



## Evaluation Study

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## Water Policy and Related Operations

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## ABBREVIATIONS

ADB	–	Asian Development Bank
ADTA	–	advisory technical assistance
CCF	–	Climate Change Fund
CFWS	–	Cooperation Fund for the Water Sector
CLTS	–	Community-Led Total Sanitation
CoP	–	Community of Practice
CWRD	–	Central West Asia Department
DMC	–	developing member country
EA	–	executing agency
EARD	–	East Asia Department
EIRR	–	economic internal rate of return
FIRR	–	financial internal rate of return
IA	–	implementing agency
IADB	–	Inter-American Development Bank
IED	–	Independent Evaluation Department
ISF	–	irrigation service fee
IWRM	–	integrated water resources management
LTSF	–	long-term strategic framework
m <sup>3</sup>	–	cubic meter
MDB	–	multilateral development bank
MDG	–	Millennium Development Goal
MRC	–	Mekong River Commission
NGWT	–	National Guidelines on Water Tariffs
NRW	–	non-revenue water
NSO	–	nonsovereign operations
PARD	–	Pacific Department
PCR	–	project completion report
PPP	–	public-private partnership
PPR	–	project performance report
PPTA	–	project preparatory technical assistance
PPWSA	–	Phnom Penh Water Supply Authority
PRC	–	People's Republic of China
PSI	–	private sector investment
PSP	–	private sector participation
RBO	–	river basin organization
RETA	–	regional technical assistance
RRP	–	report and recommendation of the President
RSDD	–	Regional and Sustainable Development Department
SARD	–	South Asia Department
SLR	–	sea level rise
SERD	–	Southeast Asia Department
SES	–	special evaluation study
TA	–	technical assistance
VND	–	Viet Nam Dong
WBNR	–	water-based natural resources
WFP	–	Water Financing Program
WFPF	–	Water Financing Partnership Facility
WUA	–	water user association
WSS	–	water supply and sanitation

## NOTES

- (i) For an explanation of the ratings used in ADB evaluation reports, see ADB. 2006. *Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations*. Manila.
- (ii) In this report, "\$" refers to US dollars.

### Key Words

adb, asian development bank, community of practice, river basin organization, water-based natural resources, water communities of practice, water supply and sanitation, regional cooperation, private sector participation, public-private partnership, cost recovery, climate change, non-revenue water, water tariff

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The guidelines formally adopted by the Independent Evaluation Department (IED) on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. Michael Henri-Paul Fortin, Jonathan Richard Cook, Daisy de Jesus-Garcia, and Rashel Yazmin Pardo-Dimaano were the consultants. Tomoo Ueda peer reviewed the earlier draft of the report. To the knowledge of the management of IED, there were no conflicts of interest among the persons preparing, reviewing, or approving this report.

## EXECUTIVE SUMMARY

When the water policy of the Asian Development Bank (ADB) was approved in 2001, water was widely viewed as one of the greatest global challenges. The challenge was accentuated by, among others, population growth, urbanization, and changes in climatic patterns. Significant improvements were needed in water management policies and practices to (i) sustain lives and food production, (ii) support larger urban populations, and (iii) improve environmental sustainability in the Asia Pacific region and in the world. The water policy covers seven main elements: (i) promoting a national focus on water sector reform, (ii) fostering the integrated management of water resources, (iii) improving and expanding the delivery of water services, (iv) fostering water conservation and increasing system efficiencies, (v) promoting regional cooperation, (vi) facilitating the exchange of water sector information, and (vii) improving governance. Under the seven elements, 40 objectives or approaches are defined. A preliminary internal review of the policy was conducted in 2003, followed by a more detailed review in 2005 by an external panel of experts. These reviews recommended doubling ADB lending to the water sector to \$2 billion annually, catalyzing reforms, and supporting capacity development. This special evaluation study (SES) is the first evaluation of the ADB water policy and operations carried out by the Independent Evaluation Department (IED).

The objective of the SES is to (i) assess the implementation of ADB's 2001 water policy and the performance of related operations, (ii) identify lessons and issues, and (iii) make recommendations to inform future decision making on water sector operations in ADB's developing member countries (DMCs). Key evaluation questions centered on relevance, consistency, and adequacy of the water policy; ADB's responsiveness or how it implemented the policy; and results so far, including effectiveness in achieving outputs and outcomes, process and project efficiency in resource use, and likelihood of the sustainability of net benefits.

The SES is based on a careful review and analysis of relevant ADB policy and operations documents, water sector-related portfolio data and evaluation reports, and interviews in ADB headquarters. Completed and ongoing water sector projects were also reviewed to determine their effectiveness and efficiency in achieving outputs and outcomes. In addition, three project-level case studies from Cambodia, Pakistan, and People's Republic of China (PRC); and three country-level case studies in India, Uzbekistan, and Viet Nam were carried out to identify good practices and implementation issues. The SES team made a presentation to the Water Community of Practice (CoP) on the preliminary findings of the study.

### Key Findings

**Relevance.** The water policy is rated relevant as it is consistent with ADB's corporate strategy and DMC national priorities, and supports international consensus on integrated water resources management (IWRM) and Millennium Development Goals (MDGs) related to water and sanitation. The policy also seeks to promote environmental protection and sustainable use of water resources, which are relevant to climate change. The review of completed as well as ongoing projects shows that the water program scores well on relevance.

A comparative review of water policies shows that ADB's water policy compares well with that of other multilateral development banks. In relation to the World Bank, the main areas of difference in approach are as follows: (i) ADB has increased focus on negotiated and participatory approaches; (ii) ADB promotes a gradual phase-out of subsidies while the World Bank support targeted and means-tested subsidies; (iii) ADB lacks an explicit policy for small water supply providers and sanitation in contrast to the World Bank; and (iv) for large water

projects, ADB has a cautionary approach. Further, ADB's water policy recognizes the importance of regional cooperation in water resource management.

ADB's current Strategy 2020 (superseding the Long-Term Strategic Framework 2001-2015) has established three strategic pillars to guide its operations up to 2020: (i) inclusive economic growth, (ii) environmentally sustainable growth, and (iii) regional integration. Water is common to each and is central to their achievement. The seven key elements of the water policy are consistent with Strategy 2020.

As the policy is contextual and comprehensive, it will remain relevant for the next decade or so. However, it is noted that relevance would have been higher if objectives and implementation pathways had been clearly defined. Monitoring the implementation of the water policy has been difficult.

**Responsiveness.** Between 1992 and 2009, ADB's loan approvals for the water sector amounted to \$16.3 billion, or around 13% of total lending. The total loan approvals were 59.4% for the water supply and sanitation (WSS) (33.2%) and multicomponent (26.2%) subsectors. The two are largely in the urban sector. The shares of the other subsectors were 14.4% for water-based natural resource management (WBNR), 13.9% for large hydropower, and 12.3% for irrigation, drainage, and flood protection. From a high of \$1.3 billion in 1995, lending fell to \$236 million in 2001, the year the policy was issued. A very small portion of the lending has gone to rural WSS (13% of total lending to WSS during 1992–2009). The 2005 review recommended doubling water sector lending to well over \$2.0 billion per year. Approvals amounted to \$1.4 billion in 2008 and \$1.7 billion in 2009. Over the same period, ADB provided stand-alone grants totaling \$194 million, project preparatory technical assistance (PPTA) totaling \$125 million, advisory technical assistance (ADTA) worth \$126 million, and regional technical assistance (RETA) valued at \$81 million.

The majority of the ADTAs focused on capacity development rather than water policy themes, except for IWRM (addressed in 41% of ADTAs). ADTAs in the water sector have declined in number since 1992, but have increased in value, averaging almost three times the amount in the period after the water policy. Some themes were more prominent after 2000, namely: formulation of comprehensive water policies, water sector road maps, IWRM, and river basin organizations. After the water policy was issued, an average of 3.9 RETAs was approved annually, more than double the number before the policy. RETA allocation was nearly six times higher in the post-policy period, in pursuit of objectives related to the policy. Of the completed ADTAs, 82% were rated *successful*, including 16% that were *highly successful* by the technical assistance completion reports.

Direct lending to the water sector from the private sector window has been limited, with only six loans valued at \$212 million over the past 18 years, or 0.5% of total water sector lending. One major constraint to private sector participation in water sector operations has been the lack of an enabling environment and appropriate tariff structure in most DMCs.

ADB made significant efforts to disseminate the policy and its provisions to key staff. Key to this effort was the establishment of the Water CoP in 2006, which has since been very active. An internal review of the CoP in 2009 generally noted positive feedback to the CoP and its activities. The CoP is considered a useful initiative under the Water Financing Program (WFP). CoP now has around 170 volunteer members, 109 of whom are in ADB headquarters. It conducts learning and knowledge sharing events. Water sector operations overlap or cross over other sectors and themes, a strong horizontal link across sector and thematic CoPs is yet to evolve.

A comparison of project design by individual water policy element reveals that changes after 2000 were not evenly distributed. Ratings of criteria associated with tariffs, subsidies, water conservation and water user associations (WUA) were relatively high before the water policy and showed little change after 2001. This is not surprising, since these elements of water management were well-established before 2001. Tariff reform was already being aggressively pursued in the WSS sector before 2000, while water conservation was promoted by ADB as early as 1993 in Viet Nam when ADB support to Viet Nam recommenced. Overall, the incorporation of water policy elements into the design of projects improved after 2001.

The principal strengths of the policy are as follows: it (i) contributes to the development of national water sector policies, reforms, and road maps; (ii) intends to promote IWRM; (iii) influences some DMC governments to improve or modernize their own water policies; (iv) contributes to improved project design; and (v) contributes to local, regional, and global partnerships, and to the production and distribution of key knowledge products.

The principal weaknesses of the policy relate to its design: it (i) is too broad and ambitious; (ii) lacks sufficient guidance for implementing the policy, including lack of realistic target results (outputs and outcomes) for water sector program performance, and monitoring and evaluation framework for intended development results, and communication of these to operational divisions and staff; (iii) overemphasizes general solutions to individual country problems, for example the focus on apex bodies and basin-wide IWRM, when subbasin approaches may have had better prospects for success, at least until a national framework is sufficiently well-established to accept IWRM for major and complex basins; and (iv) overemphasizes technical issues, placing insufficient emphasis on the impediments to institutional reform required for successful implementation of the policy at client country level.

**Results so far.** The water lending program has been effective in achieving many of the intended objectives for the evaluation period. The project completion and project performance evaluation reports gave a *successful* or *highly successful* rating to 69% of completed water sector projects approved during 1992–2009, compared with an average of 71.2% for all non-water sectors. Large hydropower projects were the most successful (80%), and irrigation projects the least successful (54.5%). Multicomponent projects performed poorly, being rated *partly successful* on average. Progress at the country level was consistent with the water policy's endorsement of national water sector reforms and the significant uptake by the ADTAs of comprehensive water policies, road maps, IWRM, and river basin organizations. A review of the 92 completed projects indicates that the projects generally achieved many of their intended objectives. Nine projects were completed since 2001, and their success rate was 89%.

While tariff reform is the dominant covenant in 66% of water sector projects during 1992–2009, noncompliance was 15%, and partial compliance 22%, implying difficulties that executing agencies faced in implementation. After 2001, the compliance level rose.

The policy has also been *effective*, despite a relatively slow start. This rating is primarily based on activities from the 2005 review onward, with a range of programs and activities that disseminated key aspects of the policy widely. Key factors are (i) the establishment of WFP and the rise in water sector lending from 2007 onward; (ii) the establishment of the Water Financing Partnership Facility (WFPF), which raised \$48 million in aid agency contributions; (iii) the CoP and water operators partnerships; and (iv) publication of a range of technical and policy-related materials. Substantial shortfalls in achieving the Facility's target outcomes are noted in terms of number of beneficiaries of (i) access to safe water and sanitation, reduced risk to floods, and improved irrigation and drainage services; and (ii) introduction of IWRM in river basins.

Completed water sector projects have been rated *efficient*, but with a total score that is marginally above the threshold for the *partly satisfactory* category, implying much room for improvement. The estimated financial and economic rates of return across all projects averaged 10.6% and 20.8%, respectively.

A desk review of about half of the ongoing water sector projects indicate that they tend to suffer from implementation delays. Selected country studies highlight implementation issues. For example, some of the key implementation issues identified by the India field study include: (i) poor performance of consultants and contractors, (ii) need for expeditious action in identifying new works that would use uncommitted loan balance and loan savings, (iii) need for timely testing and commissioning of works, and (iv) water tariff adjustments. Key issues in the water sector in Uzbekistan include: (i) high rates of nonrevenue water (NRW); (ii) low water fee collection rates; (iii) low water tariffs and difficulty in raising them to viable levels; and (iv) inability of most water companies to meet operation, maintenance and capital repayment costs. In the irrigation and drainage sector, the issues include water logging and salinization in many areas, low irrigation efficiencies, limited water supplies during the irrigation season, low WUA fees and collection rates, and absence of security of tenure and freedom to farm. In Viet Nam, key issues include: (i) limited private sector investment; (ii) difficulty in implementing IWRM due in large measure to the hierarchical nature of the bureaucracy; and (iii) recent termination of irrigation fees, which has slowed down progress toward participatory irrigation management.

Sustainability is one of the weakest aspects of ADB's water sector lending. Only around 44% of completed projects (92) approved since 1992 were rated *likely* or *most likely sustainable*, with less than 10% in the latter category (hydropower and WSS). Projects rated *less likely sustainable* are in irrigation and drainage, WBNR, and multicomponent subsectors. The relatively poor level of sustainability in several subsectors highlights a need for increased attention. Weaknesses contributing to poor sustainability include limited technical and financial sustainability, due mainly to limited operation and maintenance budget and cost recovery. Water utilities can be constrained by the prevailing social and political environment, which limits politicians' willingness to allow economic tariffs to be set, while inadequate control and maintenance, and poor institutional arrangements prevent significant reduction in NRW.

If supported by operational plans and adequate resources, the policy will be sustainable. As the water crisis in the Asia Pacific region worsens and climate change (probably) takes hold, both the relevance and the sustainability of the policy are expected to increase. The policy must continue to evolve in response to rapidly changing conditions.

**Key lessons.** The SES has identified a number of useful lessons for improving the ongoing program of support to the sector, and for formulating future strategies and plans. Several lessons are also broadly consistent with those identified by recent evaluation studies of other multilateral development banks and with those identified by the 2005 review. The following are the most commonly cited lessons: (i) it is important to increase water use efficiency, (ii) greater attention must be given to cost recovery, (iii) getting tariffs right is a complex process, (iv) institutional weaknesses are a major constraint to progress in the water sector, and (v) involving the private sector in service delivery has had mixed results.

Ten key lessons from the SES are summarized here (details are in paras. 127–147, and Appendix 8). First, at the strategic level, an effective policy needs to be firmly grounded in the core business of an enterprise. Successful policies need to be accompanied with clearly defined targets, required approach and resources, and a reliable monitoring mechanism with result indicators. Second, to improve overall success rate in water sector operations, both design and

implementation of ADB-funded projects will have to improve, requiring change in the institutional mind-set and adoption of good practices and appropriate techniques/technology. ADB assistance has pursued some innovative approaches and good practices for improving efficiency (pricing, cost recovery, reducing NRW). However, there is need for continued and significant effort in adopting and operationalizing innovative approaches and good practices.

Third, there is a substantial gap between what was planned and actually implemented in IWRM, which shows difficulties in implementation and at the same time indicates that past experience and lessons did not influence the design of subsequent projects. Fourth, capacity development, government commitment, strong leadership, community participation, monitoring, and good coordination are important requisites of successful projects.

Fifth, real benefit to impoverished populations is realized when the water issues that affect them are resolved—when access to clean drinking water is secured, when floods are controlled, when crops can be reliably irrigated. While technical assistance grants help lay the foundation for realizing these benefits, it is the sustainable loan or grant project that secures the benefit. Sixth, ADB made robust contributions to national water sector policies and institutions. Some countries, notably PRC, have made good progress in forming basin organizations, expanding urban water and sewerage systems, and rehabilitating irrigation systems. Many DMCs have had less success largely because of poor governance and the weak financial sustainability of implemented projects.

Seventh, for DMCs, there is need for innovative and realistic business models, which recognize that water resources management is intensely political and requires the articulation of prioritized, sequenced, practical, and patient interventions. The interventions should support reformers and pay explicit attention during design and implementation to the political economy of reform. Eighth, support to regional cooperation has proved a difficult area, although ADB has had some success in Central and Southeast Asia. The issues are similar to those facing intracountry IWRM and river basin organizations—a multiplicity of competing or conflicting interests, and political sensitivities, which make integrated management and rational resource allocation difficult.

Ninth, the private sector plays a pivotal role in developing WSS systems in the Asia Pacific region. However, this role is limited to construction contracts or concessions, with relatively low levels of direct investment in the sector, either foreign or local. To bridge the investment gap, ways need to be found to make investment in the sector more attractive to private businesses. Tenth, government-owned and commercially run water agencies can be highly efficient in delivering services in the water sector; however, champions are needed in both managerial and political areas.

**Key issues.** The major issues in the water sector have not changed greatly since the policy was issued in 2001. In some cases, they are now more serious than they were at the turn of the century because of two key factors— increased population and climate change.

The population of DMCs is expected to reach 3.7 billion by the end of 2010, compared with 2.8 billion in 1990. Because of rural-urban migration, the urban population is rapidly expanding, increasing the demand for potable water and associated wastewater and solid waste management facilities. The increasing demand by the urban population for hydropower and irrigation has resulted in an ongoing program of construction of dams and interbasin canals, which significantly changes river hydrology. Managing water within and between river basins and countries will be a great challenge in the future.

Global warming and climate change and their implications for water sector operations are an important issue for future ADB strategies and operations in the water sector. Climate change affects water supply in several ways: (i) changing climatic patterns, and the likely exacerbation of both drought and flood events will cause damage to agriculture, people, and infrastructure; (ii) melting glaciers and snowfields will be the source of water in major Asian river systems; and (iii) rising sea level will lead to coastal erosion, salinization of estuaries, and contamination of fresh water lenses on atolls. Coastal and low-lying DMCs such as the Pacific DMCs, Bangladesh, PRC, and Viet Nam may suffer most, but no country will be immune from the negative impacts. ADB is well-placed to contribute to assisting its DMCs to resolve their climate change-induced problems. In 2008, ADB launched its Climate Change Fund (CCF) with an initial contribution of \$40 million and established a Climate Change Program Coordination Unit in the Regional and Sustainable Development Department in 2009. The potential importance of climate change is well-recognized, and ADB's operational departments are considering adaptation to climate change for relevant loan projects and its impact on project outcomes and sustainability.

The majority of transboundary issues facing river systems in ADB's regions are in Central and West, South, and Southeast Asia. Common to these regions and their major river basins are issues related to water allocation, IWRM, and the environment. ADB has assisted in improving the joint management of a relatively small basin shared by Kazakhstan and the Kyrgyz Republic in Central and West Asia and is currently working in a basin shared by Cambodia, Lao People's Democratic Republic (Lao PDR), and Viet Nam. However, the major problems facing all four of Asia's great river basins have proved too difficult and political for any agency to address.

Regional cooperation in water resource management has been a difficult area for ADB and other multilateral development banks due largely to the political sensitivity involved in cross-border water sharing within and outside national borders. As envisaged in the water policy, however, ADB should remain ready to assist riparian countries to improve water management and allocation between them when requested by all the involved countries. ADB could consider funding increased technical assistance activity in relation to transboundary water issues and management-related studies to increase awareness and disseminate good practice.

Cost recovery is one of the most frequently cited lesson in project completion reports for WSS projects completed between 1995 and 2009. The lessons refer to the difficulty of tariff reform, affordability, and cultural and political sensitivity. Tariff reform has been the most covenanted policy factor, being present in two-thirds of relevant projects. Only 53% of projects with the covenant were able to fully meet the reforms, 14% did not comply, and 33% partly complied. Important elements of a successful tariff approach are (i) effective stakeholder communication and consultations, (ii) early identification of winners and losers, (iii) tariff structures that are perceived as fair and affordable, (iv) reforms that are accompanied by service improvements, (v) use of meters so customers can manage their service bill by controlling consumption, (vi) gradual tariff adjustments, (vii) crisis conditions that legitimize infrastructure investments and related tariff reforms, and (viii) credible and legitimate service providers.

Cost recovery and financing of operation and maintenance have direct implications for the financial sustainability of water sector operations. Where cost recovery is ensured, particularly in hydropower and water supply projects, sustainability is *likely*. Completed projects in subsectors like irrigation, drainage and flood protection; water-based natural resources; and multicomponents had a sustainability rating of *less likely* at completion. However, follow-up actions were weak or nonexistent and lessons were not always incorporated in the design of

new projects. As to ongoing projects, implementation delays had been pervasive, and contract awards and disbursements were slow. The situation calls for both better design and implementation arrangements for new projects and closer supervision of implementation for ongoing projects.

Other issues remain similar to those addressed in the water policy and its 2005 review. However, several new issues have emerged or become accentuated in recent years: (i) IWRM is a difficult and complex activity, and in the institutional environment of many DMCs, it has proved difficult to implement at a high level; (ii) institutional change is slow and ongoing capacity development is needed; (iii) there is a need for effective demand management, water conservation, reduction in NRW, water allocation, and water pricing (including block tariffs, where appropriate); (iv) there should be interbasin transfers for both hydropower (with potential negative impacts on donating and receiving rivers) and water for domestic or irrigation use; and (v) there are issues of increasing use of groundwater and/or declining water tables (for example in northern India), and arsenic problems in some areas, notably in Bangladesh.

## **Conclusions and Recommendations**

First, main themes of the water policy, namely, river basin organizations and protection of ecosystems, have been included in the design of water sector projects, particularly since approval of the policy. Other critical areas including tariff reforms and IWRM also increased in importance, but by small degrees. The water policy is ambitious considering the implicit outcomes it would like to achieve. It lacks operational plans and mechanisms for monitoring results. ADB is currently formulating a water operational framework (2011–2020), which is a step in the right direction. ADB's water policy is largely consistent with that of other MDBs, but there are some differences in approach.

Second, ADB's response to water sector issues has been substantial but delayed in some cases. While WFP and Water Financing Partnership Facility (WFPP) are sound initiatives, they could have been established earlier than 2006. Furthermore, mainstreaming of related issues and establishment of ADB's CCF in 2009 came more than 10 years after the Kyoto Protocol. In the area of private sector investment in the water sector, ADB has achieved little to date. A major exception is PRC where both ADB and other MDBs actively lend to private sector water and sanitation companies. The reasons are PRC's sound legal and regulatory framework in the water sector, progressive tariff and related institutional reforms, and strength of local private sector companies.

There is no systematic and significant difference between public and private operators in efficiency or other performance measures, as evidenced by the performance of utilities in two Asian capital cities—Manila Water (private) and the Phnom Penh Water Supply Authority (public). Both achieved remarkable results in providing service, expanding the network, and reducing NRW. For sanitation, the objectives are far from attainment, reflecting the lower priority in borrowing that governments and communities place on sanitation than on water. In the irrigation and drainage sector, projects have proved to be more difficult to implement with an overall success rating of only 52%.

Third, ADB assistance has contributed to water policy development in Asia in areas such as water sector governance, including building institutional capacity, tariff reforms, regulatory framework, and water conservation. However, more needs to be done, particularly in areas such as IWRM. International experience indicates that effective IWRM is difficult, time-consuming, and expensive to introduce. It may not be realistic to expect that ADB's DMCs would be able to introduce it in the medium term. A problem appears to be a lack of connection between policy

development and promotion on the one hand, and operations on the other. Policies must be made operational at an early stage.

The SES notes that ADB management is currently preparing operational framework and implementation plans for the water sector operations. A major conference with the theme '*Water Crisis and Challenges*' was held on 11–15 October 2010. Assuming that the operational framework, implementation plans and guidelines are adequate and results-oriented, and are properly implemented, they should contribute to operationalizing the policy more effectively and achieving the stated water policy objectives.

On the basis of the foregoing findings, the SES puts forward the following recommendations for consideration by ADB Management starting in 2011. Further details on the recommendations are provided in paras. 185–197 of the main text.

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### Recommendations

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- 1. Develop and implement an operational framework and implementation plans for further implementation of the water policy.**
  - (i) Develop an implementation plan for each key subsector in relation to DMC priorities and available ADB resources.
  - (ii) Catalyze public and private sector finance for water supply through a mix of assistance modalities including programs.
  - (iii) Reconcile the 2001 Water Policy's strategic objectives with realistic, achievable, and monitorable targets; financial and human resources in the operational framework; and implementation plan currently being formulated.
  - (iv) Develop and implement a monitoring mechanism including monitorable indicators for inputs, outputs, and outcomes of the implementation plan.
- 2. Build on success and assist DMCs to achieve their water-related national and international targets.**
  - (i) Encourage and support DMC governments to (a) improve implementation performance, (b) enhance efficiency of water supply utilities, and (c) ensure sustainability of net benefits through country programming and policy dialogue.
  - (ii) Promote a holistic approach to irrigation system rehabilitation and, where opportunities arise, participatory management of primary and secondary systems; sustainable use of groundwater; and, where feasible, groundwater recharge activities.
  - (iii) Increase assistance for sanitation.
- 3. Address more effectively the thematic and cross-cutting issues of the water policy by reorienting assistance operations.**
  - (i) Adopt a flexible, demand-driven and long-term approach to integrated water resource management.
  - (ii) Consider funding for increased technical assistance activity in relation to transboundary water issues and management, depending on demand from the DMCs.
  - (iii) Promote climate change adaptation and mitigation in water sector operations.
  - (iv) Enhance staff skills in the water sector in line with current and future needs.
  - (v) Bring CoP together to achieve better sector- and theme-level coordination and to improve synergy in water-related operations in ADB.

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## I. INTRODUCTION

### A. Background

1. The objective of this special evaluation study (SES) is to (i) assess implementation of the 2001 water policy of the Asian Development Bank (ADB) and performance of related operations, (ii) identify lessons and issues, and (iii) make recommendations to inform future decision making related to water sector operations in its developing member countries (DMCs). The key evaluation questions that the study sought to answer were: (i) How relevant (consistent and adequate) have been the water policy and related operations? (ii) How has ADB responded to water sector issues and implemented its water policy? (iii) How effective and efficient have the water operations been in achieving intended outputs and outcomes? and (iv) What are the measures taken and arrangements put in place to ensure sustainability of net benefits? In consultation with operational departments, a broad definition was applied to the water sector, covering operations in irrigation, drainage, and flood protection; management of water-based natural resources (WNBR); large hydropower; multicomponents including urban waste management, municipal services, and water supply and sanitation (WSS) subsectors (Appendix 1).

### B. Methodology and Data

2. The SES undertook (i) a careful desk review and analysis of ADB's relevant policy and operations documents, water sector-related portfolio data, and evaluation reports; (ii) interviews at ADB headquarters; and (iii) selected project-level and country-level case studies to identify good practices and implementation issues (Appendix 1).

3. The performance of the 2001 Water Policy (the water policy)<sup>1</sup> was assessed for relevance and responsiveness measured by the extent of integration of the key components and underlying objectives or approaches of the policy in the water sector operations during 2001–2009. In assessing the policy, the SES reviewed (i) the water-related policies of other multilateral development banks (MDBs); (ii) key emerging water and sanitation issues discussed at the annual World Water Forum, and other international water initiatives, including climate change; (iii) cross-cutting issues such as environment and climate change, regional cooperation, private sector participation (PSP), and Millennium Development Goals (MDGs) related to water and sanitation; and (iv) collaborative and partnering initiatives of ADB with other international organizations and networks to mobilize resources and share knowledge. It also reviewed ADB-funded completed and ongoing water sector projects for effectiveness and efficiency in achieving intended and actual outputs and outcomes.

4. Three project-level case studies from Cambodia, Pakistan, and the People's Republic of China (PRC) and three country-level case studies from India, Uzbekistan, and Viet Nam were carried out to identify good practices and implementation issues. The findings of the studies supplemented key lessons identified by other evaluation studies of water sector operations by the Independent Evaluation Department (IED) in recent years.<sup>2</sup>

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<sup>1</sup> ADB. 2001. *Water for All: The Water Policy of the Asian Development Bank*. Manila.

<sup>2</sup> ADB. 2009. *Sector Assistance Program Evaluation for Urban Services and Water Supply and Sanitation in Viet Nam*. Manila; ADB. 2009. *Sector Assistance Program Evaluation on Urban Sector and Water Supply and Sanitation in Bangladesh*. Manila; ADB. 2008. *Sector Evaluation Study for ADB Assistance to Water Supply Services in Metro Manila*. Manila; ADB. 2003. *Sector Evaluation Study for ADB Capacity Building Assistance for Managing Water Supply and Sanitation to Republic of Fiji Islands, Kiribati, Papua New Guinea, Republic of*

5. The rest of the report is organized as follows: Chapter II sets the global and regional context for water policy and discusses the relevance, consistency, and adequacy of ADB's water policy; Chapter III is an assessment of the implementation of the water policy; Chapter IV discusses effectiveness and efficiency in achieving outputs and outcomes of water sector operations; Chapter V summarizes key lessons and issues; and Chapter VI presents conclusions and recommendations.

## II. THE WATER POLICY

### A. The Water Policy Context—Current Scenario and Challenges

6. Water remains one of the greatest global challenges. Significant improvements are needed in water management policies and practices to (i) sustain lives and food production, (ii) support larger urban populations, and (iii) improve environmental sustainability in the Asia Pacific region and in the world. In the next 2 decades, 60% of the world's population will be urbanized. Rapid urbanization threatens to exacerbate inequality in the access to clean WSS, especially in Asia. Together with its connection to the ecological balance and health, water is a key factor that affects the world's environmental and economic sustainability (Appendix 2).

7. Freshwater accounts for only 3% of the world's water supply. Of that amount, about 2% is trapped in glacier ice or captured in deep underground aquifers, leaving only 1% readily available for human consumption.<sup>3</sup> Population growth and increasing prosperity are leading to increased demand for water, placing a strain on sources and often aging delivery systems. Urbanization and industrialization increase local demand and can increase pollution levels in the rivers on which many of Asia's great cities are built.

8. While the pressures on the world's water resources are great, progress was made in several areas over the past decade. In particular, there is now increased recognition of the issues facing water (as highlighted, for example, in the annual World Water Forum and Singapore Water Week). Waterborne diseases are now better managed, as suggested by a 28% drop in under-5 mortality since 1990, from 90 to 65 deaths per 1,000 live births according to the United Nations Children's Fund (UNICEF) Australia.

9. The 2009 World Water Development Report reveals the gravity of the water crisis.<sup>4</sup> From demographic growth alone, 90% of the forecasted annual population growth of 80 million was in poorer countries. Population growth will increase water demand by 64 billion cubic meters (m<sup>3</sup>) per year. Similarly, the World Bank's Water Resources Sector Strategy (2004)<sup>5</sup> used the World Commission on Water's term, the "gloomy arithmetic of water," to describe how growth in water demand exceeds that of the world's population. During the past century, when the world population tripled, the use of water increased six-fold. The strategy document pointed out that climate change will heighten the impacts of an impending world water crisis. The World Bank considers water resources management and development a critical element in achieving their strategic objectives of sustainable economic growth and poverty reduction.

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*Marshall Islands*. Manila; ADB. 2002. *Sector Evaluation Study on Water Supply and Sanitation Projects in Selected Developing Member Countries*. Manila.

<sup>3</sup> World Bank. 2010. *Water and Development: An Evaluation of World Bank Support, 1997–2007*. Washington, DC.

<sup>4</sup> World Water Assessment Programme. 2009. *The United Nations World Water Development Report 3: Water in a Changing World*. Paris: UNESCO, and London: Earth scan.

<sup>5</sup> World Bank. 2004. *Water Resources Sector Strategy: Strategic Directions for World Bank Engagement*. Washington, DC.

10. The role of population growth and climate change in perpetuating or exacerbating the water crisis has been widely discussed in the water management literature. Population growth means a growing demand for food, but at the same time, rapid urbanization competes with agriculture for freshwater supplies. The pressure to increase food production increases the demand for irrigated agriculture, while the economics and politics of development create a demand to reallocate water to cities. Climate change is altering precipitation patterns and increasing the risk of water stress,<sup>6</sup> and decreasing the efficiency of water infrastructure in many areas.

11. Improvement in water and sanitation coverage was one of 18 targets in the MDGs adopted by the world's major multilateral institutions (Appendix 2). Target 10 is to "halve, between 1990 and 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation."<sup>7</sup>

12. Many multilateral and bilateral aid agencies have provided assistance for improving water and sanitation in developing countries over the past decade. The situation with respect to clean water supply has improved, but partly due to population growth, some 844 million people lack adequate access, only 7% less than in 2000. In sanitation, less progress has been made and a recent high-level consultation<sup>8</sup> estimated that 2.5 billion people are still without access to improved sanitation facilities, virtually unchanged from 1990. At the current rate of progress, the internationally agreed-upon goal on sanitation will not be met until 2049.<sup>9</sup> Asia is on track to achieve the water MDG by 2015, but slow development of sanitation, particularly in South Asia, is limiting progress toward the sanitation target.

## **B. ADB's 2001 Water Policy—Relevance, Consistency, and Adequacy**

13. ADB launched the water policy following an extensive stakeholder consultation in 2001. The policy has seven main elements: (i) promoting a national focus on water sector reform (including policies, laws, building institutional capacity, information management, and sector coordination); (ii) fostering the integrated management of water resources, especially in river basins; (iii) improving and expanding the delivery of water services (including PSP and emphasizing equity in access to water for the poor); (iv) fostering the conservation of water and increasing system efficiencies; (v) promoting regional cooperation and increasing the mutual beneficial use of shared water resources within and between countries; (vi) facilitating the exchange of water sector information and experiences (including public-private, community and/or nongovernment organization [NGO] partnerships); and (vii) Improving governance (including the promotion of decentralization). Under these seven key elements, 40 objectives or approaches are defined (Appendix 3).

14. When the water policy (footnote 1) was approved in 2001, water was widely viewed as one of the greatest global challenges. In Asia, home to nearly 900 million of the world's poorest, water management policies and practices play a critical role in food production, urbanization, and environmental and economic sustainability. As stated in the Water Policy, "about 40% of

<sup>6</sup> About 700 million people in 43 countries are currently experiencing water stress. Evaluation Cooperation Group (ECG). 2010. *White Paper: Prepared for ECG Workshop on the Evaluation of Water Supply and Sanitation*. Washington, DC (May 21).

<sup>7</sup> Available: <http://www.unmillenniumproject.org/goals/gti.htm>

<sup>8</sup> Sanitation and Water for All: A Global Framework for Action. Summary by the Co-Chairs of the High Level Meeting on April 23rd 2010 held at the World Bank, Washington, DC.

<sup>9</sup> UNICEF. 2006. *Progress for Children: A Report Card on Water and Sanitation, Number 5*. New York.

Asia's cropland is irrigated, producing about 70% of its food. Paradoxically, however, poorly conceived or managed irrigation has also contributed to salinization and water logging."

15. In 2006, 624 million out of more than 1 billion people had no access to improved sources of drinking water and more than 1.6 billion out of 2.6 billion people were without access to improved sanitation facilities. The deprived were residing in East Asia, South Asia, and the Pacific (footnote 9).

16. The water policy was established in response to water crisis linked to poverty and the potential for regional disputes. Increasing "water stress" is evident in a significant decrease in per capita water availability. The United Nations Environment Programme (UNEP)<sup>10</sup> states: "the per capita availability of water in India, as a whole, has decreased to 1,869 m<sup>3</sup>, from 4,000 m<sup>3</sup> in last 2 decades and farmers increasingly tap the available groundwater. Millions of tubewells have been dug, with groundwater levels plunging in many areas because of excessive pumping. By 2025, per capita water availability could fall below 1,000 m<sup>3</sup>." This stress can be addressed in various ways: (i) increase irrigation efficiency to meet food production demands, (ii) expand and improve the efficiency of WSS services, (iii) manage industrial and municipal effluents and rural and urban stormwater runoff; and (iv) improve the management and allocation of available resources at a watershed level.

17. The water policy establishes two fundamental principles. It (i) treats water as both a social and economic good, and (ii) acknowledges the fundamental distinction between "water as a resource" and "water as a service."<sup>11</sup> These principles inform efforts to improve suboptimal national policies and practices in the water sector. The policy (i) supports ADB's strategy for poverty reduction by promoting participation of the poor in water management, (ii) supports ADB's strategy for public-private participation (PPP), and (iii) aims to catalyze a national focus on water sector reform in the DMCs. It also has a regional cooperation dimension, which would be supported in response to requests from DMCs concerned.

18. The water policy does not make specific reference to climate change,<sup>12</sup> but it does refer to the need to prevent natural calamities by proper management of water resources, preventing deforestation, and effective urban planning.

19. It is widely held that climate change is changing rainfall patterns, and the extent and frequency of both droughts and floods. Global warming is causing permafrost to melt and is reducing the buffering capacity of snowfields and glaciers, on which irrigation depends on the great Asian rivers including the Amu Darya, Indus, Ganges, Brahmaputra, and many lesser rivers. These rivers and others such as the Mekong cross international boundaries, with the potential for disagreement about water development and allocation. Countries are increasingly seeking to construct dams for hydropower or irrigation on these rivers and their tributaries, or to divert part of their flow, with potential impact on downstream riparian countries.

20. The *Asian Water Development Outlook 2007*<sup>13</sup> argues that physical scarcity is not the main cause of water crisis; rather, it is the mismanagement of water resources. This finding

<sup>10</sup> UNEP. 2008. *Freshwater Under Threat: South Asia*. United Nations Environment Programme. Nairobi, Kenya.

<sup>11</sup> ADB. 2006. *Comprehensive Review of ADB's Water Policy Implementation*. Manila.

<sup>12</sup> However, the policy seeks to increase understanding of the effects of climate change and share its knowledge and experience with DMCs in order to promote adaptation of proactive approach to reduce the severe economic and social costs of natural disasters.

<sup>13</sup> ADB. 2007. *Asian Water Development Outlook 2007: Achieving Water Security in Asia*. Manila.

supports the main objective of the water policy, which is to promote an integrated approach to water management and development.

21. At the time of its release, the water policy stipulated a Board-level review of its implementation. This review was to be conducted by a commissioned panel of experts within 5 years of the policy's release. A preliminary internal review of the policy was conducted in 2003<sup>14</sup> followed by the prescribed review in 2005.<sup>15</sup> The latter included a panel of DMC experts, donors, private sector, and NGOs. Several substantial recommendations were made, including doubling ADB lending to the water sector to \$2 billion annually, catalyzing reforms, and supporting capacity development (Appendix 1). This SES is the first independent evaluation of the water policy and related operations undertaken by IED.

### C. Continued Relevance and Consistency of the Water Policy

22. Relevance is assessed from several perspectives: ADB's corporate strategy, DMC national priorities, and addressing international consensus on integrated water resources management (IWRM) and MDGs.

23. **Consistency with past and present corporate strategies.** In 1999, ADB published its 1999 Poverty Reduction Strategy (PRS)<sup>16</sup> followed in 2001 by its Long-Term Strategic Framework, 2001–2015 (LTSF).<sup>17</sup> The 1999 PRS identified lack of adequate water and sanitation as key determinants of poverty, in addition to other social indicators and income poverty. The strategy promoted continued investment in the water subsectors. The 2001 LTSF indicated that large investments would be required in the social sectors and in social infrastructure, particularly education, health, shelter, and WSS, especially in the poorer DMCs. It also discussed issues relating to regional cooperation, including shared watershed management. ADB sought to ensure, in conjunction with DMCs, that environmental policies adopt an integrated resource management approach as highlighted by the then recently published water policy. The water policy aims to promote achievements of higher irrigation efficiency in a basin context.

24. In 2008, ADB updated its LTSF under Strategy 2020,<sup>18</sup> which superseded the 2001 LTSF and established three strategic agendas to guide its work up to 2020 namely: (i) inclusive economic growth, (ii) environmentally sustainable growth, and (iii) regional integration. Water is common to each and is central to their achievement. The seven key elements of the water policy are consistent with Strategy 2020.

25. **Consistency with national priorities.** While the 2001 water policy is highly relevant to DMC national priorities, the design of water projects in relation to country- or location-specific demand factors and institutional capacities is not always appropriate. With a few exceptions, the design of projects' physical assets is appropriate, as evidenced by almost 90% of projects rated *relevant* or *highly relevant* in the project completion report (PCR). However, evidence from case

<sup>14</sup> ADB. 2004. *Interim Review of ADB's Water Policy Implementation Report of the In-House Study by ADB's Water Sector Committee*. Manila.

<sup>15</sup> ADB. 2006. *Water for All: Translating Policy into Action, The Review Panel's Final Report and Recommendations*. Manila.

<sup>16</sup> ADB. 1999. *Fighting Poverty in Asia and the Pacific: The Poverty Reduction Strategy*. Manila.

<sup>17</sup> ADB. 2001. *Moving the Poverty Reduction Agenda Forward in Asia and the Pacific: The Long-Term Strategic Framework of the Asian Development Bank (2001–2015)*. Manila.

<sup>18</sup> ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

studies and key informants suggests that the design of implementation mechanisms for capacity development and financial sustainability could be better.

26. DMCs' national priorities are shaped in part by prevailing environmental and social conditions. Currently, around 1.9 billion people in countries eligible for funding from the Asian Development Fund (ADF) do not have access to basic sanitation. After years of neglect by DMCs in Asia, the infrastructure deficit has led to unsanitary and unhealthy cities. Underlying causes include (i) poor cost recovery in public sector operations, (ii) weak policies and institutions, and (iii) regulatory failure. Water resource depletion and impairment hamper Asia's economic growth and increase susceptibility to natural disasters. With its emphasis on improved legal and institutional frameworks, tariff reform, improved service delivery, IWRM, water conservation and other widely accepted water management practices, the water policy provides DMCs with the necessary high-level framework to address water resource issues.

27. **Addressing international consensus on IWRM and MDGs.** ADB's water policy also reflects the prevailing international consensus about the importance of elements such as IWRM. Beyond this consistency in content, it is important to recognize the significant contribution that ADB's water policy has made to the international consensus on water; it makes a distinction between water as a resource and water as a service. However, IWRM, which has received increased focus in ADB has made limited progress in most DMCs.

28. The policy was produced almost concurrently with the MDGs agreed-upon at the Millennium Summit in 2000 and adopted by the United Nations (UN) member countries in 2001. While the policy does not mention the MDGs as such, it lists the indicative targets set at the Second World Water Forum (WWF) at The Hague in March 2000 from which the WSS targets were taken up by the MDGs. The policy was intended to help DMCs achieve MDGs and adopt water action agendas that have clearly defined objectives and milestones linked to resources. The policy is, thus, highly relevant to regional objectives, at least at the conceptual level. The policy is closely aligned with MDG 7 (Target 10) "to reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation."

29. ADB has made a good contribution to the evolving international consensus on water through its support to the Asian forum and the WWF. ADB is represented at most regional and global international workshops and conferences. Through research papers and those prepared for technical assistance (TA) projects, ADB has contributed to the international debate on water and related issues.<sup>19</sup> The 2007 WWF publication *Achieving Water Security for Asia* is an impressive document, with a wealth of information on water issues and solutions in the region and individual countries. Through the Community of Practice (CoP),<sup>20</sup> and linkages to the Global Water Partnership and to national partnerships, ADB has made substantial efforts to spread the messages contained in the water policy.

30. ADB's operations in the water sector have responded well to country needs. Sector priorities are agreed upon in the country partnership strategies (CPSs) and updates, and specific project priorities in almost all cases are recommended or approved by the national

<sup>19</sup> An example is the assistance supporting establishing and supporting the Asia-Pacific Water Forum, which encourages collaborative efforts on water resources management and accelerates the effective integration of water resources management into the socioeconomic development process of the Asia and Pacific region.

<sup>20</sup> Available: [http://pedge.asiandevbank.org/wps/myportal!/ut/p/c/1/04\\_SB8K8xLLM9MSSzPy8xBz9CP0os3j3EN-gUG93QwMLQ09TA0-jEAsDd0djA4NQM6B8pFm8n79RqJujp6GhhZmroYGRmYeJk0-Yp4G7izEB3eEg-DrB8kb4ACOBvp-Hvm5qfoFuREGWSaOigDCPJd/dl2/d1/L2dJQSEvUUt3QS9ZQnB3LzZfR1RNUIVLRzEwR1FINzBJSUpLUFQ0TjJHRji!](http://pedge.asiandevbank.org/wps/myportal!/ut/p/c/1/04_SB8K8xLLM9MSSzPy8xBz9CP0os3j3EN-gUG93QwMLQ09TA0-jEAsDd0djA4NQM6B8pFm8n79RqJujp6GhhZmroYGRmYeJk0-Yp4G7izEB3eEg-DrB8kb4ACOBvp-Hvm5qfoFuREGWSaOigDCPJd/dl2/d1/L2dJQSEvUUt3QS9ZQnB3LzZfR1RNUIVLRzEwR1FINzBJSUpLUFQ0TjJHRji!/)

planning agencies. CPSs are aligned with national development plans of DMCs. In India and PRC, the largest borrowers in the water sector, the national planners present ADB with a prioritized list of projects for which they seek financing; the programs thus closely reflect national demands.

#### D. Comparative Review of Water Policies

31. This SES reviewed the water policies of MDBs. The results are summarized in Table 1, and details are in Appendix 4. In general, ADB's water policy aligns closely with those of the other MDBs. But it differs from that of the World Bank in its approach in some areas.

**Table 1: Comparison of Water Policies**

<b>A. Common Ground with ADB's Water Policy</b>
<ol style="list-style-type: none"> <li>1. Comprehensive water resources assessment in river basins</li> <li>2. Integrated water resources management<sup>a</sup></li> <li>3. Capacity development</li> <li>4. Promotion of autonomy and accountability of service providers</li> <li>5. Development of contracting modalities for public-private partnership in managing infrastructure</li> <li>6. Promotion of user participation to ensure accountability, appropriate design, cost recovery, and sustainability of physical and managerial systems</li> <li>7. Development of modalities for investors to participate in expanding and improving services to the poor</li> <li>8. Instituting tariff reforms to reward conservation</li> <li>9. Promotion of cost recovery principles</li> <li>10. Establishment of regulatory systems</li> <li>11. Explicit participation by the poor in water projects</li> <li>12. Stakeholder participation in water resource management</li> </ol>
<b>B. Difference in Approaches</b>
<ol style="list-style-type: none"> <li>1. <b>Water allocation.</b> ADB supports negotiated and participatory approaches.<sup>b</sup> The World Bank and Inter-American Development Bank (IADB) employ an incentives-based approach primarily through tradable water rights, although they do not preclude negotiated and participatory solutions.</li> <li>2. <b>Subsidies.</b> ADB's policy seeks to promote a gradual phase-out of subsidies while the World Bank and IADB support targeted and means-tested subsidies. For the World Bank, output-based aid is currently being pilot-tested as a targeting instrument for subsidies.</li> <li>3. <b>Small water supply projects.</b> ADB has no explicit policy for small water supply providers in contrast to the World Bank.</li> <li>4. <b>Large-scale water operators.</b> For large water projects, ADB has taken a more cautionary approach while the World Bank has taken a more aggressive stance since 2003 with at least 67 ongoing projects worth \$8.7 billion, at least half of which are in Asia.</li> <li>5. <b>Sanitation.</b> Unlike the World Bank, ADB does not have a separate strategy for sanitation.</li> <li>6. <b>Regional and/or cross-border cooperation.</b> ADB has an explicit statement for its potential role in regional cooperation in water resources management.</li> </ol>

ADB = Asian Development Bank.

<sup>a</sup> For the World Bank, integrated water resources management is not the main management challenge. Rather it is the political economy dimension of reform, which requires a "pragmatic but principled" approach that respects principles of efficiency, equity, and sustainability. In contrast, ADB's focus is on the technical rather than on the political economy dimensions of reform.

<sup>b</sup> See Appendix 10, para 47.

Source: Compiled by the Independent Evaluation Department. See Appendix 4.

32. The World Bank recently completed an evaluation of its water sector operations (1997–2007) (footnote 3). The recommendations from that report suggest that the World Bank should in the future (i) seek ways to support the countries that face the greatest water stress; (ii) ensure that projects pay adequate attention to conserving groundwater and that the quantity extracted is sustainable; (iii) help countries strengthen attention to sanitation; (iv) clarify how to cover the

cost of water service delivery in the absence of full cost recovery; and (v) if borrowers must cover the cost of water services out of general revenue, share the lessons of international experience with them so they can allocate costs most effectively. The evaluation also draws the attention of World Bank's senior management to the importance of regional-level engagement in water resource management issues.

#### **E. Relevance at the Project Level**

33. The appropriateness of a project in relation to local demand and capacity should be measured at completion by the rating for relevance in the PCR or the project performance evaluation report (PPER). The water program scores well for relevance, averaging 2.4 out of 3 across 97 completed projects—a high level, although about the same as the average across all sectors of the 554 projects completed since 2001. Too few projects that started after 2001 have been completed to allow detailed analysis of any possible impact of the policy, but indications to date are that ratings for both relevance and overall success have increased after the policy compared with their incidence before 2001.

34. The extent to which covenants are met also provides insight into the suitability of design, since a covenant that is partially complied with or not complied with often represents a design factor that the client government considered unimplementable. Tariff reform is the most frequent covenanted loan condition, and also most frequently not complied with (15% of covenants) or partly complied with (32%), highlighting both the need for and the difficulty of tariff reform (and full cost recovery) in many DMCs.

35. Institutional capacity in many executing agencies and implementing agencies remains weak, despite their rapid development over the last 20 years. Salaries and conditions in some DMCs and their agencies do not attract or retain the best staff, while governance may also be weak. To try to address this issue, many loans and TA projects include training and capacity development activities. For example, in the water sector regional TAs (RETAs) and advisory TAs (ADTAs), training and capacity development were the dominant themes, being major or secondary themes in 71% of RETAs. IED's database of lessons learned also highlights training needs, often identifying the need for capacity development—referred to in 20% of the 539 lessons from the water sector, the same as the need for participation, and below only the need for improved planning.

### **III. ASSESSMENT OF THE IMPLEMENTATION OF THE WATER POLICY—RESPONSIVENESS**

#### **A. Water Sector Operations**

36. Water sector operations such as loans, grants, and TAs as well as focused programs and/or activities to support water sector activities—Cooperation Fund for the Water Sector (CFWS), Water Financing Partnership Facility (WFPF), and the Water CoP—show the extent of ADB activities to implement the policy. The operations and activities for 1992–2009 were analyzed. There were 207 loan projects, 29 (2 grants approved in 2010) grant projects, 178 project preparation technical assistance (PPTA) projects, 185 ADTAs, and 55 RETAs. In addition, 97 PCRs, and 15 PPERs were reviewed.

## 1. Public Sector Operations

37. Activity under the policy, for example, under the December 2001 CFWS, was initially slow. Increasing activity became evident in 2003 and translated into increased loan approvals in 2003, before a lull in 2004, and a high level of activity in 2005 to 2008 following the 2005 review. This led to the establishment of the Water Financing Program (WFP) in December 2006 with explicit and ambitious targets, for example, “to deliver access to safe drinking water and improved sanitation to 200 million people” by 2010 (Appendix 5). The launch of the WFP in 2006 was also ADB’s response to international calls for doubling of water investments (2003 Camdessus Panel Report on Financing Water for All and 2006 Gurria Task Force Report on Financing Water Infrastructure). ADB was the first MDB to come out with a concrete program responding to such calls.

38. Appendix 5 summarizes the number and value of water-sector related loans by country during 1992–2009. For 1992–2009, ADB’s loan approvals for the water sector amounted to \$16.3 billion, or around 13% of total lending (Appendix 5, Table A5.5). From a high of \$1.27 billion in 1995, lending fell to \$236 million in 2001 (the year the water policy was issued). Lending did not regain its 1995–1997 levels until 2005. The 2005 review (footnote 15) recommended doubling water sector lending to well over \$2.0 billion a year.<sup>21</sup> Approvals amounted to \$1.4 billion in 2008 and \$1.7 billion in 2009.<sup>22</sup> As of August 2010, ADB approved 12 loans (including three multitranche financing facility [MFF] tranches), with a total loan amount of \$1.045 billion, of which \$733.8 million was for a water component.

39. India and PRC were the dominant recipients of ADB lending, followed by Pakistan with \$2.8 billion, Indonesia with \$2.4 billion, Viet Nam with \$1.3 billion, and Bangladesh with \$0.9 billion. Lending to five more DMCs (Azerbaijan, Nepal, Philippines, Sri Lanka, and Uzbekistan), exceeded \$500 million over the evaluation period 15 countries borrowed between \$20 million and \$200 million, while five Pacific DMCs and the Maldives borrowed less than \$10 million. The top 10 countries obtained 91% of total lending, a high degree of concentration.

40. **Grants.** In addition to loans, ADB provided stand-alone grants totaling \$193.6 million for 16 projects over the same period (Appendix 5, Table A5.4). Funds came from the ADF, Japan Fund for Poverty Reduction, and other funds. By April 2010, this figure had reached \$215.2 million. The recipient DMCs were Afghanistan, Cambodia, Kyrgyz Republic, Lao People’s Democratic Republic, Federated States of Micronesia, Mongolia, Nepal, Samoa, Tajikistan, Timor-Leste, and Viet Nam.

41. **TAs.** ADB’s lending program is supported by TA. For 1992–2009, ADB approved TAs amounting to \$321.3 million (\$125.4 PPTA, \$80.7 million RETAs, and \$125.9 ADTAs). Between 1992 and 2008, the average value of the PPTA was stable in real terms. A statistical analysis of PPTA costs indicates that projects incorporating good water policy elements into their design do not have significantly higher PPTA costs, implying that applying the water policy has not increased the cost of processing loan projects.

<sup>21</sup> ADB. 2006. *Water for All: The 2nd Five Years, ADB’s Water Financing Program 2006–2010*, Background Paper, Manila (10 August).

<sup>22</sup> While these amounts are less than the estimates by WFP, it should be noted that the SES sample excluded a number of multisector infrastructure projects, where the proportion of the water component was unknown or limited. Program loans, coastal zone and emergency loans were also excluded. Conversely, large hydropower loans were included. Multitranche financing facility (MFF) loan tranches are included in the current dollar tables in the year in which the tranche is approved.

42. The ADTAs in the water sector declined in number over the period since 1992, but increased in value in real terms except for a significant drop in 2009 (Appendix 5, Figure A5.3). This implies that the average ADTA was almost three times in real terms in the period after the water policy.<sup>23</sup> An evaluation of the treatment of water policy themes in the ADTAs shows that certain themes were more prominent after 2000, notably the formulation of comprehensive water policies, water sector road maps, IWRM, and river basin organizations (RBOs). The majority of ADTAs focused on capacity development and other aspects of development rather than the water policy themes. The exception is the IWRM theme, which was addressed by 41% of the ADTAs. The focus on IWRM is reassuring since this is a cornerstone of the improved sustainability of water-related projects. However, it is difficult to successfully apply IWRM in the absence of an enabling institutional framework. Themes that address the institutional framework, such as water policies, road maps, tariff reform, RBOs, and water legislation did not figure as prominently in ADTAs. This implies a focus on the more technical aspects of water sector reform rather than on institutional aspects, which are equally important but in many cases more difficult to address (Appendix 5, Table A5.3).

43. RETAs are developed in consultation with two or more DMCs, or regionally in support of DMC (and ADB) objectives. Over the 9 years after the policy, an average of 3.9 RETAs had been approved annually, more than double the number before the policy. ADB expenditure on RETAs was nearly six times higher after the policy, indicating a far higher reliance on TA largely in pursuit of objectives related to the policy. RETAs can be valuable in promoting policy objectives among several countries and improving networking among them. While regional cooperation in water is a policy objective, only five RETAs have had improving intercountry river management as a central objective; most of them dealt with relatively small catchments in Central and East Asia. However, RETAs have assisted in developing the Syr Darya and Amu Darya agreements in Central Asia, which are significant, as well as in supporting the Chu Talas agreement between the Kyrgyz Republic and Kazakhstan.

## **2. Private Sector Operations**

44. Direct lending to the water sector from the private sector window has been limited. Over the past 18 years, there had been only six loans with a total value of \$250 million, or around 0.5% of total water sector lending (details are in Appendix 6). However, PSP is far more important than this figure would imply, since (i) a large majority of construction in the sector was carried out by private firms under contract to national or local governments, and (ii) many ADB multisector loans in the urban sector were granted to government investment companies that onlent to the private sector for infrastructure construction, of which some (though again a small proportion) was for water and sanitation.

## **3. Key Thematic Areas**

### **a. Environment and Climate Change**

45. ADB's water policy has little to say about climate change. It simply states that "global climate change may heighten the impact of floods and droughts in parts of Asia" (footnote 1,

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<sup>23</sup> Strongly influenced by a series of capacity development TAs in Viet Nam and an \$8 million TA for Indonesia in 2008 for building capacity related to the Citarum Water Resources Management Project, with \$5 million funded by the Netherlands Government.

para. 10).<sup>24</sup> However, climate change has assumed a higher profile in ADB in recent years. Since the publication of Intergovernmental Panel on Climate Change's Fourth Assessment Report in 2007, ADB has emphasized climate change and planning to expand related operations. The establishment of the Climate Change Fund (CCF) and a number of TA grants are some examples. It is also acknowledged that there is no international consensus yet on anthropogenic (human-induced) climate change or sea level rise (SLR), and in this situation, a hasty response could be considered premature. With its commitment of \$40 million to CCF and support for related activities, ADB has struck a reasonable balance between precaution and excessive haste.

46. In total, 13 loans approved by ADB since 1993 have responded in some degree to potential climate change risks; nine of them were approved after 2008, highlighting ADB's increased focus on climate change issues. The most direct response to climate change was through the linkage of energy projects to the clean development mechanism (CDM). Major investment activities in direct response to climate change are still in the pipeline, such as improved flood protection for Ho Chi Minh City.

47. Large investments will be needed to protect urban and coastal areas if the predicted SLR occurs, and negative impacts are expected on irrigation and from drought and inland flooding. These factors will need to be incorporated in ADB's WFP and successor programs, for they are expected to significantly increase the demand for loan funds from many DMCs. In the event that climate change predictions prove conservative and rapid change occurs, ADB and its WFP and CCF should be in a position to act quickly to assist states in particular difficulties. For example, ongoing coastal erosion in Viet Nam and Sri Lanka, whether or not related to SLR, will require major responses if valuable coastal assets are not to be lost. Along with physical infrastructure, equal attention may be needed to establish effective adaptation mechanisms in place, which can monitor the impacts of climate change and provide necessary response (both in terms of hardware and software) in an adaptive manner.

48. While climate change and global warming were recognized as issues when the water policy was drafted, particularly following the framework convention on climate change—the Kyoto Protocol—there was little empirical evidence on which to base specific recommendations for inclusion in the policy.

49. ADB's intention under the water policy to assist in developing collaborative networks and operationalizing international arrangements has not made much progress. It is categorized as partly satisfactory because of the low-level activity compared with the potential envisaged. In retrospect, it seems that the policy overreached itself in the regional cooperation area; it was always unlikely that its objectives would be easy to attain due to political sensitivities within countries as well as cross-border issues.

50. As population expands and demand for water increases throughout Asia, rivers that cross international borders will assume even more significance than at present. The four river systems cited in this paper are of immense social and economic import to the countries through which they pass and the close to one billion people who reside in their basins. Equitable sharing of resources, control of pollution, and protection of biological status and biodiversity are key issues for the rivers in the 21st century. Numerous smaller rivers cross international borders and

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<sup>24</sup> ADB seeks to increase its understanding of the effects of climate change and share its knowledge and experience with DMCs in order to adopt a proactive approach to reduce the severe economic and social costs of natural disasters.

can face similar though localized issues. They also need negotiation between states, which can bring significant benefits, as in the case of Chu-Talas in Central Asia.

51. Some riparian countries continue to take decisions that may have major downstream impacts. Without adequate consultation with their downstream partners, such decisions may lead to conflicts. Some agencies are working hard to promote cooperation (e.g., the Mekong River Commission [MRC]), but even well-established consultative mechanisms seem unable to prevent states from making unilateral decisions that the states perceive as being in their national interest, regardless of possible downstream impacts. Monitoring and information sharing are highly desirable, e.g., in relation to flood forecasting, but are reportedly inadequate on most river systems, but improving under the current MRC management.

52. Transboundary jurisdiction issues are also significant between provinces and states in a DMC—for instance the Songhua River Basin in PRC cuts across the provinces of Heilongjiang, Jilin, and Inner Mongolia and eventually joins the Amur River in Russia. The October 2005 chemical spill in Heilongjiang in the Songhua River was a big concern for Russia as the chemical spill steadily made its way downstream. ADB is playing an active role in promoting integrated water resource and river basin management in the Songhua River (see the Supplementary Appendix B). In Wuhan, ADB has assisted in developing a comprehensive water quality monitoring system from a river basin perspective.

53. ADB can build on some success that it has had in Central Asia, and has made a limited contribution to the operation of the MRC on the Mekong. It has made a major contribution to regional networking and the exchange of ideas between water management and technical staff from the DMCs, which provide a basis for improved cooperation between their countries in the future. Particularly significant are TAs such as TA 6388-REG: Supporting the Asia-Pacific Water Forum. Further details can be found in Supplementary Appendix A.

#### **b. Water and Sanitation-Related MDGs**

54. ADB's WFP is largely driven by the MDGs, which provided the justification for the large increase in value and percentage applied to the water sector after 2006. It is acknowledged that achieving the target for quality water would also positively impact poverty, health, and education. It has particular benefits for women and children, for whom easily accessible high quality water significantly reduces workload and improves health status. It is, however, important that improved water supplies are reliable. If an improved supply breaks down after a few years, and people are forced back to their traditional sources, morbidity can rise to above previous levels, since people may have lost their natural immunity.

55. WFP analyzes the planned and sometimes the actual beneficiaries of water sector loans. Between 2006 and 2009, an estimated 45 million people were expected to benefit from potable water, and 64 million from improved sanitation systems. But much remains to be done (Appendix 7). In some rural areas, piped water networks are still rare. Even where piped water is available, most residents have to boil water to avoid bacterial and/or viral health risks; the relatively wealthy buy bottled water. The proportion of the population with improved sanitation is low. Urban areas are faced with aging infrastructure that needs upgrading or replacing, and expanding populations that require expansion of water and sewerage networks.

### c. Private Sector Participation

56. ADB's support to PPP and private sector or nonsovereign operations (PSO or NSO) in the water sector over the last 20 years has been *partly satisfactory* because of its limited contribution to the water program in the context of both the water policy objectives and the LTSF (Appendix 6). The loans made by the Private Sector Operations Department (PSOD) to private companies have so far been limited in number. In the public sector (sovereign operations), PPP has made some progress, but less than planned. Activity levels have increased since the water policy was issued, although probably more in response to the LTSF and international trends than to the policy itself. Numerous loans had sought to involve the private sector at a high level, but that has proved difficult in practice and, in many cases, objectives were only partly achieved.

57. A recent SES on PPPs identifies reasons why PPP has not been more widespread under ADB operations:<sup>25</sup> (i) there are general difficulties associated with PPPs in the sector, e.g., the governance environment and nonviable tariff structures; (ii) ADB's operational focus has shifted from support for larger water utilities to assistance for water systems in smaller towns and rural areas, which have less private sector investment potential; and (iii) many water utilities (for example, most small-town water utilities in Indonesia) do not have the capacity to borrow funds for upgrading even through ADB's public sector window. Even when ADB did have long-standing relationships with key utilities, it failed to translate its engagement into support for PPP due mainly to lack of appropriate expertise in this area. PRC represents the greatest success story in NSO, with strong central and provincial government support for the concept. The Water Supply and Environmental Improvement Project in Madhya Pradesh is beginning to show encouraging results (para. 108).

58. Given ADB's intention to greatly increase the proportion of its lending involving the private sector, ways need to be found to increase the profile of the water sector in relation to ADB's private sector lending window. There is clearly a large investment gap, which could be partly filled by PPP and NSO if conditions were right.

59. While much of the discussion in this report has been on the larger water utilities, across ADB's area as a whole, gains are likely to result from the introduction of PPP to medium-sized towns and local authority areas. The development of an improved environment for PPP in these areas has the potential to show high returns, as well as improved delivery of water and sanitation services to consumers.

60. Public and private goods need not be incompatible,<sup>26</sup> as clearly shown by water utilities in Phnom Penh and Manila. The poor need potable water and safe disposal of sewage. If these services can be provided by a utility (whether public or private), the poor will not only pay, but also often save money that would have gone to purchase water from vendors on the street.

61. Within ADB there is a limited number of staff with strong PPP and NSO experience. So while there is enthusiasm to promote private sector involvement, there is little detailed knowledge of how to select appropriate modalities, or make them happen on the ground.

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<sup>25</sup> ADB. 2009. *Special Evaluation Study on ADB Assistance for Public-Private Partnerships in Infrastructure Development—Potential for More Success*. Manila (Supplementary Appendix I: ADB Assistance for PPP in WSS).

<sup>26</sup> However, there is a significant systematic difference in public and private operators in some region, as public operators are largely not reformed, inefficient, lacking market skills and financial strength, and unable to push for institutional reforms or change. Public providers lack autonomy, access to technical skills, and incentives to deliver quality, reliable and continuous service.

#### **4. Partnerships, Community of Practice, and Focused Activities**

62. The challenges facing the water sector and subsectors require substantial financing. In this regard, ADB established water funding facilities which include the CFWS (now closed) and WFPF,<sup>27</sup> which aim to assist in addressing the water challenges in the Asia and Pacific region. To maximize its resources, ADB also participates in a range of national, regional, and global partnerships and regional cooperation partnerships (Appendix 7).

63. ADB has made significant efforts to disseminate the water policy and ensure that key staff were aware of its provisions. Key to this effort was the establishment of the Water CoP<sup>28</sup> in 2006. This has played a central role in developing and disseminating knowledge products within ADB, and in the DMCs. An internal review of the CoP conducted in 2009 noted generally positive feedback to the CoP and its activities. CoP members sought increase in information and knowledge sharing, which should in part be addressed by the operational guidelines currently being prepared. A review of the CoP is included in Appendix 7. The CoP is considered a useful initiative under the WFP. It now has around 170 volunteer members, of whom 109 are in ADB headquarters.<sup>29</sup> However, as water sector operations overlap or cross over to other sectors, the horizontal link across sectors and thematic CoPs is very important. Such links and related potential synergies are weak at the moment and could be strengthened.

#### **B. Integration of the Water Policy in Water Sector Projects**

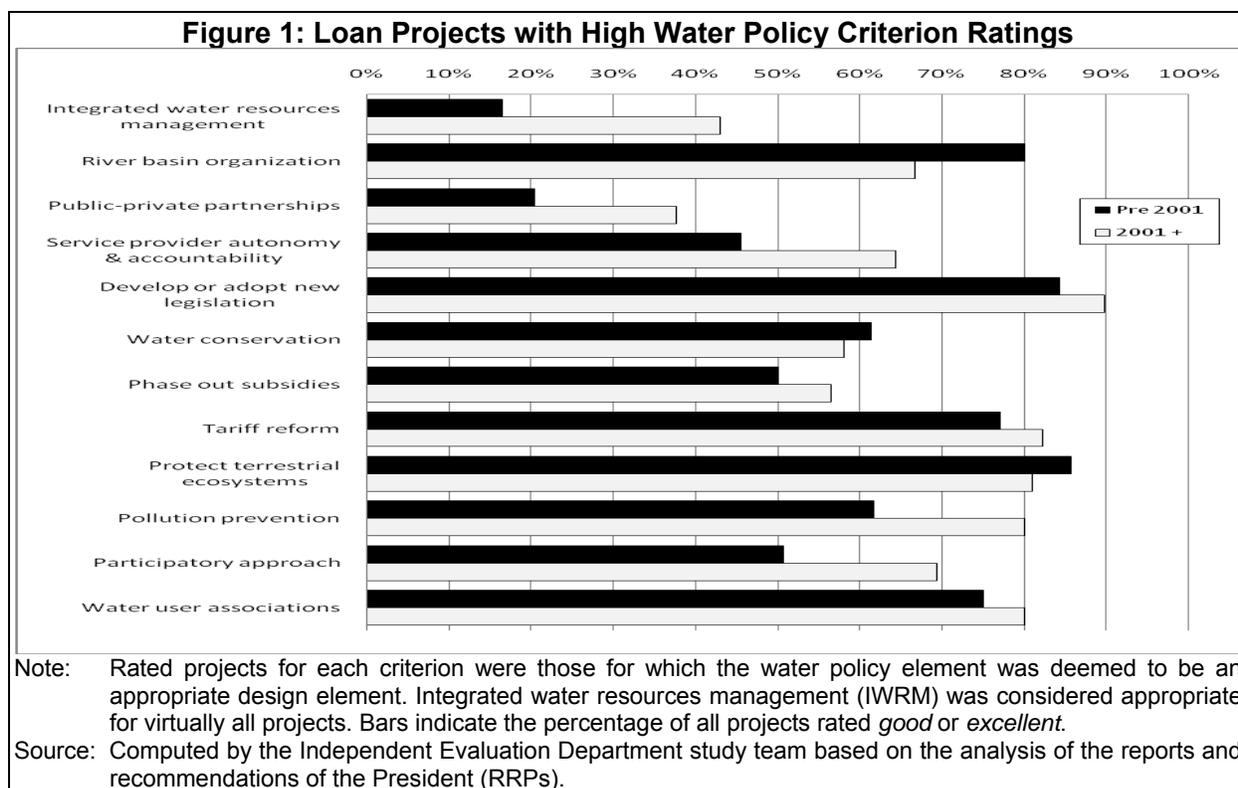
64. The establishment of an explicit water sector policy has had a significant impact on the design of loan projects. Evidence of that is in Figure 1, which shows the distribution of criterion scores by year of project approval. Improved design cannot be fully attributed to the water policy. Since many of its objectives were becoming more widely understood in the sector over the period, many would probably have been reflected in project designs even in the absence of the policy. Nevertheless, the impact of the policy is undoubtedly positive (Figure 1).

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<sup>27</sup> IED is preparing an SES on Financing Partnership Facility. This study is evaluating ADB's first three financing partnership facilities in the areas of water, regional cooperation and integration, and clean energy.

<sup>28</sup> ADB. 2010. *Water Community of Practice, 2009 Annual Report*. Manila.

<sup>29</sup> CoPs are peer-to-peer collaborative networks that can enlarge opportunities for people to interact. For some, the informal relationships established through CoPs offer more flexibility, dynamism, and freedom than formal work relations, while offering a strong sense of community within ADB.



65. A comparison of project designs by individual water policy element reveals that changes after 2000 were not evenly distributed. Ratings of criteria associated with tariffs, subsidies, water conservation, and water user associations (WUAs) were relatively high before the water policy and showed little change after 2001. This is not surprising, since these elements of water management were well-established before the 2001 water policy. Tariff reform was already being aggressively pursued in the WSS sector prior to 2000, while water conservation was promoted by ADB as early as 1993 in Viet Nam when ADB's support to Viet Nam recommenced.<sup>30</sup>

66. Key policy issues in the water sector were already being addressed before the issuance of the policy. For example, in PRC, ADB supported the water supply tariff reform process through two completed water tariff studies in 1997 and 1999.<sup>31</sup> The first water tariff study assisted the Government in developing the National Guidelines on Water Tariffs (NGWT), focusing on improving the cost recovery performance of the water supply companies and promoting water conservation and environmentally sustainable use of water. The second water tariff study assisted the Government in developing the institutional and methodological capacities to implement the NGWT tariffs and to set water tariffs. The TA's main achievements include (i) preparation and promulgation of the NGWT and its first local implementation in Zhangjiakou City;<sup>32</sup> (ii) issuance of an order by the National Development and Reform Commission on promoting urban tariff reforms in cities across PRC based on lessons learned in

<sup>30</sup> ADB. 1993. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grants to the Socialist Republic of Viet Nam for the Ho Chi Minh City Water Supply and Sanitation Rehabilitation Project*. Manila.

<sup>31</sup> ADB. 1997. *Technical Assistance to the People's Republic of China for Water Supply Tariff Study*. Manila; and ADB. 1999. *Technical Assistance to the People's Republic of China for Water Supply Tariff Study II*. Manila.

<sup>32</sup> Tariff reforms in the city included rationalizing and streamlining tariff adjustment procedures and refining methods to calculate tariffs including the introduction of forward-looking multiyear financial management concepts.

Zhangjiakou; and (iii) maintaining the tariff reform momentum with state ministries developing a new policy on tariff reform using feedback from the workshops and the TA study output. With the replication of water tariff reforms nationwide based on the Zhangjiakou experience, the strategic impact of the TA is significant.

67. From 2001 to date, close to 60% of project designs are rated *good* or *excellent* in their response to policy objectives, up from around 50% before the policy, with a marked variation between years. A number of elements were already integrated into ADB's water project designs well before the formal policy objectives were documented. Among "new" policy directions (i.e., which substantially increased their proportion of projects) were IWRM, the concept of PSP, water quality assessment, and autonomy for water organizations.

68. Hydropower and multicomponent projects showed little improvement in relation to policy objectives. Although there were few projects in each class, both appear to have suffered from the limited attention paid to water management. Hydropower projects, in particular, come within the energy sector; thus, there is relatively less water management expertise on PPTA and appraisal teams or in the implementing agency, which is often the national electricity authority.

69. Post-policy report and recommendations to the President (RRPs) show increased attention to the water policy elements in 9 out of 12 areas (see Figure 1).

70. The incorporation of water policy elements into the design of projects improved significantly after 2001 as measured in a rating exercise covering 207 RRP, about half of which were approved between 1992 and 2000 and half between 2001 and 2008. Water policy elements were addressed more frequently in RRP documents after 2001.

71. Although many of the water policy themes were pursued in loan projects long before the policy was released, ADTAs and PPTAs nevertheless exhibited a significant uptake of water policy themes since its release. There were significant increases in the number of ADTA studies dealing with comprehensive water policies, national water sector reforms, road maps, IWRM, and RBOs, and regional cooperation and integration.

### **C. Allocation of Funding and Staff Resources to Implement the Policy**

72. Although evidence clearly shows increased focus on the water policy in ADB operations, there was no concomitant increase in resources to support lending activity. The number of loans approved in the 9 years from 1992 to 2000 (106) and those issued from 2001 to 2008 (101) were almost the same, while the total value of loans, at constant 2008 prices, increased 40%.<sup>33</sup> But the increase was not sufficient to achieve the WFP target of 340 million beneficiaries between 2006 and 2010. Furthermore, operational staff resources were too low to accomplish the targets.

73. Resource allocations for PPTAs have not kept pace with the requirements for the increased workload required by these studies. Improved knowledge products for project preparation could help overcome this shortfall, but published knowledge products are often not oriented to project preparation work.

74. In both headquarters and the resident missions, ADB is increasing its capacity by retaining long-term consultants. In Manila, consultants with expertise relevant to climate change

<sup>33</sup> This increase includes the total loan proposed under MFF projects. If these are excluded, the total increase in the value of loans at constant prices would be about 25%.

have been retained, while the CoP and WFP secretariats are staffed by consultants. In Viet Nam and Indonesia, water teams have been recruited to assist ADB with sector analysis and program planning. The use of consultants is seen as a useful short-term measure to fill skills gaps in ADB in the Regional and Sustainable Development Department (RSDD), regional departments, and resident missions.

75. ADB is planning to recruit 500 new staff members<sup>34</sup> over 2010–2012<sup>35</sup> to meet the challenges of implementing Strategy 2020, and to properly implement the growing portfolio of a larger number of new operations and knowledge activities. Since water is one of the key and growing portfolios of ADB, it is important that key staffing gaps in the water sector be identified and filled with competent persons. Particular areas requiring additional expertise include PPP and IWRM; and technical aspects of WSS, including sewage management and effluent reuse.

76. Project staff in both ADB headquarters and resident missions have indicated that lack of detailed operational guidelines<sup>36</sup> (i.e., greater definition of how to move from the ideals and principles of the water policy, to practical on-the-ground implementation) has been a problem in policy implementation. Such guidelines are now being prepared, showing that ADB is responsive to the needs of its staff and projects. But in the case of the water policy, such response has been delayed by more than 8 years since its approval.

77. ADB initiated global and regional partnerships and resource mobilization for financing water-related projects in DMCs. After the policy was issued, ADB made major efforts to establish local and regional partnerships and mobilize resources for the water sector. While lending was slow after 2001, due largely to normal lags in the lending program, it increased from a low of \$236 million in 2001 to close to \$1.1 billion in 2006, then \$1.4 billion in 2008 before reaching \$1.7 billion in 2009. Planning for 2010 indicates lending of around \$2.6 billion with a pipeline of \$2.2 billion for 2011.<sup>37</sup>

#### **IV. EFFECTIVENESS AND EFFICIENCY OF WATER SECTOR OPERATIONS— RESULTS**

##### **A. Success Rates of Completed Projects**

78. Based on the assessments in project completion and evaluation reports, the performance of water sector-related loans has been comparable with ADB's average project success rate. Overall, 69%<sup>38</sup> of completed loans approved between 1992 and 2009 were rated as *successful* or *highly successful* by their PCRs or PPERs where the latter exist, compared with an average of 71.2% for all nonwater sectors (Table 2). Of the subsectors, large hydropower was most successful (80%) with all other subsectors achieving between 54.5% (irrigation) and 76.5% (WSS). The performance of all subsectors except irrigation improved between 1968–1991 and 1992–2000. While only nine water sector projects had been completed

<sup>34</sup> These include 180 professional staff, 180 national staff, and 140 technical analysts and administrative assistants.

<sup>35</sup> ADB. 2009. *Work Program and Budget Framework 2010–2012*. Manila.

<sup>36</sup> Checklists and standard terms of reference are available. However, it is not clear to what extent these checklists are used in the operational departments.

<sup>37</sup> The subsectors included in the SES database of projects are not identical to that used by WFP. The SES database includes large hydropower projects, but excludes some multisector projects.

<sup>38</sup> Major reasons for unsuccessful water projects are: (i) failure to pursue the appropriate institutional reform; (ii) inability to achieve the desired economic benefits even after an implementation extension; (iii) inadequate public awareness campaign and poor regional coordination; and (iv) poor project design and inability to anticipate risks arising from political interference, slow decision-making of the Government, cumbersome administrative procedures, and the lack of professional coordination among government agencies.

since 2001, their completion reports gave an average of 88.9% *successful*, with projects in four subsectors achieving 100%. The single completed hydropower project was rated *partly successful*.

**Table 2: Successful and Total Projects (number), by Period**

Sector/Subsector	1992–2000			2001–2009			1992–2009
	Successful	Total	Successful (%)	Successful	Total	Successful (%)	Successful (%)
Irrigation, Drainage, Flood Prot	11	21	52.4	1	1	100.0	54.5
Water-Based Natural Resource	7	12	58.3	2	2	100.0	64.3
Large Hydropower	8	9	88.9	0	1	0.0	80.0
Waste Management/ Sewage	2	3	66.7	1	1	100.0	75.0
Water Supply and Sanitation	22	30	73.3	4	4	100.0	76.5
Subtotal water	50	75	66.7	8	9	88.9	69.0
Subtotal non-water	309	431	71.7	54	79	68.4	71.2
<b>Total</b>	<b>359</b>	<b>506</b>	<b>70.9</b>	<b>62</b>	<b>88</b>	<b>70.5</b>	<b>70.9</b>
Percent Water	14%	15%		13%	10%		

Note: Ratings for successful projects are GS = generally successful, HS = highly successful, and S = successful. See also Appendix 8, Table A8.1.

Sources: Compiled from the Independent Evaluation Department database.

79. Table 3 summarizes the performance of 92 completed water sector projects based on PCRs with full information on ratings. Overall, the water sector program is rated *successful*, based on a classification of *relevant, effective, efficient, and less likely sustainable*. Relevance at design and completion was high, as expected. Efficiency, with a rating of 1.65, is close to the cutoff of 1.6 for the criterion. The relatively poor level of sustainability in several subsectors is a concern.

**Table 3: Performance of Completed Water Sector Projects, 1992–2008**

Item	Number of Projects	Overall Rating	Relevance	Effectiveness	Efficiency	Sustainability
Overall rating for sector	92	1.81	2.32	1.79	1.65	1.56
Overall rating for sector		Successful	Relevant	Effective	Efficient	Less likely
Range		>1.6	>1.6	>1.6	>1.6	>0.8<1.6
Performance by subsector						
Irrigation, drainage flood protection	19	S	R	E	E	LL
Water-based natural resources	16	S	R	E	E	LL
Large hydropower	8	S	HR	E	E	L
Multicomponent	17	PS	R	E	LE	LL
Water supply and sanitation	32	S	HR	E	E	L

E = effective/efficient, HR = highly relevant, L = likely, LE = less efficient, LL = less likely, PS = partly successful, R = relevant, S = successful.

Source: Independent Evaluation Department database classified by SES.

80. Among the water subsectors, large hydropower and WSS projects were rated *successful*. The hydropower projects contributed to meeting the rapidly growing demand for electricity in the Asia and Pacific region. They were operated mainly by utility companies that are well-run, thus promoting sustainability. The hydropower and WSS projects were also the only ones earning a *likely sustainable* rating. The three other subsector were rated *less likely sustainable*. The

multicomponent projects were the poorest performing overall, being rated *partly successful* on average, although only marginally below the cutoff for successful.

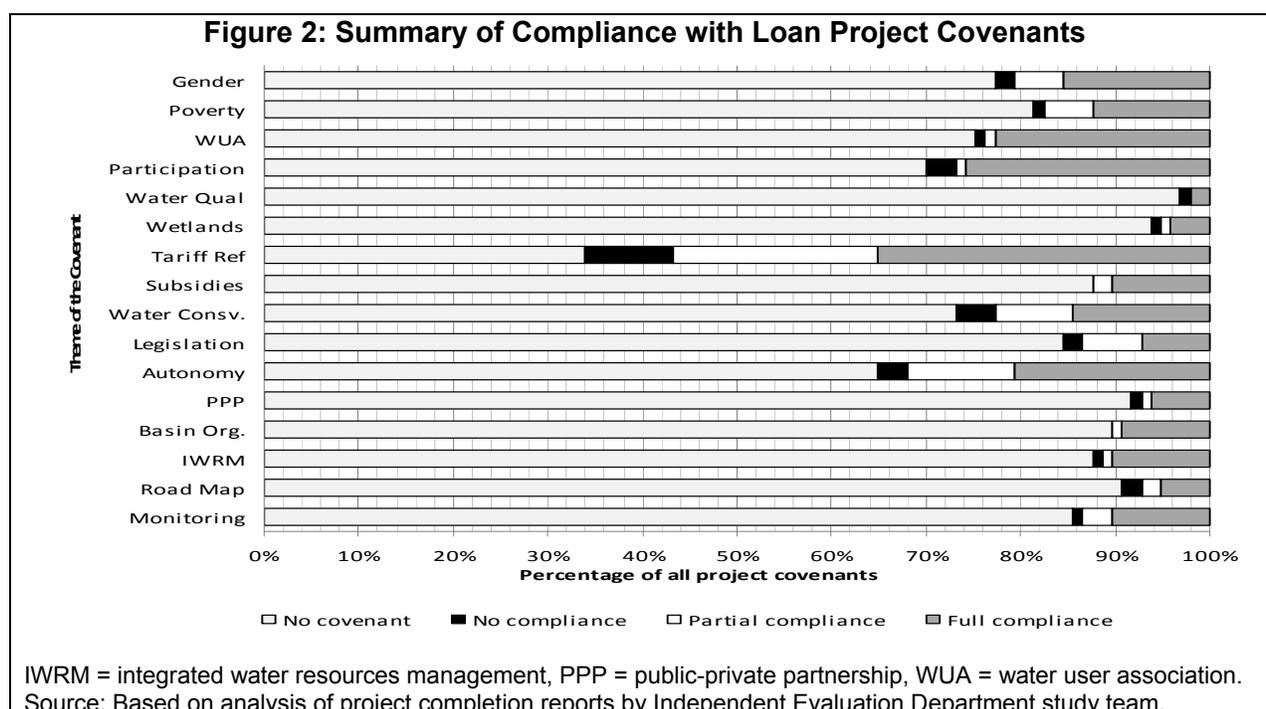
## B. Effectiveness

### 1. Achievement of Key Policy Elements

81. Achievements relating to country policy frameworks have been significant. ADB contributions at the national level have focused on sector assessments, road maps, and assistance, with strategic ADTAs focusing on national water sector reforms. However, country-level water assessments were carried out in only a few DMCs. Actual improvements in governance also depended on evidence of strong implementation in some countries such as PRC. Progress at a country level is consistent with the water policy's endorsement of national action and the significant uptake by ADTAs of the themes of comprehensive water policies, road maps, IWRM, and RBOs. A review of 92 completed projects indicates that, on average, the projects were effective in achieving many of their intended objectives (Table 3). This implies there is room for improvement.

### 2. Compliance with Covenants

82. Sixteen classes of covenants related to the water policy are identified in Figure 2. Among them, tariff reform is dominant, appearing in 66% of relevant project RFPs, and with the highest noncompliance (15%) and partial compliance (22%) problems. This highlights the difficulty—political or popular resistance or lack of will—that executing and implementing agencies face in reforms. Autonomy (i.e., the establishment of agencies independent of government) also faced compliance problems with around 20% of the covenants not complied with or partially complied with. Water quality (pollution) and the few RBO-related covenants were fully complied with. The case of the latter is surprising, given the difficulties experienced by DMCs in developing RBOs.



83. After issuance of the policy, the level of compliance with covenants increased greatly—with full compliance reported for 84% of the covenants, up from 64% in the pre-policy era (Appendix 8, Table A8.6). This represents a significant achievement, and one which rests to a considerable extent on the foundation laid by the policy.

84. Other significant findings include (i) high rates of noncompliance and partial compliance in hydropower projects, due partly to the strength and autonomy of the power companies that while keen to borrow, may be less keen to fulfill the contingent obligations expressed in covenants; (ii) high rates of partial compliance by WSS projects; (iii) high compliance on average by East Asia, which reported zero noncompliance, and a high 80% full compliance; (iv) compliance rates higher (68%) for project loans than for sector loans (59%), perhaps due to the greater autonomy of executing and implementing agencies for sector loans and, consequently, less apparent obligation to implement covenants; and (v) better compliance of *highly successful* and *successful* projects than the *partly successful*. *Unsuccessful* projects only fully met 29% of their covenants, but whether the failure to meet covenants was a cause or effect of lack of success has not been determined (Figure 2).

### 3. Policy Effectiveness

85. Effectiveness is normally measured against outcome objectives. It is notable that the policy specifies almost no objectives at the outcome level. The 40 objectives identifiable within the policy themes were first separately listed in the review of the policy in 2004.<sup>39</sup> This list is reproduced in Appendix 3, together with a summary of the nature of the action implied by the objective. This suggests that only one (the elimination of subsidies) can genuinely be specified as an outcome sought from the implementation of the policy. Nine objectives are couched in terms of actions required by ADB (rather than outcomes in the DMCs) and are thus under ADB's control. Two require the implementation of other ADB policies (environment, safeguards, and Strategy 2020). The remaining 30 objectives indicate that ADB will support, help, encourage or advise DMCs in the particular aspect of the policy, i.e., are effectively actions rather than outcome-level objectives. Apart from the ADB actions identified, the policy is thus a wish list that ADB (and probably a majority of its DMCs) would like to see implemented. The absence of monitorable outcome indicators at the sector and subsector levels under the policy limits the assessment of effectiveness.

86. Assessment of effectiveness therefore rests on (i) the extent to which desired actions under the policy were adopted in ADB projects, i.e., over which ADB had full or at least partial control (partial because they have to be accepted by the borrowing country); and (ii) less directly, the extent to which DMC governments adopted approaches identified as desirable under the policy.

87. The water policy has contributed to improved planning and design and contributed to the uptake of a “modern” approach to water sector development and management. In addition, the policy focused significantly on improving water governance, recognizing that detailed technical solutions would vary widely across the Asia-Pacific region depending on local conditions. The objectives of the policy are ambitious. The underlying issue is that many reforms contemplated in the policy will take a long time to happen. To expect significant change within 8 years is unrealistic. The extent to which ADB assistance can influence genuine policy reform through its

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<sup>39</sup> ADB. 2004. *ADB's Water Policy Implementation Report of the In-House Study*. Interim Review by ADB's Water Sector Committee. Manila (Appendix 1).

lending program is limited, even through policy-based program lending. While borrowers are often prepared to accept loan-related policy measures on paper, implementing them on the ground is weak due often to political sensitivities.

88. Contributions toward establishing sound legal and institutional frameworks for the water sector have been made through ADTAs and loan projects. Of 184 ADTAs from 1992 to 2008, 17 related to legislation. Stipulations for legal reforms were built into the design of 29% of loan projects (55 out of 187 projects), but almost as many of these stipulations were made before 2001 (25) as after (30). The level did not therefore change significantly after introduction of the water policy. Of the 81 projects evaluated in PCRs, 14 featured covenanted legal reforms; and of these, 10 achieved partial or full compliance.

89. ADB efforts in PRC had a significant impact on the success of private sector involvement in WSS. Overall, about one-third of loan project designs and 7% of ADTAs from 1992 to 2008 addressed PSP in a significant manner. The levels of activity did not change significantly after the water policy was issued.

90. The overall project performance rating in the PCRs is only weakly related to the overall compliance rating of loan projects with elements of the water policy (Appendix 8). Further assessment of PCR ratings for relevance, effectiveness, efficiency, and sustainability indicated no link with compliance with elements of the water policy, except for the project rating for sustainability, which was significantly and positively related to projects' incorporation of the principles of tariff reform.

91. Achievement of the WFP goals related to the MDGs has been significant at around 50% of the 2006–2010 target levels of beneficiaries (Supplementary Appendix A). The targets were too ambitious in light of allocated resources and perhaps also in terms of the market for water portfolio loans. The market aspect is important—the policy per se could not be expected to suddenly increase provision of loan funds to the sector.

92. In recent years, particularly from the 2005 review onward, a range of programs and activities have widely disseminated key aspects of the water policy. Key factors include (i) establishment of WFP and the rapid rise in water sector lending from 2007 onward; (ii) establishment of the WFPF, which raised \$48 million in aid agency contributions and fully or partly funded a large number of RETAs and ADTAs, many of which supported ADB's policy objectives and assisted in disseminating key aspects of modern water sector thinking and development; (iii) CoP, which provides a forum both in ADB headquarters and in the DMCs for water professionals to meet and discuss issues relating to the sector and its development; (iv) the Water Operators Partnership program, which works to enable water utilities to improve service coverage and delivery, financial sustainability, and other aspects of their performance; and (v) publication of a range of technical and policy-related materials, particularly resulting from the 55 RETAs and 184 ADTAs supported under the water program. Some of the TA outputs are substantial, notably the Water Utilities Data Book for the Asian and Pacific region (produced with assistance from TA 5488-REG: Preparation of a Water Utilities Data Book for the Asian and Pacific Region and updated under TA 5694-REG: Second Water Utilities Data Book for the Asian and Pacific Region) and the *Asian Water Development Outlook 2007*,<sup>40</sup> which contains a wealth of data on Asia's water sector (under TA 6388-REG: Supporting the Asia-Pacific Water Forum).

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<sup>40</sup> ADB. 2007. *Asian Water Development Outlook 2007: Achieving Water Security for Asia*. Manila.

93. Many post-2001 RETAs and country ADTAs have supported aspects of the policy and helped DMC governments modernize their water policies and strategies. While it could be said that ADB should have done more to promote acceptance of policy objectives, such an action has to be linked to demand from DMCs and balanced with ADB's overall lending portfolio.

### **C. Efficiency of Project Implementation and Output**

94. Assessment of efficiency focuses on project financial and economic returns, or, in the absence of relevant data, on cost-effectiveness—the achievement of project outputs and outcomes in a cost-effective manner. Efficiency of the implementation process is also important, relating to the efficiency of converting inputs to outputs.

95. Completed water sector projects were rated *efficient*, with the total score of 1.65 (Table 3). This implies there is room for further improvement as the rating is just at the cutoff rate and not far from the rating of *partly successful*.

#### **1. Financial and Economic Performance**

96. Across all projects, the anticipated financial internal rate of return (FIRR) averaged 10.6% (110 projects) and the economic internal rate of return (EIRR) averaged 20.8% (156 projects),<sup>41</sup> suggesting that substantial consumer surplus (nonmarket) benefits were included, or that subsidies or a policy to forgo full cost recovery limited financial returns (e.g., recovering operation and maintenance [O&M] costs, but not depreciation or new investment to cover system growth). Overall, the EIRRs (Appendix 8) estimated at project design were stable, lying between 18% and 22% between areas, periods, and types of project. Most EIRRs were marginally higher for projects after the policy than those before. The FIRR was lower (8.7% compared with 10.2% before the policy) although above the weighted average cost of capital (WACC) in all cases (Appendix 8, Table A8.2).

97. The relatively low FIRRs indicate that many private companies would not look on the WSS sector as highly desirable investments. The low returns, combined with often aging infrastructure and resistance to tariff reform, have limited private sector investment in water infrastructure, and explain the investment gap between need and supply. However, there are significant differences between classes of investment. The World Bank reports that interest and investment in water utilities are declining, but that this is more than compensated for by increasing investment in water treatment plants. The reason is that a treatment plant (particularly on a greenfield site) is relatively straightforward compared with distribution, by not having to deal with both consumers and the bureaucracy.

98. The FIRR overall was more variable than the EIRR. The FIRR before the policy was higher in South Asia and Southeast Asia (averaging over 10%) than in other regions and lowest in the Pacific (7%). Cost recovery may be more difficult in the latter region although the differences are not statistically significant. Across sectors, hydropower and WSS projects on average had lower FIRRs before the policy than multicomponent projects and (particularly) projects for water-based natural resources (WBNR), which averaged a high 13% FIRR. This suggests that full cost recovery may be more difficult for electricity producers and WSS operators, depending on the cost of their capital. The level of predicted EIRR is largely independent of the extent to which the project addresses policy recommendations. This is

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<sup>41</sup> The inter-quartile range (with results between the first and third quartiles, or the middle 50% of results) was 6-12% for the FIRR and 16-24% for the EIRR.

encouraging, as it suggests projects that are well-designed with respect to the inclusion of policy-responsive components or activities perform as well as projects with less responsive components.

## 2. Review of Ongoing Water Sector Projects

99. Of the 103 active water sector projects, 44 primary loans with 9 supplementary loans were selected for the review. Those with primary loans were approved on or before 2006. All active water sector projects from the three country case studies, namely, India, Uzbekistan, and Viet Nam, were included, while representatives for each water subsector from each region were selected through purposive sampling. The review covered 16 out of 35 active WSS projects (the 16 had seven supplementary loans); eight out of 14 irrigation projects (the eight had two supplementary loans); eight out of 23 for WBNR; four out of seven for hydropower; and eight out of 24 multicomponent projects. Details are in Appendix 5.

100. On the average, sample projects had a loan age of 4.86 years (Table 4). Start-up times<sup>42</sup> averaged 305 days in which approval to signing took an average of 191 days and signing to effectiveness averaged 117 days. It was observed that irrigation projects took a longer period for approval to signing, while WSS projects took a long time between signing to effectiveness. The time from approval to effectiveness, however, was the same for both WSS and irrigation projects. Loan age was longest for WBNR projects, which required a longer implementation period because of their institutional and social complexities.

**Table 4: Loan Age and Start-Up Delays of Sample Water Projects**

<b>Water Subsector</b>	<b>Approval to Signing (days)</b>	<b>Signing to Effectiveness (days)</b>	<b>Approval to Effectiveness (days)</b>	<b>Average Loan Age (years)</b>
Irrigation (8+2=10)	285	60	345	4.55
WBNR (8)	120	148	267	6.34
Hydropower (4)	100	61	162	4.03
Multicomponent (8)	174	73	247	4.17
WSS (16+7=23)	196	156	345	4.86
<b>Average</b>	<b>191</b>	<b>117</b>	<b>305</b>	<b>4.86</b>

WBNR = water-based natural resources, WSS = water supply and sanitation.

Note: Numbers in parenthesis indicate the samples used for the corresponding water subsector classification. For WSS, 16 loans with 7 supplementary loans were reviewed; for irrigation, 8 loans with 2 supplementary loans were covered.

Source: Compiled by the Independent Evaluation Department.

101. **Contract awards and commitment.** From 2006 to 2009, the contract awards ratio<sup>43</sup> for the sample water sector projects averaged 25% (Table 5). The ratio was highest for hydropower projects (average of 88%) and lowest for irrigation projects (10%). WBNR and WSS, on the other hand, did fairly well with 31%, but multicomponent projects needed to catch up. Overall, the sample water projects performed a lot less than the ADB average for project loans of 2006, leveled with ADB averages for 2007 and 2008, and exceeded ADB average in 2009. The 4-year average is slightly lower than the ADB average for project loans.

<sup>42</sup> Start-up times refer to the days that elapse between project approval and its date of effectiveness.

<sup>43</sup> The contract awards ratio is the ratio of contract awarded or actual commitment during the year over the value available for contract and/or commitment.

**Table 5: Contract Awards Ratio of Sample Water Projects by Subsector, 2006–2009**  
(%)

Water Subsector	2006	2007	2008	2009	Average
Irrigation (8+2=10)	5	9	12	13	10
WBNR (8)	17	26	37	42	31
Hydropower (4)	201	37	13	102	88
Multicomponent (8)	14	20	25	28	22
WSS (16+7=23)	9	37	29	47	31
All (44+9=53)	<b>12</b>	<b>25</b>	<b>24</b>	<b>38</b>	<b>25</b>
ADB average for project loans	25	25.3	24.8	30	<b>26.2</b>

ADB = Asian Development Bank, WBNR = water-based natural resources, WSS = water supply and sanitation.

Notes: (i) Numbers in parentheses indicate the samples used for the corresponding water subsector classification. For WSS, 16 loans with 7 supplementary loans are reviewed while for irrigation, 8 loans with 2 supplementary loans are covered.

(ii) The contract awards ratio is the ratio of contract awarded or actual commitment during the year over the value available for contract or commitment.

Source: Compiled by the Independent Evaluation Department.

102. **Disbursement.** In general, the average disbursement ratio<sup>44</sup> was at a very low 14%, with irrigation lagging behind at 6%. The WSS, WBNR, and hydropower subsectors were likewise at marginal levels of 17%, 20%, and 22%. Multicomponent projects had second lowest disbursement ratio at 9%. From 2006 to 2008, the disbursement ratios of water projects were way below the ADB average for project loans. It, however, caught up in 2009 (Table 6).

**Table 6: Disbursement Ratio of Sample Water Projects by Subsector, 2006–2009**  
(%)

Water Subsector	2006	2007	2008	2009	Average
Irrigation (8+2=10)	5	4	7	8	6
WBNR (8)	7	14	22	34	20
Hydropower (4)	27	43	6	10	22
Multicomponent (8)	4	7	9	17	9
WSS (16+7=23)	8	13	20	26	17
All (44+9=53)	<b>8</b>	<b>12</b>	<b>15</b>	<b>20</b>	<b>14</b>
ADB average for project loans	16.5	33.6	20.3	19.5	<b>22</b>

ADB = Asian Development Bank, WBNR = water-based natural resources, WSS = water supply and sanitation.

Notes: (i) Numbers in parentheses indicate the samples used for the corresponding water subsector classification. For WSS, 16 loans with 7 supplementary loans were reviewed; for irrigation, 8 loans with 2 supplementary loans were covered.

(ii) The disbursement ratio is the ratio of total disbursement in a given year or period over the net loan amount available at the beginning of the year or period plus the loan amounts of newly approved loans, which have become effective during the year or period.

Source: Compiled by the Independent Evaluation Department.

## D. Implementation Problems and Actions Taken

### 1. Implementation Delays

103. Implementation delays were due to (i) late loan effectiveness, (ii) noncompliance with loan covenants, (iii) slow progress of contract awards, (iv) slow release of counterpart funds, (v) highly centralized decision making, and (vi) weak project management due to poor recruitment and performance of consultants. To address these concerns, ADB approved major changes in scope and implementation arrangements, such as (i) introducing flexibilities including removal of the loan covenant to expedite implementation; (ii) extending loan closing

<sup>44</sup> The disbursement ratio is the ratio of total disbursement in a given year or period over the net loan amount available at the beginning of the year or period plus the loan amounts of newly approved loans, which have become effective during the year or period.

and revising implementation schedules; (iii) adopting and/or revising action plans, particularly at midterm review; (iv) formalizing the project steering committee (PSC) to agree and apply remedial actions within a specific timeframe to existing constraints; (v) recruiting additional consulting services (especially for construction supervision); and (vi) consolidating small civil works contracts into large packages suitable for international competitive bidding (ICB) procedures, or breaking up large contracts into smaller packages suitable for national competitive bidding (NCB) if no international company participated in the ICB and not all local contractors can comply with ICB requirements.

104. To resolve weaknesses in project management, implementing agencies were advised to restructure the team composition so as to strengthen the monitoring and data management capacity of the team. As such, organizational restructuring generated sufficient savings enough to cover the additional consulting services required for extending the project. Implementing agencies were also reminded to build the capacity of the project management unit (PMU) counterparts on a daily basis. Modifications adopted included opening of second-generation imprest accounts, increasing the ceiling for advances, reallocating loan and grant proceeds and eliminating overlaps in cost categories, and submitting accurate and a more timely withdrawal applications. On top of all these, project progress was closely monitored with the help of the resident missions in accordance with the revised implementation schedule, accelerated procurement schedule, and improved action plan through quarterly portfolio reviews.

105. Two of the sample projects likewise experienced cost overruns so that the governments asked for supplementary financing. ADB considered the preparation of supplementary financing and at the same time explored arrangements with the governments to exclude those projects from the payment of taxes and allow the reallocation of the proceeds to pay for civil works and equipment. In some cases, the governments decided to shelve several contracts to reduce the cost overrun. Some projects were struck by natural calamities that affected construction and maintenance of physical structures. In such cases, ADB reduced the project scope and reallocated funds to civil works done. Implementation arrangements were also modified to include rehabilitation and replacement of affected project components. There were instances when ADB missions were unable to visit the project area due to security concerns and physical verification of the reported achievements was not possible. To monitor progress, the executing agency was advised to submit photographs of the field activities: one before the project starts, one during construction, and one after project completion, together with the monthly progress reports.

106. Current ADB mechanisms for assessing performance, primarily the project performance reports (PPRs), are updated regularly. However, for checking performance against development objectives, updating is often done only after review missions. In addition, the rating of most projects against “impact and outcome” is limited to a simple *satisfactory* (or occasionally *highly*, or *partly satisfactory*).

## 2. Implementation Issues Identified by Field Studies

107. **India.** The India field study under the SES identified two good practice examples. First, the Rajasthan Urban Infrastructure Development Project (Loan 1647-IND)<sup>45</sup> involving the construction of a 62.5 million liters per day (MLD) waste water treatment plant (WWTP) in Jaipur, which started operations in September 2009, is identified as a good practice example

<sup>45</sup> ADB. 1998. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to India for the Rajasthan Urban Infrastructure Development*. Manila. This loan is closed.

from both financial and environment sustainability perspectives. The sludge generated from the WWTP is digested and methane gas is extracted to generate energy (about 500 kilowatt of power per day) which meets about 70% of the WWTP energy requirements. This results in cost savings of about Rupees 1.2 million or \$25,000 per month. Currently, the wastewater is treated to secondary level and the treated water is used for irrigation. However, it was proposed that in the near future consideration could be given for upgrading the WWTP to the tertiary level and the treated water could then become a saleable resource to the industrial area of Sitapura located downstream of the WWTP with ready demand for tertiary treated water.

108. The second good practice example involves formulation of PPP under Loan 2046-IND: Water Supply and Environmental Improvement in Madhya Pradesh<sup>46</sup> to develop in pilot zones in three cities of Bhopal, Indore, and Gwalior, a water distribution network on a PPP basis. The proposed PPP aims to (i) attract private sector investment in water distribution system including metering and rehabilitation of household connections; and (ii) achieve private sector management efficiencies in effective water distribution including billing and collection systems and reduction in NRW, and increase in coverage and availability of water to consumers. For the selection of prospective bidders, a request for qualification (RFQ) was issued by the project in August 2009. By October 2009, 11 firms submitted their RFQ. Mayors of Bhopal and Indore have recently approved the final document on RFQ, and invitation for financial proposals from qualified bidders is expected to be issued shortly. This PPP approach is also a good practice example with potential for replication. Some of the key implementation issues identified include (i) poor performance of consultants and contractors, (ii) need for expeditious action in identifying new works that would use uncommitted loan balance and loan savings, (iii) need for timely testing and commissioning of works, and (iv) water tariff adjustments.

109. **Uzbekistan.** Uzbekistan began borrowing from ADB for the water sector in 2001, with Loan 1842: Urban Water Supply Project (currently closing). The total program comprised eight projects, four each in WSS and irrigation and drainage, with a total cost of \$920 million and a loan of \$660 million. A new \$300 million MFF project, Loan 2564: Water Supply and Sanitation Services Investment Program, is under way. The SES team reviewed six ongoing projects in the field. The project designs were linked adequately to ADB's water policy, but at a lower level than those in Viet Nam. ADB-supported TA successfully helped in building capacity in urban water supply, and developed a framework for WUA development (rated *partly successful*, due to lack of national-level support). RETAs supported regional cooperation both for smaller (two country) basins and the major Aral sea basin rivers. Overall, the water sector program in Uzbekistan was rated *likely successful*, based on criteria ratings of *highly relevant*, *effective*, *efficient*, and *likely sustainable* (although close to the border with *less likely sustainable*). The full country report is in Supplementary Appendix B.

110. The field study identified a number of significant issues relating to activities in the water sector. The most important are listed below.

- (i) Despite good reported progress in meeting the sanitation MDGs, the provision of improved water supply to rural people has worsened over 1990–2008.
- (ii) Reforms in the sector, supported by international development partners, have made only limited progress. Uzbekistan remains a country in transition from central planning.

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<sup>46</sup> ADB. 2003. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to India for the Urban Water Supply and Environmental Improvement in Madhya Pradesh Project*. Manila.

- (iii) The centralized bureaucratic system has restrictive implications for project design, with a need for higher level government decrees to approve project designs and changes.
- (iv) Key issues in the water sector include (a) high rates of nonrevenue water (NRW), (b) low water fee collection rates; (c) low water tariffs and difficulty in raising them to viable levels; and (d) inability of most water companies to meet operation, maintenance, and capital repayment costs
- (v) In the irrigation and drainage sector, issues include (a) water logging and salinization in many areas, (b) low irrigation efficiencies, (c) limited water supplies during the irrigation season; (d) low WUA fees and collection rates, and (e) absence of security of tenure and freedom to farm.
- (vi) Significant regional issues in relation to water allocation appear capable of technical but not political resolution at present.

111. **Viet Nam.** Viet Nam has been a substantial borrower of ADB since its first (post-unification) loan in 1993. It made 16 loans in the water sector totaling \$1.3 billion, which represents 16% of total ADB lending to the country. Seven completed projects were reviewed. The SES team visited five of them in the Red River delta. Analysis of the RRP shows that projects have responded well to ADB's water policy objectives, particularly in relation to tariff reform and/or subsidies, participation, and pollution. Implementation, however, has not always matched design targets. For example, in Loan 2223-VIE: Central Region Water Resources, cost recovery was prejudiced by the Government's waiver of irrigation service fees (ISFs). Based on ratings by their PCRs and evaluation reports (where available), the five projects reviewed were all rated *successful*. The overall program is considered successful, based on its aggregated ratings of relevance, effectiveness, efficiency, and likely sustainability, generating an overall score of 2.2 out of 3, significantly higher than the performance of the water sector overall. The socioeconomic impact was high. The full country report is in Supplementary Appendix B.

112. A number of issues relating to activities in the water sector were identified during the field study in Viet Nam. The most important are summarized below.

- (i) Despite good progress toward meeting the MDGs, major investments are needed for urban sewerage and rural piped water supply.
- (ii) Private sector investment has been limited.
- (iii) The termination of ISFs has slowed down progress toward participatory irrigation management.
- (iv) IWRM has proved difficult to date because of the hierarchical nature of the bureaucracy and lack of demand at the main basin level.
- (v) The major regional issue facing Viet Nam relates to the Mekong and particularly the current and planned construction of main rivers and major tributary dams. These may reduce sediment transport to the delta, and in concert with SLR, lead to erosion.
- (vi) If the main river dams even out seasonal flow to some degree, they may assist in mitigating saline water intrusion. However the combined effects of possible SLR and main system dam construction have not yet been assessed.

## **E. Sustainability**

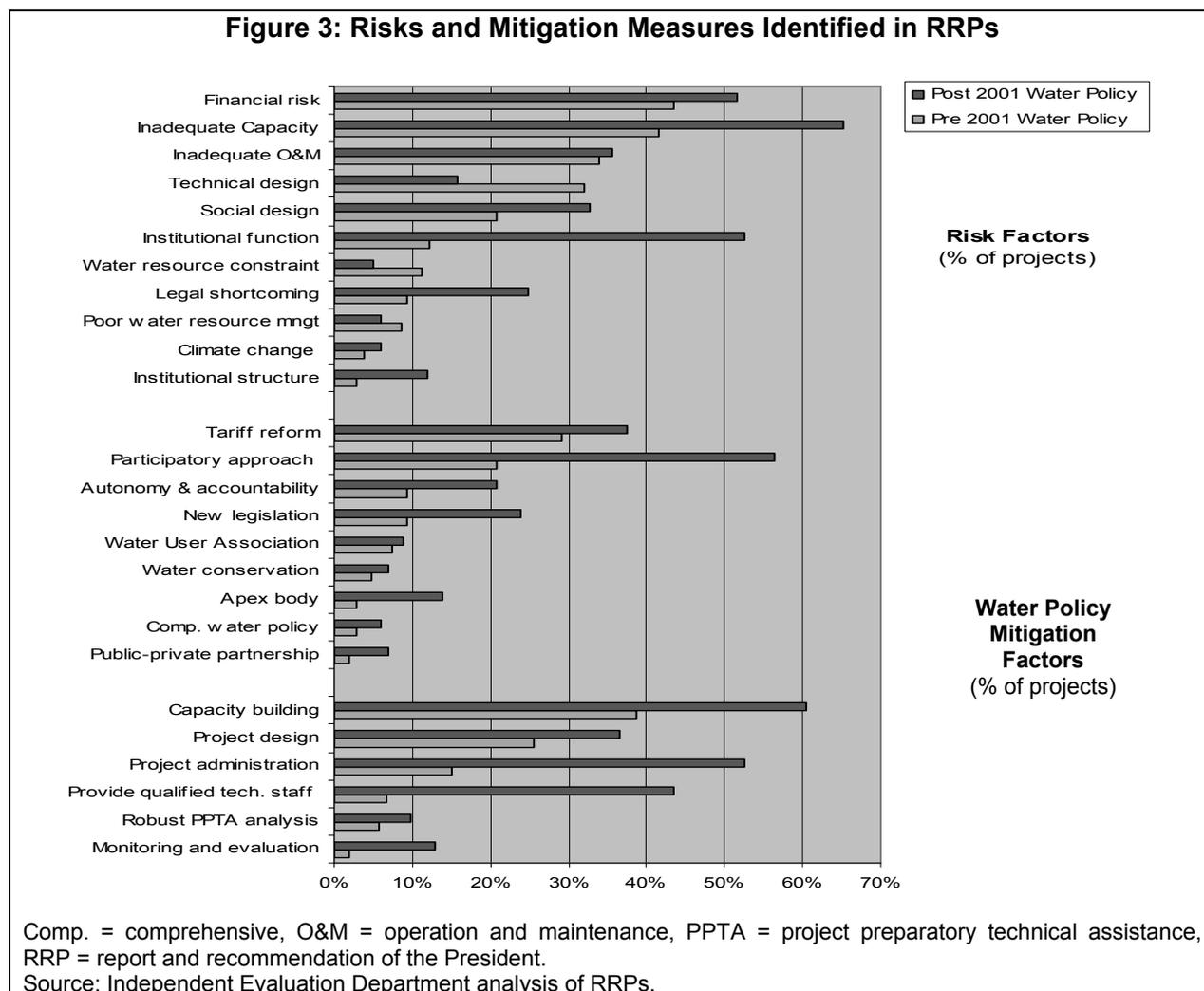
### **1. Sustainability Rating**

113. Sustainability is one of the weakest aspects of ADB's water sector lending. Only around 44% of completed projects (92) approved since 1992 were rated *likely* or *most likely sustainable*,

with less than 10% in the latter category (Table 3). They fall under large hydropower and WSS. *Less likely sustainable* projects are in irrigation, WBNR, and multicomponent subsectors.

## 2. Risks and Mitigation Measures

114. A content analysis of RRP and PCR documents was carried out to study how these reports identified risk factors and discussed risk mitigation measures. The focus of the analysis was the specific impact of the 2001 water policy on project sustainability. Results (summarized in Figure 3) indicate that (i) significantly more risks were identified by project designs after 2001, particularly in relation to lack of capacity and limited institutional function; (ii) technical design was a far less important issue after 2001; and (iii) all mitigation factors—both general and policy related—were reflected more strongly in project documents after 2001. Further information in relation to the identification and mitigation of risk is in Appendix 9.



## 2. Sustainability and Loan Covenants

115. Of the 207 water projects under study, 100 were approved after 2001. By region, 38 projects (18%) are in Central and West Asia, 33 (16%) in East Asia, 11 (6%) in the Pacific, 54 (26%) in South Asia, and 71 (34%) in Southeast Asia. The study examined whether covenants dealing particularly with sustainability issues are included, e.g., (i) implementing tariff and cost

recovery measures, (ii) phasing out subsidies, (iii) enhancing financial management and increasing autonomy of water supply companies, (iv) reducing NRW and promoting water conservation, and (v) attracting PPPs. Water projects in focus are in WSS as well as irrigation since their customers are defined.<sup>47</sup>

116. **WSS projects.** Of the 74 WSS projects studied, 35 were approved after 2001 when ADB adopted the water policy. The projects are distributed by region as follows: 14 (19%) in Central and West Asia, 16 (22%) in East Asia, eight (11%) in the Pacific, 15 (20%) in South Asia, and 21 (28%) in Southeast Asia. It was noted that 14 projects had no covenants on tariff, three did not comply with the covenant on cost recovery, 14 partly complied and 13 fully complied with the same covenant. Thirty projects included tariff reform as a covenant but have no PCRs yet; thus, compliance remains uncertain as of this writing.

117. Of the 12 projects without a covenant specific to cost recovery, one is in Central and West Asia, three in East Asia, four in South Asia, and four in Southeast Asia. Five of these projects were approved before the water policy. One possible reason for the absence of such a covenant is the institutional condition prevailing in the project sites where rate setting was either highly politicized or prohibited. It can be deduced that even with the water policy, covenants on cost recovery for WSS projects would be lenient.

118. Among the reasons cited for noncompliance with covenants are that (i) the already high level of tariff if raised further might lead to public protest, (ii) tariff increases can be deferred in consideration of options for future institutional arrangements, and (iii) additional tariff is inconsistent with the guidelines and regulations issued by the water supply authorities.

119. The phase out of subsidies is included as a covenant in only 15 of the WSS projects under study. Of the 59 projects without that covenant, 13 (22%) are in Central and West Asia, nine (15%) in East Asia, four (7%) in the Pacific, 14 (24%) in South Asia, and 19 (32%) in Southeast Asia. Note, however, that about half or 28 of these projects without a covenant on the subsidies were approved after 2001.

120. NRW, which is a major concern among water service providers, should be minimized, if not eliminated, to ensure the sustainability of water supply. It is interesting that out of the 74 WSS projects under study, 49 had no covenant on the same—28 of these were approved after 2001. Two projects were found to be noncompliant, five were partly compliant, and 10 were compliant. Nine ongoing projects included reduction of NRW among the covenants. The two noncompliant projects made no effort to (i) check, recalibrate, repair, and/or replace defective consumer meters to minimize NRW losses; and (ii) conduct leakage tests to identify leaking pipelines and carry out needed repairs.

121. The covenant on improving financial management and increasing the autonomy of water service providers is found in 38 WSS projects. Two of them did not comply, six partly complied, and 12 fully complied with the covenant. Eighteen projects in the group have no PCRs yet; thus, the level of compliance is undetermined. Of 36 projects with no covenants, 26 were approved after 2001. Of only five projects that included PPP covenants, one did not comply, one partly

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<sup>47</sup> Flood management and drainage, like other WBNR management projects, are not included in the sustainability assessment because their effects are not limited to any one group. Power projects (i.e., hydropower) that have no irrigation or water supply components are likewise excluded since they do not directly deal with water supply. Multi-component projects are also excluded from the assessment, given the complexities of their respective designs.

complied, one complied, while the two others have covenants but no PCRs yet. Of the 68 projects without a PPP covenant, 33 were approved after 2001.

122. **Irrigation projects.** Of 34 irrigation projects studied, 12 (35%) are in Central and West Asia, seven (21%) in South Asia, and 15 (or 44%) in Southeast Asia. Nineteen projects were approved after 2001. It is often argued that the O&M cost of irrigation projects should be the responsibility of the local or national agencies, and adequate funds should be provided in the annual budget of those agencies. In practice, budgets are often inadequate as for example in Uzbekistan, where the Basin Irrigation System authorities estimate that funds are sufficient for less than half of routine maintenance requirements. In some cases, however, water user administrative systems (WUAS) responsible for irrigation schemes rehabilitated or upgraded under the project are empowered to collect ISF from their respective members to fund the O&M of such irrigation schemes.

123. Only 13 projects had a covenant on user fees and cost recovery: two did not comply, one partly complied, six complied, and three are still ongoing and have no PCRs yet. In one project, the ISF scheme was considered inapplicable despite the authority of WUAS to collect the same. Of the 21 projects without a cost recovery covenant,<sup>48</sup> six are in Central and West, five in South Asia, and 10 in Southeast Asia. Thirteen of these were approved after 2001. Noncompliance with the cost recovery covenant was due mainly to farmers' reluctance to pay a user fee. Other factors causing slow progress might be the inadequate design of the ISF collection system such as lack of enforceable legal right to collect a service charge and penalty for nonpayment.

### 3. Factors Contributing to Sustainability

124. Several factors contribute to sustainability: adequate institutional capacity to operate and maintain project facilities or programs,<sup>49</sup> adequate cost recovery for services, community ownership through participation, and sound management of critical ecological inputs. In the water sector, management of ecological inputs calls for IWRM including effective water allocation mechanisms. Water allocation issues are being addressed in less than half the projects where allocation could be significant. The focus on allocation did not appear to increase after the release of the water policy (Appendix 5). The IWRM theme was addressed by 41% of the water sector ADTAs, but themes that address the supporting institutional framework, such as water policies, road maps, RBOs, and legislation, did not figure as prominently in ADTAs.

125. Improved water management should be a priority for the most water-intensive projects—those involving hydropower and irrigation. Contrary to expectations, these projects were subject to fewer covenants relating to water management and exhibited poorer compliance with covenants that were imposed.

126. A review of 31 PCRs showed the following factors contributing to low likelihood for sustainability of water sector projects:

- (i) poor performance of operational entities and their inability to recover costs, making them less likely to sustain O&M expenses;
- (ii) lack of financial autonomy among water service providers, which prevents tariff adjustments that would help recover costs;

<sup>48</sup> Some of these are drainage and flood protection projects that are non-revenue generating in nature.

<sup>49</sup> Some examples where sustainability improved include the Khulna-Jessore Drainage Rehabilitation Project in Bangladesh.

- (iii) lack of funds and low tariff collection for continued O&M and growth requirements;
- (iv) lack of ownership of the schemes demonstrated by many farmers and local residents, leading to misuse of irrigation infrastructure;
- (v) lack of government ownership and commitment due to conflicting and overlapping of functions and responsibilities among line agencies;
- (vi) lack of management personnel to monitor, evaluate, and plan for service improvement;
- (vii) lack of proper maintenance policy and procedures;
- (viii) lack of transparency regarding project expenditures, which damaged users' WUA ownership of the subprojects and made them reluctant to assume O&M responsibilities;
- (ix) low level of community participation and beneficiary incentives to maintain project benefits;
- (x) poor location and choice of technology probably due to failure of the project to involve communities in decision making during planning;
- (xi) poor service provider-client relations;
- (xii) uncontrolled pollution and extraction of water resources;
- (xiii) failure to institutionalize efficient water distribution and conservation; and
- (xiv) lack of land-use plans and zoning mechanisms, which leads to uncontrolled development of areas that are prone to environmental hazards and thus could damage project facilities.

## **V. KEY LESSONS AND ISSUES IN THE WATER POLICY AND RELATED OPERATIONS**

127. The SES identified some key findings and lessons that are useful for improving the ongoing program of support to the sector and for formulating future strategies and plans. The key ones are summarized below (details are in Appendix 8). Several lessons are broadly consistent with those identified by recent evaluation studies of other MDBs. The most commonly cited lessons<sup>50</sup> are as follows: (i) it is important to increase water use efficiency, (ii) greater attention should be given to cost recovery, (iii) getting tariffs right has proven to be a complex process, (iv) institutional weaknesses are a major constraint to progress in the water sector, and (v) results of involving the private sector in service delivery have been mixed.

### **A. Key Lessons Identified**

128. At the strategic level, an effective policy needs to be firmly grounded in the core business of an enterprise. Successful policies must be accompanied by clearly defined targets, required approach and resources, and a reliable monitoring mechanism with result indicators.

129. To improve overall success rate in water sector operations, both design and implementation of ADB-funded projects will have to improve, requiring change in the institutional mind-set and adoption of good practices and appropriate techniques and/or technology. ADB assistance has pursued some innovative approaches and good practices for improving

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<sup>50</sup> World Bank. 2010. *Overview of Issues Evaluators are Likely to Confront in Water Supply and Sanitation*. Washington, DC. Paper presented at the Evaluation Cooperation Group meeting in May.

efficiency (pricing, cost recovery, reducing NRW). However, there is need for continued and significant effort in adopting and operationalizing new approaches and good practices (Appendix 8).

130. There is a substantial gap between what was planned and actually implemented in IWRM, which shows difficulties in implementation and at the same time indicates that past experience and lessons are not influencing the design of subsequent projects (Appendix 7). There is need to promote cooperation in water resource use within and across countries.

131. Implementation of the water policy requires a good design—integrated, community driven, institutionally robust, technically sound, and attentive to social and environmental values. Good design makes good financial sense because it minimizes financial risk. Project preparation requirements should be limited to aspects needed to assure due diligence, support sound decisions, and facilitate loan processing. Project preparation budgets should be commensurate with the project preparation requirements.

132. Completed ADB water projects reviewed in this study cite capacity development, government commitment, community participation, monitoring, and good coordination as requisites of successful projects. Successful projects are characterized by strong stakeholder commitment, good leadership, and a capable executing agency. Current efforts to build leadership and capabilities are not adequate to meet the challenges faced by DMCs.

133. Real benefit to impoverished populations is realized when the water issues that affect them are resolved—when access to clean drinking water is secured, when floods are controlled, when crops can be reliably irrigated. While technical assistance grants help lay the foundation for realizing these benefits, it is the sustainable loan project that secures the benefit. Conversely, an unsustainable loan project poses double jeopardy for the borrower. Not only are project beneficiaries deprived of promised improvements in their lives and livelihood, but their country is saddled with the burden of debt repayment long after the project has ceased to function, a burden that may inhibit new public sector investments.

134. In its implementation, the water policy has been effectively "marketed" to many DMCs. International associations of water stakeholders have developed, rewarding conferences were organized, and ADB has made robust contributions to national water sector policies and institutions. Some countries, notably PRC, have made good progress in forming basin organizations, expanding urban water and sewerage systems, and rehabilitating irrigation systems. Many DMCs have had less success in large part because of poor governance and the weak financial sustainability of the implemented projects (Appendix 8).

135. For DMCs, there is need for realistic business models, which recognize that water resources management is intensely political and requires the articulation of prioritized, sequenced, practical, and patient interventions. The interventions should support reformers and pay explicit attention during design and implementation to the political economy of reform.

136. Despite some success it has had with regional cooperation in Central and Southeast Asia, ADB has found it difficult to contribute much to that area. The issues are similar to those facing intracountry IWRM and RBOs—a multiplicity of competing or conflicting interests, which makes integrated management and rational resource allocation difficult. Transnational rivers give rise to even greater challenges, but these will need to be addressed and overcome if the great (and minor) river systems of Asia are to continue to provide benefits and services at a high and equitable level in future decades (para. 52).

137. The private sector can play a pivotal role in developing WSS systems in the Asia Pacific region. However, this role is limited to construction, with relatively low levels of direct investment, either foreign or local, in the sector. To bridge the investment gap, ways need to be found to make investment in the sector more attractive to business, particularly in rural areas with low densities of consumers (Appendix 6).

138. Government agencies can be highly efficient in delivering services in the water sector. Frequently quoted examples include Manila Water in the Philippines and Phnom Penh in Cambodia. In each case, a strong, principled, and long-serving head has managed to lead the institution from a nonviable state to a highly efficient supplier. Champions are needed in both managerial and political areas.

139. Targets set for loan projects should be realistic and achievable. Elements of the water policy are too ambitious. They ignore the real constraints imposed by local political and social values and customs. The evolution of water institutions and water sector service providers into efficient well-governed entities is possible but takes a long time.

## 1. Lessons from Project-Level Case Studies

140. **Songhua Project in the People's Republic of China.** River basins have played a critical role in various economic activities, ranging from irrigation to electricity generation. However, the movements of water resources in river basins are often not readily confined to administrative boundaries. As a result, the management of river basins is inevitably confronted with tremendous challenges due to potential conflicts among different users, such as industrial versus agricultural, upstream versus downstream.

141. In the case of water pollution, typical contributing factors to the conflicts in river basins are (i) negative externalities caused by low efficiency and poor administrative capacities in trans-jurisdictional water pollution management by local governments, (ii) conflicts between people living upstream and downstream of river basins, (iii) potential hidden problems for social stabilization, and (iv) lack of sustainable coordination mechanism to deal with trans-jurisdictional water pollution disputes. The keys to water pollution problems in river basins are through better coordination and sharing of responsibilities in water resource usage, water environmental programming, and water pollution control among different districts (stakeholders) sharing the same basin.

142. This case presents both challenges and responses in controlling and managing water pollution in a river basin in PRC. As of 2005, only about 52% of urban wastewater was treated (compared with 34% in 2000); the rest was discharged untreated to rivers and lakes. About 41.8% of the water in the seven major river basins<sup>51</sup> does not meet the class III national water quality standard.<sup>52</sup> Surface water sources serving municipal water supply systems are polluted to levels unacceptable under water quality standards.<sup>53</sup> ADB's Songhua River Basin Water Pollution Control and Management Project (Songhua Project) gives an example of how to tackle water pollution in river basins in a holistic manner. The project offers the following valuables

<sup>51</sup> Changjiang (Yangtze River), Haihe, Huaihe, Huanghe, Liaohe, Songhuajiang, and Zhujiang.

<sup>52</sup> PRC water quality standards have five classes of quality covering about 40 pollution parameters. Class I is pristine, while class V is suitable only for industrial use. Class III is the minimum water quality required for municipal water supply.

<sup>53</sup> ADB. 2007. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Jilin Urban Environment Improvement Project*. Manila.

lessons on how to deal with similar challenges elsewhere in PRC and Asia: (i) the design and implementation of the project should be aligned with the national policy and master plan, (ii) the principle of cost recovery should be targeted at each subproject level, (iii) the project should cover an entire river basin instead of focusing on segments in the basin, (iv) a high level of commitment to the project is essential to ensure its success, and (v) PPP can play a positive role.<sup>54</sup>

143. **Phnom Penh Water Supply Authority (PPWSA) in Cambodia.** Most water utilities in DMCs are publicly owned and operated and are often associated with inefficiencies, poor service, and inability to meet rising demand. These outcomes are often attributed to a tradition of below-cost pricing due to populist pressures and owner-regulator conflicts of interest. Below-cost pricing in turn drives the vicious cycle problem of low tariff, poor collection, poor service leading to further drop in collection, and service deterioration. These problems are further compounded by the lack of financial and commercial autonomy by the water utility, noncredible threat of bankruptcy, rigidities, and principal-agent problems.

144. This case study reports how PPWSA solved those problems and became a role model for many other public water utilities in DMCs. Leadership played an important role in this process. If leadership accounted for 40% of the success of PPWSA, the focus of this study is on the other 60%, including the role of ADB in facilitating these conditions for success.

145. To answer this question, two independent assessments of PPWSA's performance were made. Two main lessons emerged: (i) tariff and corporate governance reforms propelled PPWSA from the vicious to a virtuous cycle, both reforms can also be replicated elsewhere; and (ii) ADB mission-driven leadership at PPWSA played an important role in bringing about these reforms.<sup>55</sup>

146. **WSS Projects in Rural Punjab in Pakistan.** Community participation has been a promoted strategy for rural water sector projects funded by MDBs. Community ownership is the key to success in small towns and rural water supply. Substantial, structured, and well-defined community participation positively correlates with the project's effectiveness. The case study of ADB-funded water and sanitation projects in Punjab, Pakistan, is presented to identify the key factors in a successful rural water sector project and further innovations to gauge the achievements. The study also looked at the role of the ADB water policy in the success of the project, general contributions this project makes to the water policy discourse, and the role of ADB in the strategic implementation of a community-based approach in various sectors of water management and sanitation.

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<sup>54</sup> Based on experiences from ADB. 2003. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Harbin Water Supply Project*. Manila; ADB. 2005. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Jilin Water Supply and Sewerage Development Project*. Manila; ADB. 2007. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Jilin Urban Environmental Improvement*. Manila; ADB. 2008. *Report and Recommendation of the President to the Board of Directors: Proposed Loan in the People's Republic of China for the Songhua River Basin Water Pollution Project Control and Management Project*. Manila; ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Equity Investment in the People's Republic of China for the Songhua River Basin Water Pollution Project Control and Management Project—Private Sector Facility*. Manila; and ADB. 2003. *Technical Assistance to the People's Republic of China for the Songhua River Water Quality and Pollution Control*. Manila.

<sup>55</sup> Based on experiences from ADB. 1996. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to Cambodia for the Phnom Penh Water Supply and Drainage Project*. Manila.

147. Lessons learned from this case study highlight the two dimensions of water and sanitation as means to an end: (i) political reform, and (ii) cultural reform. The case shows that community participation has the potential to support reforms beyond the local level. Learning from previous projects is key to success, particularly projects that were in the same area and a very similar context. Nationwide policy reform can be a window of opportunity to develop innovative solutions at the local level; and delegation of authority to trained communities and inclusion of an educational component in rural community-driven development are potential avenues to break down cultural barriers to project success because the change occurs from bottom up. However, limited health and income-generating activities as outcomes due to the water supply projects were noted by another IED study.<sup>56</sup>

## **B. Key Issues in the Water Sector**

148. The major issues in the water sector have not changed greatly since the release of the policy in 2001 (Appendix 10). In some cases, the issues are now more serious than they were at the turn of the century because of two crucial factors—climate change and increased population.

149. **Climate change.** Global warming and climate change and ensuing implications for water sector operations will be an important issue to consider in future ADB strategies and operations in the sector. Climate change affects water supply in several ways. It (i) changes climatic patterns and is likely to exacerbate both drought and flood events, with the consequent damage to agriculture, people, and infrastructure, and risks to some of Asia’s megacities; (ii) causes melting of glaciers and snowfields, the sources of water in major Asian river systems; and (iii) raises sea level, leading to coastal erosion, salinization of estuaries, and contamination of freshwater lenses on atolls (Supplementary Appendix A). Although some climate skeptics remain, increasingly anthropogenic (human-induced) climate change, global warming, and SLR are accepted as highly probable if not inevitable. Global warming will change climatic patterns and river runoff characteristics, often with negative impacts on agriculture, water supply, droughts, and floods. The SLR will cause flooding, salinization of estuaries and rivers, coastal erosion, and the possible loss of some of ADB’s Pacific DMCs. Other coastal and low-lying DMCs may suffer most, including Bangladesh, PRC, and Viet Nam, but no country will be immune from the negative impacts.

150. If climate change is as severe as is currently predicted, vulnerable countries such as Bangladesh, Viet Nam, and the Pacific DMCs will need to take drastic action to prevent major loss of life, loss of assets, and social upheaval. ADB is well-placed to assist its DMCs to resolve their climate change-induced problems, and will need to dedicate an increasing proportion of its lending to them. The potential importance of climate change is now well-recognized. All ADB departments are now planning to include climate change adaptation into relevant loan projects, and to consider carefully what might be the impact of climate change on project outcomes and sustainability.

151. The anticipated increase in storm frequency and severity has implications for ADB-supported projects. Infrastructure loan projects should now incorporate design standards that reflect changing conditions. This might include revised designs for the size of drainage and flood management projects; and projections of future drought frequency and severity to help evaluate the security of supply for irrigation and municipal water systems. At present, some project officers and consultants do not have the kind of tools required to plan and design the required adaptive measures.

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<sup>56</sup> ADB. 2009. *Impact Evaluation Study of Rural Water Supply and Sanitation (Sector) Projects*. Manila.

152. **Population growth.** Although population growth is slowing in Asia as countries become richer, the population of ADB's DMCs is expected to reach 3.7 billion by the end of 2010, compared with 2.8 billion in 1990. At the same time, urban populations have expanded, thus increasing the demand for piped water, and facilities for disposing of solid waste and sewage. The increasing demand for hydropower and irrigation has resulted in an ongoing program of construction of dams and interbasin canals, which significantly changes river hydrology. Managing water within and between river basins and countries will be an increasing challenge in the future.

153. **Integrated water resource management.** IWRM is a difficult and complex activity. In the institutional environment of many DMCs, it has proved difficult to implement at a high level. IWRM in the future will need to respond to particular problems and at an appropriate level. A top-down solution (i.e., with an apex organization and major RBOs) may not always be appropriate to basin planning, particularly in water-rich countries. Local initiatives may be more manageable and successful. While Australia has successfully implemented IWRM in several states, it is noted that Australia is a developed and water-scarce country, with strong incentives to make IWRM work, including dedication of environmental flows to sustain its ecosystems.

154. **Regional cooperation and integration.** Most issues facing the river systems in ADB's regions are in Central and West, South, and Southeast Asia. Common to the three regions and their major river basins are issues related to water allocation, IWRM, and the environment. Central and West Asia face serious issues relating to water release in upstream dams, which result in environmental damage and shortage of water for downstream irrigation and Aral sea replenishment. ADB supported the development of transboundary basin management in the Chu Talas system between the Kyrgyz Republic and Kazakhstan, demonstrating that agreement is both possible and potentially beneficial to participating states. With two of the world's great river systems, South Asia has great interest in transboundary water management (e.g., Indus, Ganges, and Brahmaputra rivers). In Southeast Asia, the Mekong river is the dominant intercountry river, with management supported by the Mekong River Commission (Supplementary Appendix A).

155. The multicountry rivers and river basins in DMCs are important to agriculture, fisheries, hydropower, and transport. They also have the potential to cause disagreement or conflict between countries. It is therefore believed that ADB could in the future place increased emphasis on assisting in managing and developing transboundary rivers by providing international good practices and capacity development at the country level.

156. While it is recognized that water is a contentious topic, and that problems have the potential to increase, ADB could have a more active role to play by (i) ensuring that its single-country water sector projects benefit or at least do no harm to other countries in the region, and (ii) contributing to multicountry initiatives directly or more often through the regional river institutions. Possible activities by ADB over the next 10 years include (i) contributing indirectly to containing transboundary issues in the water sector by supporting increased water use efficiency; (ii) providing TA to assist in biodiversity assessment and environmental management of the river systems; and (iii) providing TA to assess the combined effects on the delta areas of dam construction on the main stream, for example, in Bangladesh and Viet Nam. These activities could allow increased food production per cubic meter of water, help reduce intercountry stresses due to water allocation issues, and assist public and private water utilities reduce levels of NRW.

157. **Cost recovery, tariff reforms, and nonrevenue water.** Cost recovery is one of the most cited lessons in PCRs for WSS projects completed between 1995 and 2009. This lesson refers to the difficulty of tariff reform, affordability, and cultural and political sensitivity.

158. At the end of 2008, ADB had 121 WSS projects (60% of all water sector projects) worth \$4.2 billion. Project appraisal documents for 58 of them completed since 1995 indicate that ADB consistently advised governments to adopt cost recovery principles. Half of all TA and loan projects over the period 1997–2003 failed to fulfill agreed-upon policy actions on tariff reform and 40% failed on cost recovery commitments.

159. An evaluation of urban WSS projects in Viet Nam shows the unanticipated “deep-seated resistance” of provincial officials to tariff increases. As a result, most of the financial covenants were not met and acceptable rates of return were achieved only because of revenues from non-water business activities. This report argues for more rigorous policy dialogues and suggests that ADB “set more judicious, achievable targets in covenants, ensure their full acceptance by the contracting parties, and be prepared to invoke remedies in case of significant noncompliance.”<sup>57</sup> Field study in Viet Nam under the SES indicates that tariffs have increased rapidly since 2005, particularly since the ending of a freeze in 2009. As a result, tariff levels in Thanh Hoa and Ninh Binh have doubled since 2004 and 2006, respectively, to a base tariff of D3,800/m<sup>3</sup> in Thanh Hoa for consumption of less than 10 m<sup>3</sup>/connection/month, rising to D6,200 for consumption of more than 30 m<sup>3</sup>/month. The adoption of increasing block tariffs is seen as a useful development since it can be both pro-poor and pro-conservation, the latter desirable in a situation of tight capacity. However, care is needed that water utilities do not bypass poor areas due to the poor financial viability of new connections in such areas. The tariffs also need to be designed with care so that the poor actually benefit more from the regime than the better-off do.

160. Reform is difficult but not impossible. ADB has a number of projects in its water portfolio that have implemented successful tariff reforms. The success of those projects reflects the approaches used to implement the reforms. From experience in the projects, the important elements of a successful approach are (i) effective stakeholder communication and consultations, (ii) early identification of winners and losers, (iii) tariff structures that are perceived to be fair and affordable, (iv) reforms are accompanied by service improvements, (v) metered rates so that customers can manage their service bill by controlling consumption, (vi) gradual tariff adjustments, (vii) crisis conditions that legitimize infrastructure investments and related tariff reforms, and (viii) credible and legitimate service provider.

161. It also helps if customers have past experience with metering and water bills. This is the case in PRC where customer metering in larger cities dates back to 40 years or longer. The aggressive tariff increases initiated in the 1990s in response to State cutbacks in subsidies caused alarm and opposition. But such opposition quickly subsided largely because the resulting water bills were still affordable. An evaluation of water supply projects in selected DMCs concluded that water supply companies most likely to achieve compliance with tariff covenants were in PRC.<sup>58</sup> Uzbekistan targets 100% metering of urban water users by 2020.

162. Sanitation is an important subsector that needs further attention in ADB operations. Lack of progress in sanitation can negate benefits from the water supply. For the future, it is suggested that (i) in recognition of the difficulties faced by the sanitation sector, the proportion of

<sup>57</sup> ADB. 2009. *Sector Assistance Program Evaluation Viet Nam: Urban Services and Water Supply and Sanitation Sector*. Manila (SAP: VIE 2009-27).

<sup>58</sup> ADB. 2002. *Impact Evaluation Study on Water Supply and Sanitation Projects in Selected Developing Member Countries*. Manila (IES: REG 2002-17).

resources devoted to it should be increased (e.g., from the present 20% to perhaps 30%), but the increase would need to be gauged in the context of demand from the DMCs;<sup>59</sup> (ii) the Water CoP should assess the expanding and successful Community-Led Total Sanitation (CLTS) program and determine whether it should be supported in relevant ADB-funded projects;<sup>60</sup> and (iii) since improved sanitation and particularly the achievement of open-defecation-free (ODF) status is largely a function of community attitudes, education, and peer pressure, NGOs should be integrated into the sanitation program to assist in accelerating adoption of ODF targets, as is already being done in some projects. The ADB Water CoP should consider the desirability of utilizing the index of drinking water adequacy for assessing status in countries where ADB has a substantial water program.

163. Cost recovery and financing of O&M have direct implications for the financial sustainability of water sector operations. The sustainability of hydropower and water supply projects is likely where cost recovery is ensured. Completed projects in subsectors like irrigation, drainage, and flood protection; WBNR; and multicomponent had a rating of *less likely sustainable* at completion. However, follow-up actions have been weak or nonexistent, and lessons were not always incorporated in the design of new projects in these subsectors.

164. In ongoing projects, implementation delays have been pervasive, and contract awards and disbursements have been slow. The situation calls for both better design and implementation arrangements for new projects and stronger supervision of implementation for ongoing projects.

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<sup>59</sup> According to the WFP 2009 annual report, “the commitment to allocate 20% of WFPF resources to sanitation exceeded. The share of sanitation from the cumulative allocations as of 31 December 2009 reached a total of 26%, exceeding by 6% the 20% target set by ADB’s Water Committee to demonstrate ADB’s commitment to accelerating sanitation action. For 2009, the share stood at 19%, which is just 1% short of the target. Sanitation remained high on the Facility’s agenda in 2009.”

<sup>60</sup> CLTS is discussed as an option in only one ADB loan project—Loan 2609 in Viet Nam. Its RRP indicated that the information, education, and communication plan may include elements of community-led total sanitation and ecological sanitation, if appropriate. CLTS was used successfully in the water and sanitation component of ADB’s Earthquake and Tsunami Emergency Support project in Sumatra, Indonesia.

## VI. CONCLUSIONS AND RECOMMENDATIONS

### A. Conclusions

165. The study's main conclusions are summarized below.

#### 1. Consistency and Adequacy of ADB's Water Policy and Related Operations

166. **The policy is rated *relevant* as it is consistent with ADB's corporate strategy and DMC national priorities, and supports international consensus on IWRM and water and sanitation-related MDGs.** The policy also seeks to promote environmental protection and sustainable use of water resources, which are relevant to climate change. As the policy is contextual and comprehensive, it will remain relevant for the next decade or so (paras. 22–30).

167. The principal strengths of the policy can be summarized as: it (i) contributes to the development of national water sector policies and road maps; (ii) intends to promote IWRM; (iii) influences some DMC governments to improve or modernize their own water policies; (iv) contributes to improved project design; and (v) contributes to local, regional, and global partnerships, and to the production and distribution of key knowledge products.

168. The principal weaknesses of the water policy relate to its design: it (i) is too broad and ambitious; (ii) lacks sufficient guidance for operationalizing the policy, including lack of realistic target results (outputs and outcomes) for water sector program performance, monitoring and evaluation framework for intended development results, and communication of these to operational divisions and staff; (iii) overemphasizes general solutions to individual country problems, e.g., the focus on apex bodies and basin-wide IWRM when subbasin approaches may have had greater prospects for success, at least until a national framework is sufficiently well-established to accept IWRM for major and complex basins; and (iv) overemphasizes technical issues, placing insufficient emphasis on the political and social impediments to the institutional reform required for successful implementation of the policy at the client country level.

169. **In general, ADB's lending operations have reflected the policy well.** The main themes of the policy have been included in the design of water sector projects, particularly in such areas as river basin organizations and the protection of ecosystems, which have been more actively addressed in the years since the policy was approved. Other critical areas, such as tariff reform and IWRM, also increased in importance, but by small degrees. The policy did not break much new ground, but reflected the views of experienced mission leaders and most of the international water community at that time (paras. 70–71).

170. All projects reviewed for this SES reflected some elements of the water policy. The water policy is ambitious in terms of the implicit outcomes it would like to achieve. However, it lacks operational plans and results monitoring mechanisms, making it more aspirational. The lack of specific targets and performance indicators makes its achievements difficult to define or measure. To date it does not have a strategic framework and operational guidelines, which the SES considers necessary for the policy to have significant impact on the design and implementation of projects on the ground. ADB is currently formulating a water operational framework (2011–2020).

171. **The ADB water policy is largely consistent with that of other MDBs.** However, ADB's water policy provides for a gradual phase out of subsidies while the World Bank and

other MDBs, specifically the African Development Bank and Inter-American Development Bank, support targeted subsidies. Furthermore, ADB has taken a conservative approach to large infrastructure projects, while the World Bank has taken an aggressive stance since 2003. ADB has no explicit policy for small water supply providers (para. 31, and Appendix 6). A relatively small proportion of ADB assistance has gone to rural water supply and sanitation. ADB's policy includes important aspects of environmental sustainability; however, its operational plans should go beyond it to assist DMCs in addressing climate change-related challenges explicitly (including effects of global warming, weather pattern changes, and SLRs).

## **2. ADB's Response to Water Sector Issues and Water Policy Implementation**

**172. ADB's response to water sector issues has been sound, but in some cases slow or limited.** The major review of the policy in 2005 was significant and led to the establishment of WFP and WFPF in 2006 and the decision to increase lending to over \$2 billion per year. This level has nearly been achieved and is likely to continue, given the current strategies and the lending pipeline. In other areas, the response has been slow, or at least conservative. Thus climate change issues have only been mainstreamed since the establishment of the CCF in 2009, more than 10 years after Kyoto. ADB has supported the development of IWRM and RBOs, the latter particularly through support to the creation and operation of a network of Asian RBOs. It is noted that establishing RBOs is difficult and it takes time to make them fully operational because of the institutional structures in many DMCs (particularly evident in Viet Nam). Similar issues have limited what ADB has been able to do in relation to its policy objectives to support regional cooperation, where little has been achieved. Countries and their regional agencies need to do more work to improve their water relationships and reduce the potential for competition and conflict.

**173. In the area of private sector investment in the water sector, ADB has lagged behind other multilateral lenders.** The potential to expand lending exists, but many DMCs will require the establishment of improved institutional environments, and equitable regulation—i.e., fair to both companies and consumers. PRC is the major exception, where lending to the private sector water and sanitation companies by both ADB and other multilateral aid agencies has been strong. This is attributed to the sound regulatory framework in the water sector, progressive tariff reforms targeting full cost recovery, strength of local private sector companies which, in many cases, are better integrated with local conditions than companies from Europe, for example. A discussion of the Songhua River Basin Water Pollution Control and Management Project (Supplementary Appendix A) provides information on an innovative approach to PPP and private sector investment. An example of where the public sector conducted successful policy dialogue with the Government on establishing a sound regulatory framework for water tariffs is in PRC (para. 66). As a result, water tariffs in PRC have increased significantly over the past decade, attracting a larger number of private sector investors to the water sector.

**174. The ability or willingness of governments to implement covenants has been variable.** Tariff reform has been the most covenanted policy factor, with two-thirds of relevant projects covenanting tariff reforms, but also the least successful. Two-thirds of relevant projects have tariff reform as a covenant, but 14% did not comply, and 33% partly complied (para. 82).

**175. Both public and private operations can be efficient.** One of the key assumptions behind PSP or privatization of the water supply is that private provision is more efficient than public provision. However, a consistent stream of empirical evidence shows no systematic, significant difference in efficiency or other performance measures between public and private operators. Both public and private water utilities can be highly efficient, as evidenced by the

performance of utilities in two Asian capital cities—Manila Water (private) and the Phnom Penh Water Supply Authority (public). Both have achieved remarkable results in terms of service, expanding the network, and reducing NRW. The example of the latter company is also presented as a case study in Supplementary Appendix A.

176. **Water infrastructure is risky, but water and effluent treatment plants are not.** Sewage treatment plants accounted for 60% of public sector investments in developing countries worldwide in 2008.<sup>61</sup> Water infrastructure has significant political and regulatory risks that make them less attractive to private finance than telecoms, transport, and energy. Water projects tend to have a higher cost of capital and lower rates of returns than other types of infrastructure (para. 44).

177. **A driving force behind the policy and its implementation has been the water-related MDGs.** With domestic investment and support from ADB and other aid agencies, most of the Asian region has done well in meeting the main sector targets—halving the 1990 proportion of people without access to safe drinking water and basic sanitation. East Asia has already exceeded its water target, with 9% lacking adequate supply, down from 45% in 1990. South and Southeast Asia are already at or close to their targets, and should comfortably exceed them by 2015. More investment is needed in Central and West Asia if its water MDG targets are to be met (Supplementary Appendix A).

178. **Sanitation objectives are far from attainment.** This reflects the lower priority that communities place on sanitation compared to water. However, programs such as CLTS and strong education and information campaigns in several countries such as Indonesia are leading to increasing demand for sanitation. ADB and other aid agencies need to reorient their lending programs to some degree if the sanitation MDG is to be achieved by 2015.

179. **Irrigation and drainage projects have proved to be among the more difficult water subsectors, with a success rating of 54.5% overall; that rating, however, is still above the 45% overall average for all agriculture and natural resources projects.** While 19 irrigation projects rated achieved an overall rating of *successful*, sustainability is a concern, with an average rating of *less likely sustainable*, the same as WBNR. Under the ADB water program, there has been more emphasis on irrigation and drainage system rehabilitation than on new construction, with focus on main system rehabilitation, and less on tertiary and on-farm levels. Many projects have supported WUAs, but often with limited resources and inputs (Table 3, para. 80, and para. 122).

180. **A cautious approach is necessary in assisting DMCs in subregional cooperation to increase awareness and share international good practices in water resource management.** While addressing water-related issues at subregional and regional levels is very challenging and politically sensitive, a focus on only country-level engagement may lose sight of the fundamental cross-border issues of water sharing and social environmental sustainability. There is increasing recognition of the relevance of climate change to the water sector and with it has come the recognition that the sources of issues on water go beyond national borders. The task of managing water resources and use appropriately has become even more complex.

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<sup>61</sup> World Bank, Public-Private Infrastructure Advisory Facility, and Private Participation in Infrastructure Project Database, quoted in Supplementary Appendix C.

### 3. Achievements of ADB Assistance under the Policy

181. **ADB assistance has contributed to water policy development in Asia in areas such as water sector governance including institutional capacity development, tariff reforms, regulatory framework, and water conservation.** This has been achieved by (i) continued discussions between ADB headquarters and resident mission staff and the executing and implementing agencies in the DMCs where projects were designed and implemented; and (ii) an extensive program of TA involving, since 1992, around 185 ADTAs and 55 RETAs, many of which focused on policy and advanced the policy debate. Overall, the program is considered successful, although less so with issues relating to sustainability of outcomes and to a lesser extent, efficiency.

182. **A problem appears to be a gap between policy development and promotion on the one hand and operations on the other.** Policies need to be made operational at an early stage. The process may involve two steps: (i) developing a strategy indicating how the policy will be applied, and (ii) formulating guidelines to help project designers, managers, and other stakeholders contribute to the policy objectives in their own areas of interest. Water sector managers in ADB have recognized this need and operational guidelines are currently being prepared. The guidelines will help operationalize the policy and provide useful tools that will assist project designers, implementers, and operators in their work on the ground.

183. **While much has been achieved in the DMCs in the years since approval of the policy, more remains to be done, particularly in such areas as IWRM.** International experience indicates that effective IWRM is difficult, time-consuming, and expensive to introduce. It is unrealistic to expect that ADB's DMCs would be able to introduce it in a 5- or 10-year period. In Australia, which is now a world leader in IWRM, the process took around 20 years with a direct cost of \$600 million. The Government is currently investing several billion dollars to "buy back" water to restore the health of the river systems of the eastern states. In developing Asia and the Pacific, where the existing governance structures are weak, the process is likely to be even longer, if not more expensive. Thus, ongoing support will be required from ADB under the policy and from other agencies for the next 10 years and beyond if the policy objectives are to be realized.

184. **Targets need to be carefully thought out, realistic, and achievable.** The over-ambitious targets set for WFP in December 2006 can undermine the credibility of the policy. WFP had achieved only about 50% of the 2006–2010 targets for beneficiaries in mid-2010. Targets should not be set for short periods—for example, the 2006–2010 period was too short to allow policy decisions to fully flow to lending and disbursement (para. 91).

#### B. Recommendations

185. On the basis of the foregoing analyses and discussion, the SES puts forward the following recommendations for consideration by ADB Management.

##### 1. Develop and Implement an Operational Framework and Implementation Plans for Further Implementation of the Water Policy

186. The operational framework and implementation plans for the water policy, currently being formulated by ADB, should reconcile the water policy's strategic goals with organizational, budget, and human resources implications. The targets should be realistic, achievable, and monitorable. The plan should aim at catalyzing public and private sector finance for water sector

operations through both public and private sector operations and through a mix of assistance modalities including programs. Given the vastness as well as diversity of water-related operations, priorities may be set for the five key subsectors defined in this study based on their relative importance to both DMCs and ADB. Sanitation should get increased attention (para 191.) Implementation plans for each subsector should be developed in line with DMC priorities and available ADB resources. A monitoring mechanism including monitorable indicators for inputs and results (outputs, outcomes) of each implementation plan needs to be developed and implemented at both subsector and sector levels.

## **2. Build on Success and Assist DMCs to Achieve Their Water-Related National and International Targets**

187. Encourage and support DMC governments to (i) improve implementation performance, (ii) enhance the efficiency of water supply utilities, and (iii) ensure sustainability of net benefits. Minimize implementation delays by addressing factors that could contribute to start-up delays. Provisions for budgetary support and their fiscal affordability should be analyzed at appraisal, and also at completion of project implementation. Necessary follow-up actions should be carried out to ensure such provisions for the financial sustainability of water-related services.

188. **Improve the efficiency of water supply utilities.** ADB water sector projects should continue to emphasize water utility performance, reliable (24-hour) supply, full metering, full cost recovery tariffs, pro-poor measures including block and lifeline tariffs, water conservation, reduction in NRW, and leak detection systems (including subnetwork monitoring). Institutional reforms and strengthening are necessary to ensure successful implementation of tariff reforms including both supply and demand water management.

189. **Take vigorous steps to continue marketing the policy effectively.** This is already happening in ADB through the CoP, but more needs to be done in the DMCs, e.g., organizing local-level dissemination activities to increase awareness and knowledge of ADB water policy and related operations. Together with other active development partners, ADB should identify and support “champions” in the DMCs in both the public and private sectors, since it is these highly motivated and capable individuals who can make the difference between success and failure of projects and programs. ADB could encourage and support DMC governments to improve project implementation, enhance project effectiveness in achieving intended objectives, and ensure sustainability of net benefit flows.

190. **Promote a holistic approach to irrigation system rehabilitation.** Where opportunities arise, adopt participatory management of primary and secondary systems, promote sustainable use of groundwater, and where feasible, groundwater recharge activities. Irrigation and drainage rehabilitation should remain core activities for WFP. Making better use of increasingly scarce resources for food production will require higher level skills among irrigation scheme managers and farmers. Increased irrigation efficiency can be achieved by (i) reducing pumping costs; (ii) providing water to the tail of canals and schemes where poor farmers are often located; (iii) giving increased production security to farmers, allowing more appropriate use of inputs and improved technology; and (iv) reducing groundwater extraction, salinization, water logging, and nutrient loss. Increased irrigation efficiency should focus on improving yields for existing farmers rather than system expansion. In a water-scarce world, agriculture must learn to produce more with less. Emphasize support to tertiary and on-farm development through WUAs. Where opportunities arise, promote participatory management of secondary and main systems. Drainage is an area that requires ongoing attention, particularly in areas such as Central Asia, where reduced productivity and land loss to salinization or water logging are

severe. Promote sustainable use of groundwater and, where feasible, groundwater recharge activities.

191. **Increase assistance for sanitation.** ADB's DMCs will vary in their ability to meet the sanitation MDG. However, in relation to health and welfare considerations, achieving close to 100% improved sanitation is seen as a desirable goal by governments and increasingly by communities. The widespread publicity relating to the MDGs has been a key factor in triggering demand for sanitation. Environmental sanitation and wastewater treatment should be a focus of the operational plan. This should increase the proportion of assistance resource allocated to sanitation in both urban and rural areas with support to sewerage systems and construction of improved pit and/or pour flush latrine, respectively.

### **3. Address More Effectively the Thematic and Cross-Cutting Issues of the Water Policy by Reorienting Assistance Operations**

192. **Adopt a flexible and demand-driven approach to IWRM.** Apex bodies and IWRM remain a worthy goal for ADB's water policy and financing program. The program already recognizes the difficulties involved in establishing (new) effective apex bodies and national IWRM. The time taken to achieve these desirable objectives is likely to be measured in decades, far longer than the time for a single project or TA. Thus, a more pragmatic approach is recommended for the future, in situations where the national level (top-down) approach is unlikely to work well in the short- to medium-term. In countries and areas where overall IWRM is difficult, promote integrated management at the subbasin level, in response to specific challenges and issues. Adopt different approaches in water-rich and water-poor regions, where the objectives of IWRM are likely to differ.

193. **Consider funding for increased TA activity.** Regional cooperation has been a difficult area for ADB and other multilateral agencies and is likely to remain so in the future. ADB can only respond to assist in resolving cross-boundary issues when requested by the relevant riparian states; thus, the potential for involvement is limited. ADB can assist in intercountry issues at the single country level. For example, reduction in pollution can have benefits for downstream countries as well as the country where the pollution occurs. Improving irrigation efficiency can leave more water in the river system, provided that the bulk is not allocated to expanding the irrigated area. ADB should remain ready to assist riparian countries to improve water management and allocation between them when requested by all the involved countries. In the short term, more success is likely on small basins rather than in the great river systems of Asia. Given the potential for intraregional disputes in relation to shared water resources, ADB could consider funding increased TA activity in relation to transboundary water issues and management, depending on demand from the DMCs.

194. **Promote climate change adaptation and mitigation.** In addition to water shortage, the great issue confronting ADB's DMCs in the water sector relates to climate change and SLR. Through its CCF and lending program, ADB is able to assist countries to adapt to and manage climate change. ADB is well-placed to assist its DMCs to address their climate change-related problems, and will need to dedicate an increasing proportion of its resources to them. The operational guidelines currently being developed could include the updating of country specific water sector engineering design standards so that resilience to climate change is built into all designs. Another substantial issue relates to the impact of upstream activities on downstream environments, particularly in relation to dam building, SLR, and downstream erosion. In recognition of the major problems facing coastal states with major deltas (particularly Bangladesh and Viet Nam), ADB should, on request, provide TA to help those states analyze

the likely impact of changed river flow (due to dam construction or river diversion) combined with possible SLR on salinity intrusion and delta erosion.

195. **Promote increased participation.** Participation is seen as desirable for projects in most water subsectors, particularly in water supply and irrigation, as suggested by the water policy. Continue to promote the participation of stakeholders including beneficiaries in planning, designing, implementing, and operating water sector projects. Where appropriate, involve beneficiaries and communities in constructing the project assets, as was successfully done in some irrigation projects. Guidelines on what constitutes good participatory practice in different subsectors would be valuable. Focus on ensuring that the sociopolitical environment is right before promoting extensive reform, as reform can only succeed when it is strongly supported in the recipient country.

196. **Enhance staff skills in the water sector in line with current and future needs.** Seek expertise and practical experience in IWRM and development of national water organizations to better support DMC governments and champions, both in government and in the water and sanitation utilities. ADB will need additional staff with experience and expertise in PPP if it is to realize its goal of increasing private sector involvement in water investment. DMCs should be given strong support to help them establish the institutional environment needed to attract private sector investment (Supplementary Appendix A) (para. 75).

197. **Bring CoPs together to achieve better sector- and theme-level coordination and improve synergy in water-related operations across ADB operations.** Water has multiple uses and cuts across others sectors like agriculture and natural resources, energy, urban and/or municipal services, and themes such as gender, environment, and governance and public financial management (para. 63).

## EVALUATION APPROACH

### A. Conceptual Framework

1. The achievement of the Asian Development Bank's (ADB) water policy in terms of its seven key elements was evaluated. The seven are assistance in water sector reform, integrated water resource management (IWRM), delivery of water services, water conservation and system efficiency improvement, regional cooperation, exchange of water sector information and experiences, and improvement in governance (as spelled out in the ADB 2001 Water Policy).

2. Table A1.1 summarizes the evaluation framework.

**Table A1.1: Evaluation Framework**

Evaluation Criteria	Scope/Key Aspects
<p><b>Relevance</b> How consistent and adequate have water policy and related operations been?</p>	<ul style="list-style-type: none"> <li>• Consistency and coverage in terms of the Asian Development Bank's (ADB) corporate strategy, developing member country (DMC) national priorities, and coordination and synergy with other development partners.</li> <li>• Adequacy in addressing the international consensus on integrated water resource management, and the Millennium Development Goals (MDGs).</li> <li>• Adequacy of design of water operations in relation to country- or location-specific demand factors and institutional capacities.</li> <li>• Identification and mitigation of major risks to long-term sustainability.</li> </ul>
<p><b>Responsiveness</b> How has ADB responded to water sector issues and implemented its water policy?</p>	<ul style="list-style-type: none"> <li>• Preparation of sector assessments and road maps and their incorporation in country partnership strategy and business plans to address the seven key policy elements of the 2001 water policy.</li> <li>• Incorporation of 2001 policy objectives in project documents (report and recommendation of the President, technical assistance papers)</li> <li>• Distribution of approvals of loans, grants, and technical assistance by policy key element.</li> <li>• Adequacy of staff resources allocated and/or deployed and training provided.</li> <li>• Adequacy of funding resources (ordinary capital resources, Asian Development Fund) for supporting DMCs in their water sector operations.</li> <li>• Addressing issues related to ADB's contribution to evolving international consensus on water.</li> <li>• Regional and global partnerships and resource mobilization for financing water-related projects in DMCs?</li> </ul>
<p><b>Results</b> A. What have been the achievements (results) so far? How <b>effective</b> and <b>efficient</b> have the water operations been in achieving intended inputs, outputs, and outcomes?</p>	<p><b>A. Achievements so far</b></p> <ul style="list-style-type: none"> <li>• Achievement of the key policy elements (the seven mentioned in the 2001 policy) through water sector operations (loans, grants, and technical assistance).</li> <li>• Extent of achievement and/or progress in terms of intended inputs, outputs, and outcomes of water sector operations.</li> <li>• Performance of completed projects.</li> <li>• Extent of success in assisting DMCs in policy and institutional reform for improving water sector governance.</li> <li>• Extent of contribution toward addressing the needs of the poor,</li> </ul>

Evaluation Criteria	Scope/Key Aspects
<p>B. What are the measures taken and arrangements put in place to ensure benefit flows and to progress toward long-term development impact (e.g., MDGs, poverty reduction, social welfare, environment sustainability)?</p>	<p>including lifeline tariffs.</p> <ul style="list-style-type: none"> <li>• Extent of sector strategy and project-level support to follow integrated water resource management approach.</li> <li>• Extent of effectiveness in water sector operations of aid agency coordination and synergy at country, regional, and global levels.</li> <li>• Adequacy of design and implementation of water sector operations to ensure efficient delivery of inputs (project resources), their operation and maintenance, and reasonable financial and economic returns on investments.</li> <li>• Extent of contribution toward establishment of sound legal and institutional framework for the water sector.</li> <li>• Extent of public-private partnerships.</li> </ul> <p><b>B. Measures taken for long-term development impact</b></p> <ul style="list-style-type: none"> <li>• Extent of technical soundness and upkeep of water sector projects</li> <li>• Adequacy of institutional capacities.</li> <li>• Revenue generation and/or financing provisions for running the water sector projects and/or facilities.</li> <li>• Environmental sustainability, taking into account water extraction, salinity due to seawater intrusion, and provision of water-related disaster risk management practices.</li> </ul>

3. The performance evaluation of completed projects used the core evaluation criteria of (i) relevance (policy consistency, coordination, and good design); (ii) effectiveness in achieving intended objectives, including the seven guiding principles and objectives; (iii) efficiency in terms of delivery of inputs, investment returns and policy reforms; and (iv) likelihood of sustainability of project outputs and outcomes (benefits and/or results) and related issues. The ongoing projects were assessed for relevance and progress in achieving the intended inputs and outputs.

## B. Evaluation Methodology and Data

4. The study has five main components: (i) desk study comparing implementation of ADB's water policy before and after 2001, contextual and cross-cutting issues and contextual and thematic studies; (ii) review of lessons identified by various evaluation studies; (iii) field studies, including review and assessment of selected projects under implementation; (iv) interviews and discussions with officials of developing member countries (DMCs), other development partners, and (ADB) resident mission staff; and (v) discussion of preliminary findings of the special evaluation study (SES) with the Water Community of Practice (CoP) at ADB headquarters.

5. **Subsector coverage.** The SES encompasses ADB operations in the following subsectors: (i) irrigation, drainage and flood protection; (ii) water-based natural resources management (rivers, lakes, wetlands, aquifers, watershed management, control of soil erosion and runoff); (iii) large hydropower; (iv) multicomponents—water and other municipal services (wastewater, solid waste management related to water); and (v) water supply and sanitation (rural and urban). These were selected in consultation with the ADB Water CoP.

6. **Desk study.** The desk study reviewed 207 report and recommendations of the President, 97 project completion reports (PCRs), 178 project preparatory technical assistance,

185 advisory technical assistance, 55 regional technical assistance, and 31 grants. It also reviewed project performance reports on 44 out of 103 ongoing projects. In addition, (i) relevant documents on ADB's assistance to the water and sanitation sector, including policies, strategies, priorities, and programs for the water sector of the DMCs; and (ii) past water policy review and evaluations (2003 in-house review, and 2005 review by an independent panel) were reviewed. The SES also drew on the key findings of the earlier evaluation study reports.

7. An assessment was conducted on selected advisory TA study reports dealing with key elements of the ADB water policy (tariffs, cost recovery, institutional issues, integrated water resource management, regulatory framework for the water and sanitation sector, watershed agencies, etc.). Key informant interviews were completed with selected ADB headquarters staff to address issues relating to the implementation of the water policy within ADB and the policy's relevance to ongoing operations. ADB's Water Financing Program (WFP) was also assessed.

8. The rating criteria for the main themes from the ADB water policy objectives that apply to the planning and design of projects are listed in Table A1.2, which shows how they relate to the seven water policy elements.

**Table A1.2: Rating Criteria for the Water Policy Components**

<b>Water Policy Component</b>	<b>National focus on water sector reform</b>	<b>Integrated management of water resources</b>	<b>Improving and expanding the delivery of water services</b>	<b>Conservation of water and increasing system efficiencies</b>	<b>Regional cooperation and beneficial use of shared water resources</b>	<b>Exchange of water sector information and experiences</b>	<b>Improving governance</b>
Integrated water resources management		✓	✓	✓	✓	✓	✓
River basin organizations		✓			✓		✓
Public-private partnerships and investor participation			✓				✓
Autonomy/accountability of service providers			✓				✓
Review and revision of water legislation	✓	✓	✓	✓	✓	✓	✓
Water conservation				✓			
Phaseout of subsidies			✓	✓			
Tariff reform and cost recovery			✓	✓			
Protection and improvement of forests and wetlands		✓		✓	✓		
Urban and rural water quality measures		✓					

Water Policy Component	National focus on water sector reform	Integrated management of water resources	Improving and expanding the delivery of water services	Conservation of water and increasing system efficiencies	Regional cooperation and beneficial use of shared water resources	Exchange of water sector information and experiences	Improving governance
Participatory approaches			✓	✓		✓	✓
Water user associations for irrigation systems			✓	✓		✓	✓
Targeting poverty reduction			✓				
Gender-based approach			✓			✓	
Cautious approach for large projects		✓			✓		

Source: Independent Evaluation Department.

9. **Field study.** To supplement the desk work, field studies in three DMCs were undertaken to identify implementation-related lessons and issues. The countries were selected on the basis of these criteria: they (i) are representative of all the five ADB operating regions; (ii) have a large number of water-related projects; (iii) have project experience in periods both before and after the release of ADB's water policy; (iv) have a considerable water sector portfolio; (v) represent both water-abundant and water-stressed regions; (vi) represent both poor and good governance; and (vii) represent both lower and higher income economies. Other considerations were time and resources. The final selections for the field study were India, Uzbekistan, and Viet Nam.

10. India is the second largest country in Asia. It has a total landmass of 3.29 million square kilometers and a population of more than one billion. Growing demand from competitive sectors, increasing droughts, declining water quality particularly of groundwater, unabated flooding, interstate river disputes, growing financial crunch, and inadequate institutional reforms and enforcement are some of the crucial problems faced by the country's water sector. Safe drinking water is inadequate. The availability of water per capita is rapidly declining, resulting in severe water shortages. Pressure is further increasing with the rapidly growing demand for water use in agriculture, cities, and industries. Emerging challenges include management of existing infrastructure and of the water resource itself. Absence of enforceable water entitlements at all levels is at the root of service shortcomings, water use inefficiency, unregulated groundwater extraction, negligence of traditional and low-cost water bodies, financial problems and conflicts that plague the water sector. Irrigation accounts for 85% of water utilized, 30-40% of this amount from surface water systems. Faced with poor water supply services, farmers and urban dwellers have resorted to helping themselves by pumping out groundwater, leading to rapidly declining water tables. Domestic water supply and sanitation also face similar problems, with large amounts of water unaccounted for. The situation is attributed to the low quality of distribution services and limited user participation and financing. In accordance with the 2002 national water policy, the government is promoting state reforms to promote efficiency and

sustainability in water use, following the principles of IWRM; however, implementation is at a very formative stage across the country.

11. Uzbekistan has the second most extensive ADB experience with water sector projects among the Central Asian republic DMCs. In 2009, of Uzbekistan's 26.9 million people, 9.6 million (36%) lived in urban centers and 17.2 million (64%) in rural areas. The water supply and sanitation (WSS) systems were established under the former Soviet Union. These were all owned and operated by public enterprises, supervised by government ministries, and funded from the central budget. Most of the WSS agencies have yet to adopt modern management and commercial practices. Many are short on accountability and lack incentives to improve services. Service coverage across most provinces is poor. In urban areas it is fairly high at 89%, but low in reliability, continuity, or the duration of supplies. Rural coverage is low.

12. Viet Nam's strong economic growth has been accompanied by increasingly rapid urbanization, significant increases in wages, and enhanced quality of life. However, this growth has brought some less positive changes, such as high rural–urban migration, which is placing heavy pressure on the country's dilapidated infrastructure and fragile natural resource base. Although Viet Nam is a high-rainfall and coastal country, it is not rich in water. Increasing competition for reliable water resources may constrain economic growth and the creation of livelihood opportunities. Viet Nam can be considered a water-deficient nation and is predicted to face increasingly difficult challenges with water resources in the near future. Droughts are frequent and prolonged, and nearly two thirds of the surface water inflows from neighboring countries are concentrated in the Mekong River delta. Viet Nam is also part of the Mekong River Commission initiative. Demands for water resources are growing rapidly, not just for extraction but also to increase hydropower generation to satisfy the expanding economy and growing population. Groundwater is increasingly used in both rural areas and major urban centers, but levels are falling dramatically in some areas, resulting in land subsidence and damage to infrastructure.

13. **Contextual and thematic studies.** Contextual and thematic studies were conducted to (i) assess the relevance of water policy priorities and approaches in light of emerging issues and challenges in the water sector; (ii) review areas of the water sector where ADB can use its comparative advantages to make strategic contribution; (iii) promote regional and global partnerships and resource mobilization; and (iv) assess the development of ADB's internal capacity to meet sector needs—staff qualifications, training programs, documentation, coordination with other agencies, and so on.

14. Selected topics for thematic studies included (i) climate change and water resources, WSS sector investments, and environmental sustainability; (ii) regional cooperation and integration and water resource management and pollution control issues from a river basin management perspective;<sup>1</sup> (iii) political, institutional, and legal impediments to establishment of a regulatory framework and tariffs, and related capacity development in water utilities; (iv) prospects of achieving the Millennium Development Goals<sup>2</sup> related to the WSS sector in the selected case study DMCs; and (v) public-private partnerships and key impediments to private sector participation in the water sector.

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<sup>1</sup> ADB's Regional Cooperation Policy and various documents of ADB have placed emphasis on regional cooperation and integration.

<sup>2</sup> MDG 7, Target 10, calls for halving the proportion of people without access to safe drinking water and improved sanitation by 2015.

## THE WATER POLICY CONTEXT

### A. The Global Context of Water: Current Scenario and Challenges

1. Water remains one of the greatest global challenges. Significant improvement is needed in water management policies and practices to sustain lives and food production, support larger urban populations, and improve environmental sustainability in the Asia Pacific region and in the world. In the next 2 decades, 60% of the world's population will be urbanized. This rapid urbanization threatens to exacerbate inequality in the access to clean water supply and sanitation (WSS), especially in Asia. With its connection to the ecological balance and health, water is a key factor that affects the world's environmental as well as economic sustainability.

2. Because Asia is home to nearly 900 million of the world's poorest water management, it is critical to sustain lives and food production in the region. "About 40% of Asia's cropland is irrigated and helps produce about 70% of its food. Paradoxically, however, poorly conceived irrigation (and/or poor management) has also contributed to salinization and waterlogging" (the Asian Development Bank [ADB] Water Policy<sup>1</sup>). A 2006 report by the United Nations Children's Fund (UNICEF) shows that more than 1 billion people still had no access to "improved drinking-water sources."<sup>2</sup> Of that number, 624 million—more than 60%—are in East Asia, South Asia, and the Pacific. The figures are worse for sanitation. Of the 2.6 billion people without access to improved sanitation facilities in 2006, more than 1.6 billion are in East Asia, South Asia, and the Pacific. The water policy of ADB has highlighted the regional issues in South Asia, which has the "lowest level of water resources per capita" and water scarcity in the Pacific. These water issues are still relevant, and they indicate the need to evaluate the achievements in Asian water management since 2001.

3. The World Water Development Report launched in Istanbul, Turkey (March 2009) highlighted the gravity of the water crisis. In demographic growth alone, 90% of the forecasted annual growth of 80 million was in poorer countries (Figure A2.1). Based on population growth, water demand will increase by 64 billion cubic meters per year. The World Bank's water resources sector strategy (2004)<sup>3</sup> used the World Commission on Water's term, the "gloomy arithmetic of water," to describe how growth in water demand exceeds that of the world's population. During the past century, while world population tripled, the use of water increased sixfold. The strategy document pointed out that climate change will heighten the impacts of an impending world water crisis. The World Bank considered the management and development of water resources of water resources as a critical element in achieving its strategic objectives of sustainable economic growth and poverty reduction.

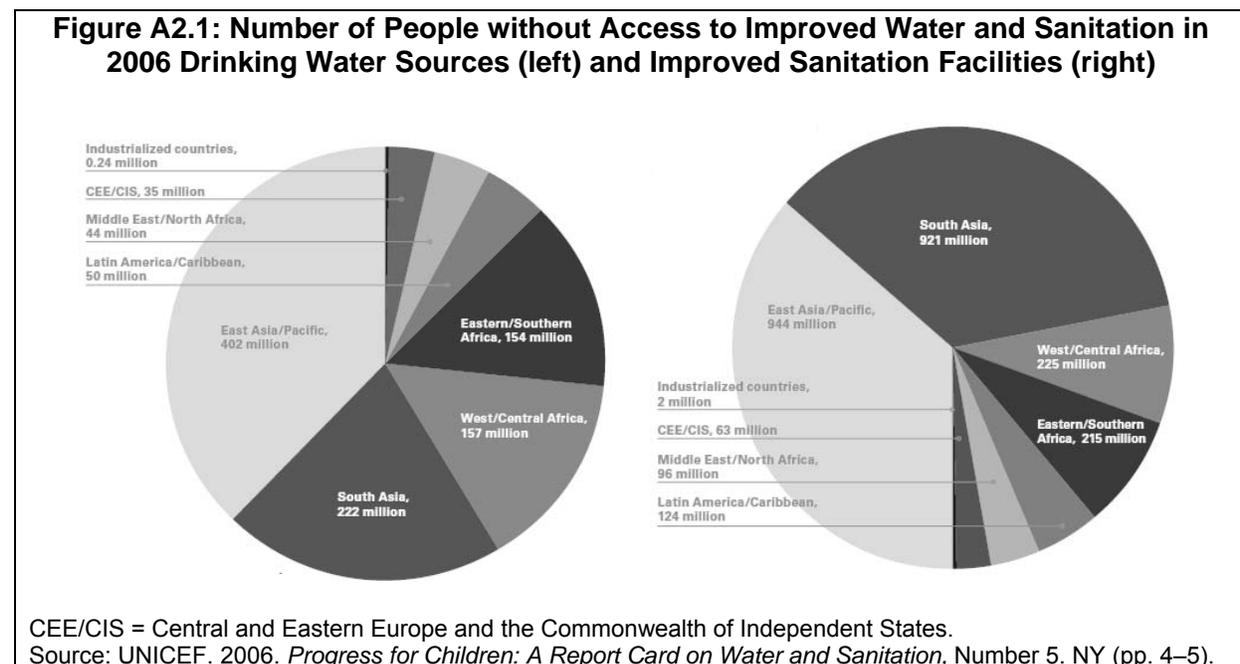
4. The role of population growth and climate change in perpetuating water crises has been widely discussed in the water management literature. Population growth means a growing demand for food, but at the same time, rapid urbanization competes with agriculture for the supply of freshwater. The pressure to increase food production increases the demand for irrigated agriculture, while the economics and politics of development that focus on urban areas create a demand to reallocate water to cities. At the same time, global climate change is altering precipitation patterns and increasing the risk of drought in many areas. Resulting changes in the hydrologic cycle are decreasing the efficiency of water infrastructure.

<sup>1</sup> ADB. 2001. *Water for All: The Water Policy of the Asian Development Bank*. Manila.

<sup>2</sup> UNICEF. 2006. *Progress for Children: A Report Card on Water and Sanitation*, Number 5. New York.

<sup>3</sup> World Bank. 2004. *Water Resources Sector Strategy: Strategic Directions for World Bank Engagement*. Washington, DC.

5. ADB's 2001 water policy is consistent with Strategy 2020<sup>4</sup> and with its primary focus on poverty eradication. In this respect, the water policy is also closely aligned with the Millennium Development Goals (MDGs).<sup>5</sup> Three targets under the seventh goal are related to water sector operations: (i) integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources (Target 9); (ii) halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation (Target 10); and (iii) have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers (Target 11).



## B. Implementation of ADB's Water Policy and Partnerships

6. ADB's Regional and Sustainable Development Department (RSDD) oversees ADB water sector projects<sup>6</sup> and ensures that they are designed and implemented in accordance with the ADB water policy. RSDD assists ADB's regional departments by

- (i) providing, during the project life cycle or as needed, comments and inputs in relation to sector assessments, road map preparation, technical assistance (TA) preparation, processing and implementation of projects in the water and sanitation sector;
- (ii) supporting the regional departments in their consultations with the developing member countries (DMCs) about the ADB water policy, and institutional and legal reforms that form the basis for the water sector projects;
- (iii) supporting the promotion of a national water policy and action agenda in each DMC, so that ADB could prioritize its operations;
- (iv) emphasizing the need for all new water sector projects to take into account water availability and conservation, in the context of a river basin or a region;

<sup>4</sup> ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development 2008–2020*. Manila.

<sup>5</sup> Available: <http://www.undp.org/mdg/goal7.shtml>, accessed 2 May 2010.

<sup>6</sup> The term "water sector project" is understood in this report to include water supply and sanitation; irrigation, drainage and flood control; water-related natural resources; hydroelectric power; and multicomponent projects with a significant water component, mainly greater than about 30%.

- (v) emphasizing the need to focus more on the specific water needs of poor people; and
- (vi) supporting the regional departments to look for opportunities to forge partnerships at project, river basin, national, and regional levels to optimize the impact of ADB water and sanitation investments.

7. The resident missions give vital support to the operations and outreach work of the regional departments. They carry out much of ADB's operational roles in country programming, some processing of loan and grant assistance, project administration, and economic and sector analysis. They also ensure that ADB remains responsive to local needs and issues and provide a channel for broader and more direct contact with DMCs and development partners, including governments, project agencies, the private sector, and civil society.

8. Water challenges require significant financing well beyond the capacity of individual DMCs and institutions. ADB's water funding facilities are the Cooperation Fund for the Water Sector (CFWS, now closed) and the Water Financing Partnership Facility (WFPF). CFWS, a multidonor facility, was established in December 2001 to help implement ADB's water policy in DMCs. The objectives of the facility were to (i) add value to water projects carried out by ADB's regional departments, (ii) increase synergy in ADB's water sector operations, and (iii) strengthen regional cooperation. Activities under CFWS were supported through regional technical assistance projects (RETAs). ADB's Water Committee coordinated, monitored, and evaluated the use of the fund.

9. In December 2006, ADB established the WFPF to mobilize cofinancing and investments from development partners in support of the Water Financing Program (WFP) 2006–2010. The program intention to increase investments to well over \$2 billion annually demonstrates ADB's commitment to supporting water sector development in its DMCs.

10. In keeping with the high profile of the water policy, the water sector features prominently in ADB's Strategy 2020. The strategy recognizes water's contribution to the national, regional, and international goals of economic and social development and establishes clear priorities for water sector investments in its core operational areas.

## **C. Previous Review of the ADB Water Policy**

### **1. 2003 Review**

11. In 2003, ADB's Water Sector Committee undertook an interim (desk) review of the ADB water policy.<sup>7</sup> The review concluded that there was (i) encouraging progress in the areas of improving and expanding water services delivery, water conservation, improving governance, and fostering participation; (ii) modest progress in fostering the integrated management of water resources and in promoting regional cooperation; and (iii) limited progress in promoting a national focus on water sector reforms. The review found that 54% of water loans had demonstrated exemplary or good practice after the policy was issued, compared with 10% in the 3 years before the policy. However, only 20% of water sector TAs demonstrated good practice in relation to the policy.

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<sup>7</sup> ADB. 2004. *Interim Review of ADB's Water Policy Implementation*. Report of the In-House Study by ADB's Water Sector Committee. Manila.

## 2. 2005 Review

12. In May 2005, ADB commissioned an independent panel of experts to conduct a comprehensive internal review of the implementation of its water policy.<sup>8</sup> The panel's review, completed in April 2006, summarized progress in the key areas of the policy, and identified remaining challenges and required actions. The panel outlined five main recommendations to improve ADB's water operations and investments.

- (i) **Increase ADB's commitments and develop its capacities.** This requires increased investments, staff realignment and development, and providing leadership in the region to prioritize water.
- (ii) **Develop long-term partnerships with DMC stakeholders and aid agencies.** This requires policy dialogue, sector assessments, training, and promoting program- or policy-based lending approaches to raise the status of water, strengthen institutional frameworks, improve water governance, develop capacities, and improve aid agency harmonization and aid effectiveness in the DMCs.
- (iii) **Focus the implementation of integrated water resource management (IWRM) on stakeholder needs and ownership.** This means supporting IWRM planning and implementation, increasing knowledge on IWRM in DMCs and at ADB, and developing and improving assessment tools for benchmarking, monitoring, and evaluation.
- (iv) **Promote "business unusual."** This means leveraging innovations to increase access, affordability, efficiency and cost-effectiveness including nuanced guidance on subsidy use, promoting public-private partnerships (PPPs), alternative financing modalities under ADB's Innovation and Efficiency Initiative, robust arrangements for operation and maintenance, and scaling up alternative technologies.
- (v) **Improve processes to ensure effective policy implementation.** This involves improving ADB's internal communications and procedures, coordinating with DMCs on country strategy processes and national planning, and monitoring and evaluation efforts to mitigate social and environmental impacts of ADB projects.

13. The review recommended doubling the allocation for water sector funding and introducing innovative and flexible financial instruments to leverage additional investment in the sector by 2010 to ensure achievement of the MDGs by 2015. ADB accepted the challenges outlined by the panel, increasing investments in the water sector to more than \$2 billion a year, catalyzing reforms, and supporting capacity development.

14. The review indicated that IWRM is the backbone of ADB's water policy, dependent on good governance, comprehensive water resource assessments, and interlinked water investments in river basins. The aim of IWRM is to manage water and related resources in a holistic and integrated manner by promoting regional cooperation within countries as well as between riparian countries.

15. It is noted that countries almost always find IWRM difficult partly because responsibilities in river basins are distributed to different agencies. IWRM-based planning is difficult and complex from a technical perspective even when institutions are well configured. This approach to planning is best developed incrementally over an extended period of time to allow

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<sup>8</sup> ADB. 2006. *Water for All: Translating Policy into Action. Comprehensive Review of ADB's Water Policy Implementation, Final Report and Recommendations of the Review Panel.* Manila.

professional capacity to develop within agencies and political institutions to evolve to the point where decision making can actually benefit from this type of analysis. In this regard, the performance of Uzbekistan is notable. In 2003, Uzbekistan began to manage its rivers and irrigation systems on a hydraulic (as opposed to political) boundary basis. Now, steps are required to integrate the perspectives of all stakeholders into river basin management.

16. The review indicated (para. 61) that “It is imperative to take steps to close the gap between policy and practice in the next 5 to 10 years”. It recognized that “to improve the country strategy and program process, it will be crucial to first ‘translate’ ADB’s Water Policy into an operational strategy to advance the investment programming exercise between ADB and DMCs.” This will soon be acted upon; operational guidelines in this regard are due for release in October 2010.

17. Under TA 6031-REG<sup>9</sup> funded by CFWS, activities were undertaken to initiate or strengthen national and regional water partnerships—Water for the Poor-Partnerships for Action, Water for Asian Cities Program; Gender in Water Partnership, Network of Asian River Basin Organizations (NARBO), National Water Sector Apex Bodies, Leadership in Water Governance, Southeast Asia Water Utilities Network, and other regional partnerships.

18. NARBO was launched in 2003 with the objectives of (i) promoting exchange of information and experience among river basin organizations (RBOs) in Asia, and (ii) strengthening RBOs’ capacity and effectiveness in promoting IWRM and improving water governance. ADB, the ADB Institute, and the Japan Water Agency supported NARBO’s establishment in 2003. “IWRM is recognized by many as the paradigm for establishing good water governance and putting water resources on the recovery path.” NARBO was established to share knowledge and build capacity for IWRM in river basins throughout the Asia and Pacific region.”<sup>10</sup> NARBO now has 65 member organizations including 22 RBOs of which nine are in Indonesia, four in Viet Nam, and one each in eight other countries. NARBO is assessed as a valuable initiative, providing support and encouragement to individuals and organizations to establish and develop RBOs.

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<sup>9</sup> ADB. 2002. *Technical Assistance for Promoting Effective Water Management Policies and Practices*. Manila (TA 6031-REG).

<sup>10</sup> Available: <http://www.adb.org/water/narbo/default.asp>

## ADB'S WATER POLICY

### A. Elements of ADB's Water Policy

1. In 2001, the Asian Development Bank (ADB) released its water policy.<sup>1</sup> The new policy was developed with extensive stakeholder consultation. It has seven main elements:<sup>2</sup>

- (i) **Promoting a national focus on water sector reform** (including policies, laws, institutional capacity development, information management, and sector coordination).
- (ii) **Fostering the integrated management of water resources** (especially in river basins).
- (iii) **Improving and expanding the delivery of water services** (including private sector participation and emphasizing equity in access to water for the poor).
- (iv) **Fostering the conservation of water** and increasing system efficiencies.
- (v) **Promoting regional cooperation** and increasing the mutual beneficial use of shared water resources within and between countries.
- (vi) **Facilitating the exchange of water sector information and experience** (including public-private—community-nongovernment organization [NGO] partnerships).
- (vii) **Improving governance** (including the promotion of decentralization).

### B. Objectives

2. Under the seven elements, 40 objectives or approaches are defined (listed below). Each objective was classified by its implied delivery mode so as to assess whether it implies any monitorable outcome, rather than an action by ADB. For example, Policy 1 implies but does not define an objective (the development of improved water policies in developing member countries), or any mechanism for providing the help. It thus largely implies a passive rather than an active role for the policy.

Theme/Policy	Action Indicated
<b>A. National Policies and Reforms</b>	
1. ADB will help develop comprehensive water policies in its DMCs.	Help
2. Assistance for undertaking water sector assessments will be provided to ensure that policy formulation and sector reforms are well grounded.	Assist
3. 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-sector coordination mechanisms, such as a neutral sector apex body that can oversee the policy formulation and sector reform process.	Support
4. 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.	Support
<b>B. Water Resources Management</b>	
5. ADB will help the DMCs introduce integrated water resources management (IWRM) and undertake comprehensive water resources assessments in river basins as a basis for future water investment projects	Help
6. To implement IWRM, ADB will support the establishment of river basin organizations (both formal and informal) to facilitate stakeholder consultation and participation; and	Support

<sup>1</sup> ADB. 2001. *Water for All: The Water Policy of the Asian Development Bank*. Manila.

<sup>2</sup> ADB. 2004. *Proposed Revisions to the Water Policy of the Asian Development Bank*. Manila.

Theme/Policy	Action Indicated
help improve planning, information gathering, monitoring, and advisory services to local and national authorities.	
7. ADB will encourage DMCs to adopt participatory and negotiated approaches for water allocation.	Encourage
8. ADB will adopt a cautious approach to large water resources 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.	Cautionary ADB approach
9. 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.	Ensure safeguards are met
10. In line with its energy sector policy, 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 that their environmental (including impact on fisheries) and social effects can be satisfactorily managed in accordance with ADB policies.	Support
11. 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-site or combined wastewater treatment and reuse, and improved farming practices.	Support
12. The introduction of wastewater discharge permits and effluent charges as part of water rights administration will be encouraged.	Encourage
13. ADB will pursue the protection and rehabilitation of degraded forestlands. To rehabilitate watersheds, ADB encourages the involvement of local communities and nongovernment organizations (NGOs).	Pursue, encourage
14. 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.	Promote
15. ADB will continue to help the DMCs reduce economic losses from floods and rapidly restore economic infrastructure and social services after such disasters.	Help
16. 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.	Understand
17. 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.	Promote
18. 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 re-establishing productive activities.	Poverty reduction will be targeted (other policy)
<b>C. Improving Water Services</b>	
19. ADB's sector strategies within countries will identify the need for introducing phased programs to increase the autonomy and accountability of service providers, either as new enterprises or by reorganizing existing agencies.	Identify
20. ADB will develop modalities for public-private partnerships in the management of physical infrastructure.	Develop modalities
21. User participation will also be supported to (i) make services and service providers	Support

Theme/Policy	Action Indicated
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.	
22. 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. ADB will support the upgrading of existing systems in physical and managerial terms.	Support
23. 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.	Help develop
24. Subsidies for operating and maintaining public irrigation and drainage systems will be phased out.	Phase out subsidies
25. The phased turnover of responsibilities for distribution system operation and maintenance to farmer groups will 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 upon.	Support turnover, clarify rights
26. ADB will seek to initiate monitoring and benchmarking exercises for irrigation and drainage service providers to track value and performance parameters.	Initiate monitoring
<b>D. Conserving Water</b>	
27. ADB will promote tariff reforms through water-related projects and programs to modify structures and rates so that they reward conservation and penalize waste.	Promote
28. ADB will consistently advise governments of the need to adopt cost recovery principles in their water policies and strategies.	Advise
29. 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.	Support
30. ADB will promote the establishment of regulatory systems through policy dialogue with the DMCs and by leveraging loan and technical assistance programs to this end.	Promote
31. 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.	Educate
<b>E. Promoting Regional Cooperation</b>	
32. By assisting with water sector assessments in riparian countries, and helping with the exchange of data, ADB will promote awareness and understanding of water resources issues and needs within each country.	Promote awareness
33. In response to 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 encompassing dispute resolution mechanisms.	Support
34. 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.	Assist
35. 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.	Accord priority
<b>F. Fostering Participation</b>	
36. ADB will promote participation in the management of water resources at all levels and collaborate in fashioning partnerships between governments, private agencies,	Promote participation

Theme/Policy	Action Indicated
NGOs, and communities.	
37. 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.	Promote
38. The key elements in a gender approach to planning, implementing, and evaluating of 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.	Add gender to design
<b>G. Improving Governance</b>	
39. ADB will promote the development of sustainable plans for capacity development; 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.	Promote
40. To optimize the work of knowledge and skills development institutions, and to promote regional self-help, a regional research and capacity development network among these institutions would provide a cost-effective approach. ADB will continue dialogue with its development partners to jointly establish the network as a complementary capacity development ingredient in the water sector.	Promote

3. Of the 40 objectives, the seven listed below imply specific actions for ADB to undertake:

8. ADB will adopt a cautious approach to large water resources projects.
10. ADB will extend support for technically and economically feasible hydropower projects.
16. ADB will increase its understanding of the effects of periodic El Niño and La Niña events on climate.
20. ADB will develop modalities for public-private partnerships.
26. ADB will seek to initiate monitoring and benchmarking exercises for irrigation.
35. ADB will accord higher priority to the optimization of existing systems.
38. ADB will incorporate gender approaches in its water sector operations.

4. Two of the policies link to other ADB policies (number 9 to environmental and social safeguards, and number 18, to some degree, to poverty reduction). Only one policy item does imply a specific outcome-level objective: number 24 in relation to the phasing out of subsidies, which provides a potentially monitorable outcome-level objective. The remaining 30 objectives all relate to actions by ADB to assist DMCs or projects to achieve the implicit objective in the policy statement.

5. This analysis, though perhaps simplistic, does highlight a significant issue in relation to the policy and its implementation—the fact that it is couched in terms of actions deemed desirable by ADB (to help, encourage or promote an activity), rather than to achieve a specific and monitorable objective. Moving from the policy (and its desirable and all-encompassing objectives) to activities in projects and the DMCs required at least one subsequent step—the preparation of an operational strategy (with priorities) and road map (how to get from where a DMC is now to where it might want to be) and also operational guidelines, to provide specific support to project designers and implementers.

### COMPARATIVE REVIEW OF WATER POLICIES

Policies	ADB	World Bank	AfDB	IDB	Beyond MDBs
<b>A. Water Resources Management</b>					
1. Comprehensive water resources assessment in river basins and integrated water resources management (IWRM)	Yes, but with limited progress; focus is on comprehensive and integrated approach	Yes, but does not regard IWRM as the main management challenge but rather a “pragmatic but principled” approach; Reports modest impact on water sector reforms	As one of the priority actions recommended by Agenda 21, the Bank will stress the importance of water resources quantity and quality assessment	Yes, but available resources cannot support national water resource assessment for each country	In the Organisation for Economic Co-operation and Development (OECD) countries, implementation has been difficult, slow, uneven; Dublin principles not implemented
2. Participatory and negotiated approaches for water allocation	Yes in policy, but difficult in practice	Use of incentives and economic principles, but difficult in practice	The Bank will encourage regional member countries to investigate market-based reallocation of water	Yes, favor a “two-track,” an incentive-based approach; avoiding top-down discretionary approach	Chile good example of trading of water rights between domestic and agriculture uses; few successful examples of compensation schemes
3. Large water resources projects (dams and storage)	Cautionary approach; needs to be justified in the public interest	Has re-engaged with high-reward–high-risk hydraulic infrastructure using a more effective business model. 67 projects approved since 2003 worth \$8.7 billion with at least 50% in Asia	Yes, IWRM requires proper coordination of activities in multipurpose hydropower dam projects.	Watershed and river basin management, role in planning and operation of dam projects is usually small	Hydropower accounts for one-fifth of the world's electricity supply and has helped shape and promote economic growth in such countries as Canada, Norway, and United States
<b>B. Improving Water Services</b>					
1. Promote autonomy and/or accountability of service providers especially in staffing and tariff setting	Yes in policy; standard loan covenant	Yes in policy; standard loan covenant	Not in standard loan agreements lack of autonomy; pricing has rarely been efficient	Yes, a trend toward autonomous operation	Autonomy and accountability highly correlated with good performing water utilities
2. Develop modalities for public-private partnerships public-private partnership (PPP) in management of physical infrastructure	Yes, but lacks common understanding and weak in implementation	Yes, with generally positive results	Yes, private sector participation (PSP) is strategic objective and priority; Lessons learned suggested effort of PPP as an option of PSP	Different model: private and/or public sector; user-owned; PSP	Cochabamba, Bolivia, offers a cautionary tale on private sector participation in water concessions
3. Promote user	Yes, but uneven	Yes, for small	Yes for irrigation	Yes for the	

<b>Policies</b>	<b>ADB</b>	<b>World Bank</b>	<b>AfDB</b>	<b>IDB</b>	<b>Beyond MDBs</b>
participation to ensure accountability, local customization, cost recovery and sustainability	in practice; lacks established business model of participation	towns and rural water supply; employs community demand-driven (CDD) approach as business model	management, adopted decentralization form through user participation. Bank's experience: lack of end-user participation in the choice of technology	water resources entity, favor "two-track" approach; cross-subsidies into tariff structure. Rising block tariff charging structure designed	
4. Promote upgrading of physical and managerial systems	Yes for physical upgrading, but less so for management	Yes for physical upgrading; less so for management upgrading	Very few projects mentioned Upgrading of management information system	Lessons learned prompted changes toward sectoral water resources management	Twinning arrangements are becoming common among public utilities
5. Develop contracting modalities that allow potential investors to participate in expansion and improvement of services that address equity and/or improved services to the poor	Yes, but lacks common understanding and weak in implementation; few successful business models	Yes, with generally positive results; pilot testing of output-based aid	Yes, options for PSP including service contracts, management contracts	Yes, lease contracts in West Africa; but several countries pursued the British model	Manila Water Company is a good example in the use of output-based aid
6. Small-scale water providers	No explicit policy	Supports governments to optimize role of small-scale service providers in the water supply and sanitation (WSS), mostly as part of larger operations	Successful records of small-scale private irrigation systems, emphasizes small-scale hydropower in rural areas	No information	Small providers play vital roles supplying poor households in peri-urban areas in the developing member countries (DMCs)
<b>C. Water Conservation</b>					
1. Promote tariff reforms to reward conservation and penalize waste	Yes, mainly through increasing block tariffs (IBT); difficulty in implementation	Yes, mainly through IBT; inconsistent application; objectives are rarely met; limited success	Not yet, pricing mechanisms require additional intervention	Raising tariff causes political problems to arise	IBT common among DMCs, but not in OECD countries
2. Promote cost recovery principles	Yes, full cost recovery usually	Yes, full cost recovery but as a	Adaptation and strengthening of	Adequate tariff levels based on	Chile uses long-run marginal

Policies	ADB	World Bank	AfDB	IDB	Beyond MDBs
	within construction period; difficult to achieve among DMCs	long-term goal; marginal cost pricing remains the exception	institutions will promote cost recovery, promotion of cost recovery systems to ensure adequate operations and management in the short term, and total financial self-sufficiency in the medium and long-term	the principle of cost recovery; Use of Service Subsidies Tariff Structure; "Common sense pricing" in Chile	cost; other concessions employ cost pass-through, tariff indexation, tariff resets, extraordinary resets
3. Promote explicit participation by the poor in water projects	Yes in policy; no established business model; uneven implementation	Yes with established business model i.e. CDD approach	No information in policy and project completion report	No information	Manila Water as good example of successfully involving the poor in water supply projects
4. Phase out subsidies to the poor	Phase out subsidies in line with affordability	Subsidies for WSS, but means-tested with output-based aid (OBA)	Yes, the introduction of cross-subsidization, progressive block tariff schedule more effective to assist the poor	Cross-subsidies do not benefit the most disadvantaged groups, or no subsidies for poor	Chile good practice; no cross-subsidies; uses targeted subsidies to the poor; Manila Water good case using OBA
5. Establish regulatory systems through policy dialogue and leveraging loan and technical assistance	Yes in policy, but weak in implementation	Yes in policy, but efforts have failed to produce lasting results	Yes in policy, and at very early stage	The best regulations are in place, but the actual performance of the water sector is very poor	Few countries have well-functioning regulatory systems

#### D. Fostering Participation

1. Promote stakeholder participation in the management of water resources	Yes, good progress in implementation	Yes, decentralization and participation are seen as keys to success	Yes, training various stakeholders	Yes, involve stakeholders in the management of water resources	
2. Promote participation by civil society in identifying needs/issues, designing solutions, establishing mechanisms for monitoring dispute resolution.	Yes in policy, but uneven in implementation; mostly for community-based projects	Yes in policy, but uneven in implementation; mostly for community-based projects	Yes, in some projects, such as village, socio-professional, women's organizations	Yes, in river basin projects, may include participation of civil society and other stakeholders	

ADB = Asian Development Bank, AfDB = African Development Bank, IDB = Inter-American Development Bank, MDB = multilateral development bank.

Source: Independent Evaluation Department.

## WATER POLICY IMPLEMENTATION

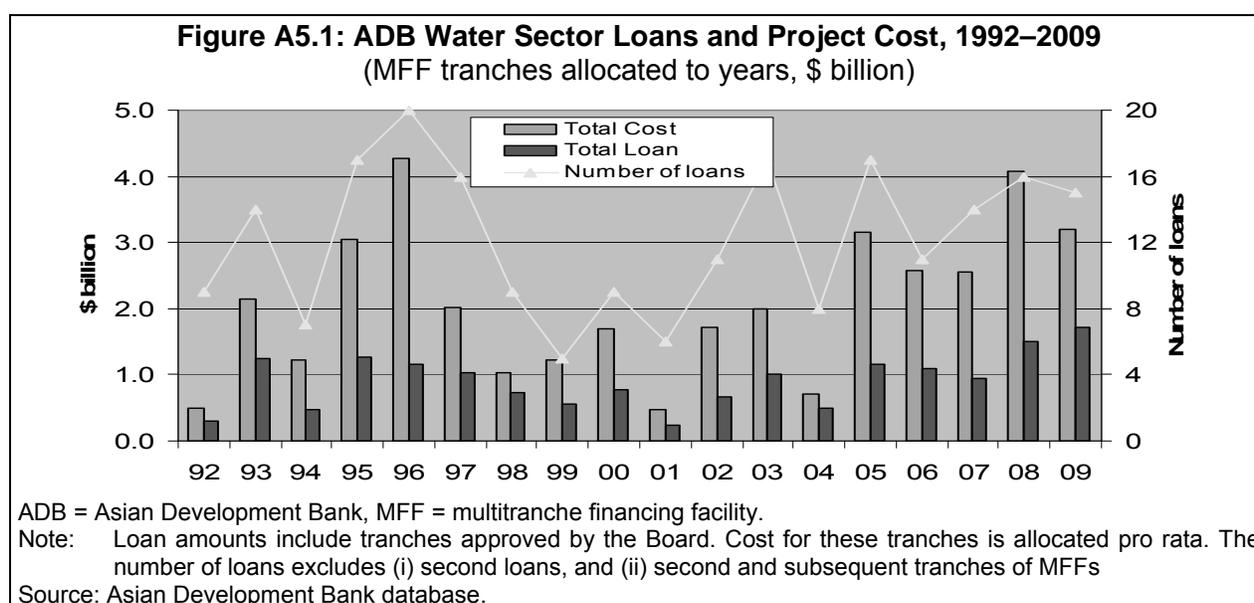
### A. Water Sector Lending within ADB's Overall Portfolio

#### 1. Water Sector Lending, 1992–2009

1. Measures taken to implement the water policy of the Asian Development Bank (ADB) largely determine its success. They are reflected in completed and ongoing loan and grant operations as well as in focused programs established to support water sector activities, for example, the Cooperation Fund for the Water Sector (CFWS, now closed), the Water Financing Partnership Facility (WFPP), and the Water Community of Practice (CoP).

2. The number of water-related loan and grant projects is a key indicator of implementation activity. An analysis of loan and grant operations was completed to quantify this activity. The analysis covered the period 1992–2009 and included 207 loan projects, 178 project preparatory technical assistance grants (PPTAs), 184 advisory TAs (ADTAs), and 55 regional TAs (RETAs).

3. Figure A5.1 summarizes the total cost of approved loan projects, including contributions from all stakeholders, and the associated ADB loans.



4. ADB lending to the water sector from 1992–2009 reached \$16.3 billion (Table A5.1), the bulk of which went to projects for water supply and sanitation (WSS, 33.2%) and multicomponent projects (26.2%). The rest went to projects for water-based natural resources management (14.4%); irrigation, drainage, and flood protection (12.3%); and large hydropower (13.9%). There was not much difference in subsector share in lending amount between 1992–2000 and 2001–2009 except for the noticeable decline in lending for projects in irrigation, drainage and flood protection (40%), and hydropower (34%). Projects for water supply and sanitation continued to increase both in number of loans and amount. Most of them were concentrated in the urban sector.

**Table A5.1: Loans Approved, by Subsector, 1992–2009**  
(\$ million)

Sub-sector	1992-2000				2001-2009				Total			
	No. of loans		Amount		No. of loans		Amount		No. of loans		Amount	
Irrigation, Drainage, Flood Protection	25	21.55	1,251.14	16.57	17	11.64	751.13	8.59	42	16.03	2,002.26	12.3
Large Hydropower	9	7.76	1,364.50	18.07	14	9.59	899.12	10.28	23	8.78	2,263.62	13.9
Multi-component	25	21.55	1,588.63	21.04	35	23.97	2,682.84	30.68	60	22.90	4,271.47	26.2
Water Supply and Sanitation	43	37.07	2,390.79	31.66	54	36.99	3,017.76	34.51	97	37.02	5,408.55	33.2
Water-Based Natural Resources Management	14	12.07	956.32	12.66	26	17.81	1,393.59	15.94	40	15.27	2,349.91	14.4
<b>Total</b>	<b>116</b>	<b>100.00</b>	<b>7,551.37</b>	<b>100.00</b>	<b>146</b>	<b>100.00</b>	<b>8,744.44</b>	<b>100.00</b>	<b>262</b>	<b>100.00</b>	<b>16,295.81</b>	<b>100.0</b>

Note: Includes nonsovereign loans.

Source: Compiled by the study team using Asian Development Bank database.

## 2. Delays in Project Implementation

5. In common with other sectors, loans in the water sector were prone to delays, with 42% of projects suffering delays longer than 2 years from effectiveness to completion (Table A5.2).

**Table A5.2: Delays in Completed Projects, by Subsector**  
(projects approved since 1992)

Subsector	<u>Approval to Completion</u>			<u>Effectiveness to Completion</u>			<u>Approval to Effectiveness</u>	
	Planned (years)	Actual (years)	Delay (years)	Planned (years)	Actual (years)	Delay (years)	Planned (months)	Actual (months)
Irrigation	5.8	7.8	2.0	5.4	7.1	1.7	5.3	8.3
Large Hydropower	4.4	5.7	1.3	4.1	5.0	0.9	3.6	8.4
Multicomponent	3.6	5.7	2.0	3.4	5.2	1.8	3.0	5.6
WSS	4.5	6.2	1.7	4.2	5.4	1.2	3.5	9.0
WNBR	5.3	7.0	1.8	4.9	6.5	1.6	4.2	6.2
<b>All Water</b>	<b>4.7</b>	<b>6.5</b>	<b>1.7</b>	<b>4.4</b>	<b>5.8</b>	<b>1.4</b>	<b>3.9</b>	<b>7.5</b>
<b>All Sectors</b>	<b>4.3</b>	<b>5.7</b>	<b>1.4</b>	<b>4.0</b>	<b>5.2</b>	<b>1.2</b>	<b>4.0</b>	<b>6.2</b>

WNBR = water-based natural resources, WSS = water supply and sanitation.

Source: Independent Evaluation database of completed projects.

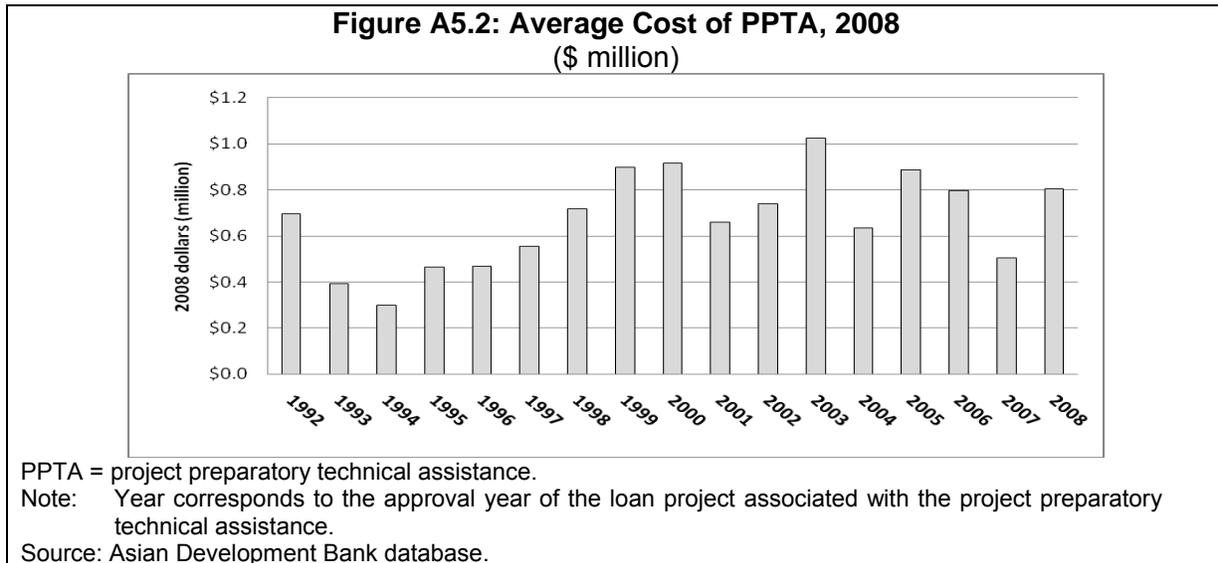
6. Loan approval to completion averaged 6.5 years in the water sector, 1.7 years longer than planned, and 0.3 year longer than the average for all sectors. Approval to effectiveness averaged 7.5 months for the water sector, almost double the planned period and 1.3 months longer than the average for all sectors for the same period. The low delays for hydropower projects are notable, and may be attributed to the fact that dam construction or augmentation is run as a managed project on a single or limited number of sites. They are thus more similar to a typical build-operate-transfer project involving private sector investment than to a typical project for irrigation, water-based natural resources (WNBR), or WSS.

## B. Technical Assistance

### 1. Project Preparatory Technical Assistance

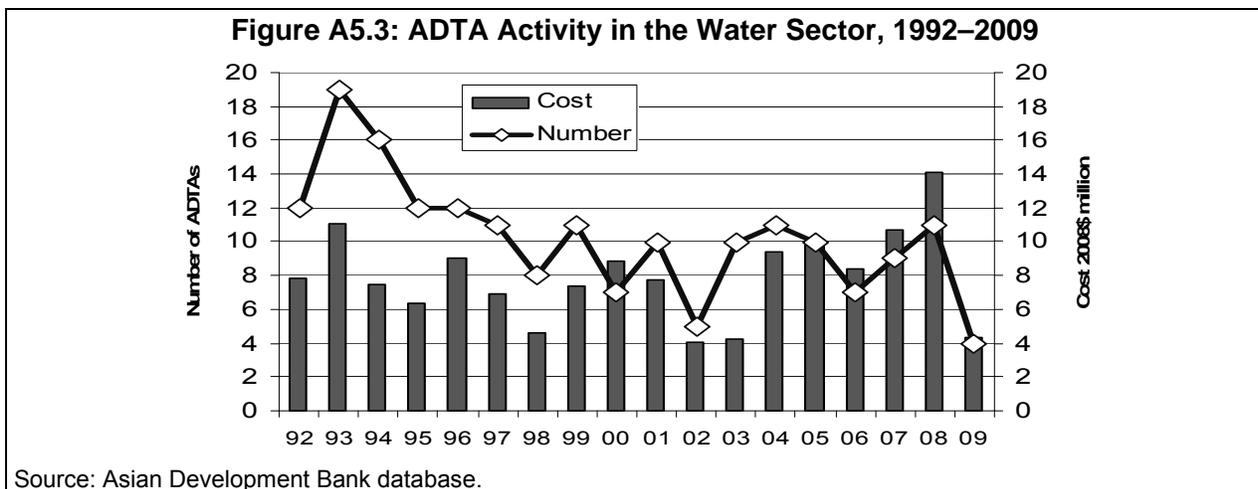
7. Loan projects are supported by PPTA as well as special-purpose TAs. The cost at 2008 prices of individual PPTAs averaged \$0.78 million over the full period or about 2% of the associated loan values. Expenditures on PPTAs varied from year to year and showed no

obvious trend over the period of analysis except for an upward trend between 1994 and 2000 (Figure A5.2).



## 2. Advisory Technical Assistance

8. The number and value of water-related ADTA declined steadily from 1993–2002, before recovering over the 2003–2008 period (Figure A5.3). On average, there were 12 ADTAs per year over the eight pre-project years, and about 8.5 for the 8 years post-project. The reason for the marked decline in 2009 is not clear. While numbers were down, the average value of the ADTAs had risen, and total (real) expenditure was higher in the latter period. The expenditure pattern mirrors the pattern seen for loan project activity in the water sector (Figure A5.1).



9. An evaluation of the treatment of water policy themes in the ADTA projects provides strong evidence that certain themes were more prominent after 2000, notably the formulation of comprehensive water policies, water sector road maps, IWRM, and river basin organization (RBO). Two cross-cutting themes—environmental and social impact assessment and poverty reduction—also became more prominent in the later period (Table A5.3).

**Table A5.3: Water Policy Themes Addressed in ADTA Projects, 1992–2009**

<b>Water Policy Theme</b>	<b>Proportion of ADTAs Addressing Water Policy Themes (% of all ADTAs)<sup>a</sup></b>		
	<b>Before 2000</b>	<b>2001 +</b>	<b>1992–2009</b>
	<b>6 *</b>	<b>17 *</b>	<b>11</b>
Water sector assessments	17	21	18
Neutral sector apex body	1	3	2
Road map, agenda, plan	<b>10 *</b>	<b>21 *</b>	<b>15</b>
Integrated water resources management (IWRM)	<b>11 *</b>	<b>41 *</b>	<b>23</b>
River basin organization (RBO)	<b>0 *</b>	<b>8 *</b>	<b>3</b>
Private sector participation (PPP)	9	4	7
Service provider autonomy/accountability (AUTONOMY)	6	11	8
New legislation (LEGISLATION)	7	12	9
Water conservation (WATERCONS)	1	4	2
Phase out subsidies (SUBSIDIES)	0	0	0
Tariff reform (TARREFORM)	9	16	12
Pollution prevention (WATERQUAL)	3	7	4
Participatory approach (PARTIC)	3	9	5
Water user association (WUA)	9	7	8
Environmental/social impact assessment	<b>2 *</b>	<b>11 *</b>	<b>5</b>
Protect terrestrial ecosystems	1	0	1
Target poverty reduction	<b>0 *</b>	<b>8 *</b>	<b>3</b>
Gender-based approach	1	0	1
Caution with large projects	0	1	1
Capacity development <sup>a</sup>	<b>40 *</b>	<b>59 *</b>	<b>48</b>

ADTA = advisory technical assistance.

<sup>a</sup> Not a specific water policy theme but a common objective of technical assistance.

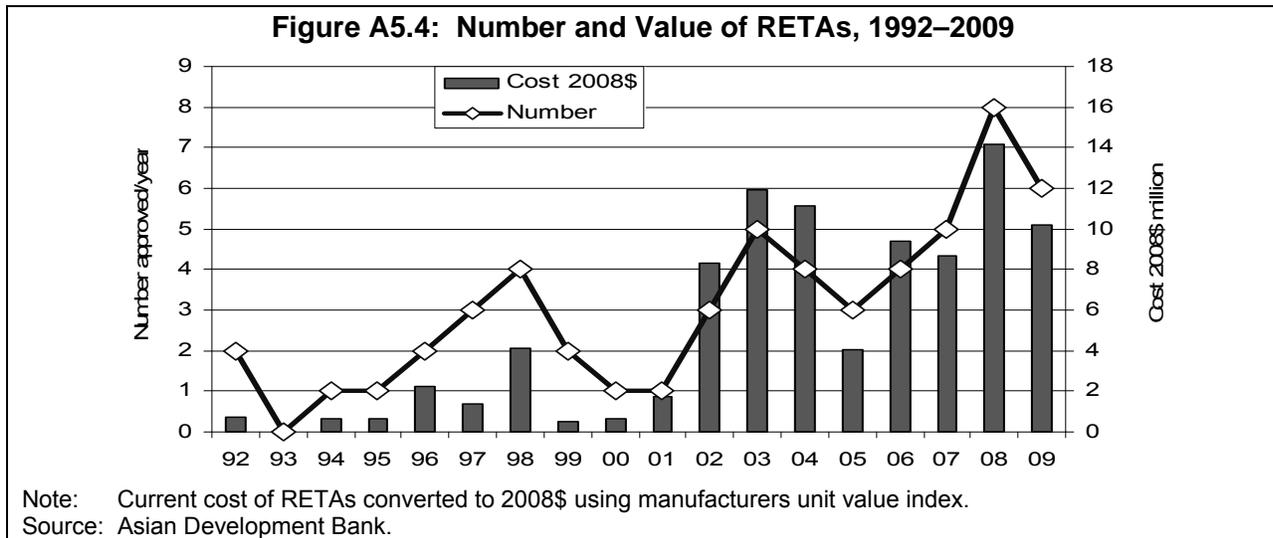
Note: Asterisks and bold letters denote a significant difference between periods (Chi square test, 95% confidence interval).

Source: Special evaluation studies calculations of the Independent Evaluation Department.

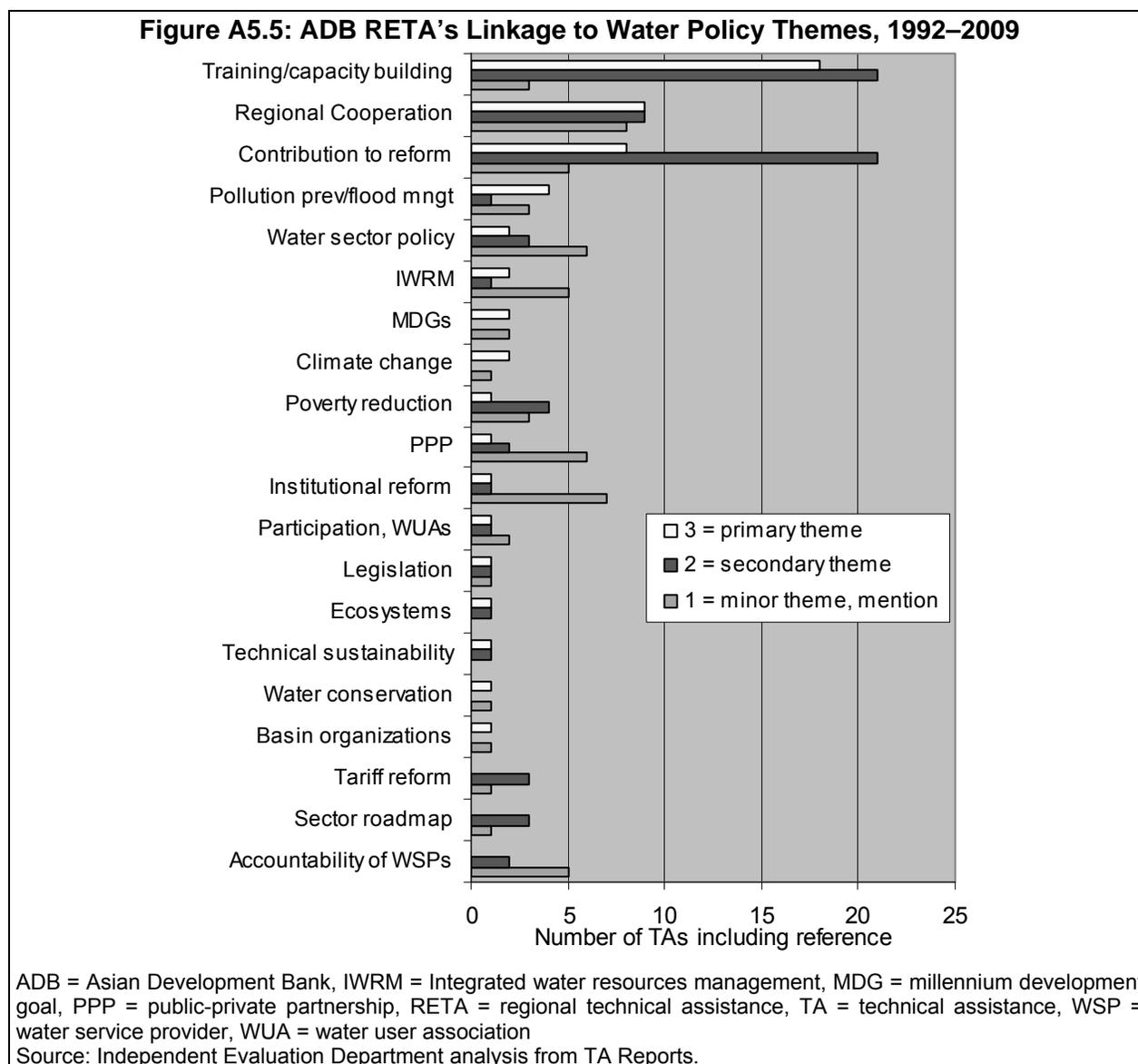
10. A majority of the ADTAs focused on capacity development and other aspects of development rather than the water policy themes. The exception is the integrated water resources management (IWRM) theme, which was addressed by 41% of the ADTAs. The focus on IWRM is reassuring since this is a cornerstone of the improved sustainability of water-related projects. However, it is difficult if not impossible to successfully apply IWRM in the absence of an enabling institutional framework. Themes that address the institutional framework, such as water policies, road maps, tariff reform, RBO and legislation do not figure as prominently in ADTAs. This implies a focus on the more technical aspects of water sector reform rather than on institutional aspects, which are equally important but, in many case, more difficult to address.

### 3. Regional Technical Assistance Projects

11. ADB funded 55 RETAs in the water sector over the period 1992–2009 at a total planned cost of \$90 million in 2008 terms, including contributions from cofinanciers. Of this total, 16 were approved before the policy was issued (1.8 per year) and 39 after (4.3 per year). The number of approved RETAs more than doubled in the later period. Average cost was \$1.4 million, with a marked increase over the period, from about \$680,000 per RETA from 1992–2000 and \$2 million from 2001 to date (Table A5.4).



12. Once again (as in the case of the lessons learned), training and capacity development were the major themes of the RETAs, followed by regional cooperation and contribution to reform (Figure A5.5). In terms of secondary themes, the three were also dominant, with contribution to reform being covered by 21 RETAs. Less frequent major themes were pollution, policy, IWRM, and Millennium Development Goals (MDGs), while the rest received little or no mention. Policy themes with very few mentions—and therefore not included in the chart—were gender, water quality monitoring, financial sustainability, apex organizations, subsidies, environmental and social impact analysis, and large projects.



#### 4. Grants

13. In total, ADB has provided 29 grants to 17 countries since 2005, with an approved value of \$397 million funded by the Asian Development Fund (ADF), Japan Fund for Poverty Reduction (JFPR), WFPF, and other external funding agencies. Of the total, 13 grants were associated with loans, and their value was aggregated with that of the loan in the present study. Of the linked loans, the Afghanistan multifinance facility Water Resources Development Investment Program-Project 1 received \$86.6 million or 43% of loan-associated grants. A further \$27.7 million was provided to Afghanistan for the Western Basins Water Resources Management Project.

14. Sixteen grants not linked to loan projects were made to 11 countries, at an approved value of \$193.6 million. Cambodia received six grants worth \$70.1 million, of which four were for grants associated with ADB's Tonle Sap program. The Lao People's Democratic Republic (Lao PDR) received two grants, amounting to \$39 million, for two WSS projects (Table A5.4).

**Table A5.4: Water Sector Grants, by DMC, 2005–2009**  
(excluding grants associated with loans)

Country						Amount	
	2005	2007	2008	2009	Total	(\$ million)	%
Afghanistan				1	1	3.3	1.5
Cambodia	3	1		1	5	60.2	28.0
Federated States of Micronesia			1		1	1.0	0.5
Kyrgyz Republic			1		1	30.0	13.9
Lao People's Democratic Republic	1			1	2	38.8	21.1
Mongolia			1		1	2.0	7.9
Nepal				1	1	45.1	21.0
Samoa			1		1	2.2	1.0
Tajikistan			1		1	3.0	1.4
Timor-Leste		1			1	6.0	2.8
Viet Nam				1	1	2.0	0.9
<b>Total Number</b>	<b>4</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>16</b>	<b>193.6</b>	<b>100.0</b>

Source: Asian Development Bank.

## 5. Summary of Total Program

15. Table A5.5 summarizes the total assistance in the water sector over the period 1992–2009. However, both RETAs and ADTAs reflect the total amount for the technical assistance grants (TAs), i.e., including in some cases contributions by cofinanciers. Loan costs include follow-on loans and PPTA costs. Overall, loans represent 95% of total ADB assistance over the period, with non-sovereign loans and TAs each representing around 1%. Grants received 2% of total ADB assistance. Both grants and nonsovereign lending began only in the second half of the analysis period. In total, assistance over the period 1992–2000 averaged \$859 million annually. For 2001–2009, average assistance rose by 23% to \$1.06 million per year.

**Table A5.5: Total Assistance to the Water Sector, 1992–2009**  
(\$ million)

Year	Loans	Grants	PPTAs	Nonsovereign	RETAs	ADTAs	Total
1992	310.5		5.3		0.6	6.9	323.3
1993	1,241.2		5.5		-	9.7	1,256.4
1994	475.1		1.5		0.6	6.8	484.0
1995	1,266.5		7.0		0.6	6.1	1,280.2
1996	1,150.2		8.3		2.1	8.3	1,168.9
1997	1,029.4		8.1		1.2	5.9	1,044.6
1998	730.4		5.4		3.4	3.8	743.0
1999	551.0		3.9	27.0	0.4	6.0	588.3
2000	797.0		7.0	31.0	0.5	7.0	842.5
2001	236.0		3.7		1.3	6.0	247.0
2002	666.6		7.0		6.4	3.1	683.1
2003	1,004.4		15.3		9.9	3.5	1,033.1
2004	488.7		4.7		9.8	8.3	511.5
2005	1,150.4	74.7	13.8		3.6	8.7	1,251.2
2006	1,088.8	13.2	8.4		8.4	7.5	1,126.3
2007	949.0	26.4	6.8	54.0	8.1	10.1	1,054.4
2008	1,435.0	80.8	13.7		14.1	14.1	1,557.7
2009	1,725.5	202.3		100.0	9.7	4.1	2,041.6
<b>Total</b>	<b>16,295.8</b>	<b>397.4</b>	<b>125.4</b>	<b>212.0</b>	<b>80.7</b>	<b>125.9</b>	<b>17,237.2</b>
<b>Average</b>	<b>905.3</b>	<b>22.1</b>	<b>7.0</b>	<b>11.8</b>	<b>4.5</b>	<b>7.0</b>	<b>957.6</b>
<b>Percentage</b>	<b>94.54</b>	<b>2.31</b>	<b>0.73</b>	<b>1.23</b>	<b>0.47</b>	<b>0.73</b>	

- = not applicable, ADB = Asian Development Bank, ADTA = advisory technical assistance, PPTA = project preparatory technical assistance, RETA = regional technical assistance.

Source: Asian Development Bank database.

## C. Water Sector Operations

### 1. Time Schedules and Implementation Targets

16. The analysis of ADB resource allocations for implementing the water policy indicates that implementation got off to a slow start. This could indicate a failure to develop an adequately resourced implementation plan; however, it must be recognized that new initiatives often take considerable time to implement within large bureaucracies. Consider the CFWS; it was set up by the Board in December 2001 and was charged with multiple tasks including raising water awareness, setting up a knowledge base and pilot projects, forging partnerships, organizing regional events, and developing and implementing coordination and monitoring mechanisms.<sup>1</sup> Any single element in this agenda could easily require 2 or 3 years to implement. It is not surprising therefore that the earliest Water Briefs published under the program appeared only in 2003, also the year of the first of a series of national media workshops promoting understanding of water issues among media representatives. The first of a series of RETAs under the CFWS started in 2002 but most came after 2003.

17. Increasing operational activity relating to the water policy objectives appears to have begun in 2003 in light of the rapid increase in loan approvals starting in 2005 and allowing for a gestation period of 18 to 24 months for preparing loan projects.

18. Further action under the water policy was taken after the 2005 review. The Water Financing Program (WFP) was established in 2006 based on analysis summarized in a background paper.<sup>2</sup> The WFP was to be supported by a new WFPF established in December 2006.<sup>3</sup> The WFP aimed to double its investments in the water sector between 2006 and 2010. The background paper<sup>4</sup> identified its targets: (i) deliver access to safe drinking water and improved sanitation to 200 million people, (ii) reduce flood risks to 100 million people, (iii) provide more efficient irrigation and drainage services to 40 million people, (iv) introduce integrated water resources management in 25 river basins, and (v) improve water governance through national water reforms and capacity development.

19. A footnote to the targets indicated that “Further analysis will finalize the outcome targets for WFP. By adopting a longer-term partnership approach and building on proven models of success, there is an expectation that the ratio of people benefited to investment amount will increase.” A review of the background paper indicates that the targets were set in broad terms and were aspirational rather than practical. For example, no analysis appears to have been done of the average cost per beneficiary in each subsector over the preceding period (as is now undertaken by WFP for all projects since 2006). The intention was to develop specific targets for each relevant developing member country (DMC), but (as far as is known) this has not happened.

<sup>1</sup> Available: <http://www.adb.org/Water/CFWS/Program.asp>

<sup>2</sup> ADB. 2006. *Water for All: The 2nd Five Years. ADB's Water Financing Program 2006-2010. Background Paper*. Manila.

<sup>3</sup> WFPF activities include (i) providing specialist expertise within PPTA projects or, in advance of a PPTA, special studies, assistance in completing sector assessments and road maps; (ii) training workshops within ADB; and (iii) development of tools for ADB staff (e.g., water market assessment tool), international water symposia, and national-level policy dialogues with government staff (e.g., Viet Nam). To date, confirmed commitments to the fund amount to \$43 million, a shortfall in the original target of \$100 million.

<sup>4</sup> ADB. 2006. *Water for All: The 2nd Five Years, ADB's Water Financing Program 2006-2010*, Background Paper, Manila (10 August).

## 2. Knowledge Products for Implementation

20. The Water Community of Practice (CoP) has a central role in the development and dissemination of knowledge products within ADB.<sup>5</sup>

21. Its activities and outputs include:

- (i) Water CoP Catchment Series (monthly events);
- (ii) CoP “streams,” meetings, and seminars;
- (iii) water and sanitation conferences and dialogues;
- (iv) international water events;
- (v) water articles by ADB experts; and
- (vi) books, briefs and brochures, media resources, and papers.

22. A review of the Water CoP in 2009 was generally positive.<sup>6</sup> Members of this CoP claim to derive greatest value from ‘practical’ aspects of the CoP work, especially opportunities to “identify, create, store, share, and use knowledge and to showcase good practices.” The periodic bluebag sessions are important in this respect but ironically, are least accessible to regional staff and staff involved in loan processing due to time and workload constraints.

23. The strong interest in practical knowledge products is all the more significant since it is this aspect of Water CoP efforts that come under criticism. Operational department staff expressed an interest in more detailed and practical topics of immediate relevance to the processing of loan projects, including resources that can be used in day-to-day work. Many good products of this sort have been produced, for instance in the area of sanitation; more are needed.

### D. Water Sector Projects and the Policy

24. This section addresses quality at entry of ADB loan projects. A basic description of the water portfolio is presented followed by an assessment of the extent to which elements of the water policy are incorporated into project planning and design. The section closes with a discussion of factors influencing the uptake of water policy themes at the planning and design stage.

#### 1. ADB’s Water Portfolio

25. Over the period 1992–2009, ADB funded about 207 loan projects in its water portfolio at a cost of \$20.2 billion (\$18.6 billion at 2008 prices). Of ADB’s 40 DMCs, 31 borrowed for water sector projects while nine countries had no water sector loans over the period. The breakdown of projects by country and sector is in Table A5.6. Overall, the projects are evenly distributed across periods preceding and following 2001 when ADB’s water policy was issued.

26. The People’s Republic of China (PRC) and India received the largest loans in the water portfolio followed by Pakistan and Viet Nam. Pakistan has been active in the portfolio over the full period back to 1992 while PRC, India, and Viet Nam have become much more active since 2001. Of the 30 countries represented in the portfolio, nine have only been active since the release of the water policy, including four in Central and West Asia. Conversely, six countries, including four in the Pacific region, have not received any loans since the issue of the water

<sup>5</sup> Many joint activities were organized over the past years with environment, urban, agriculture, governance, health and other CoPs.

<sup>6</sup> ADB. 2007. *Water Community of Practice Review*. Manila.

policy. Pacific region states clearly have significant water management issues including scarcity and contamination, and so it is not clear why water portfolio lending activity in the region is so low (Figure A5.6).

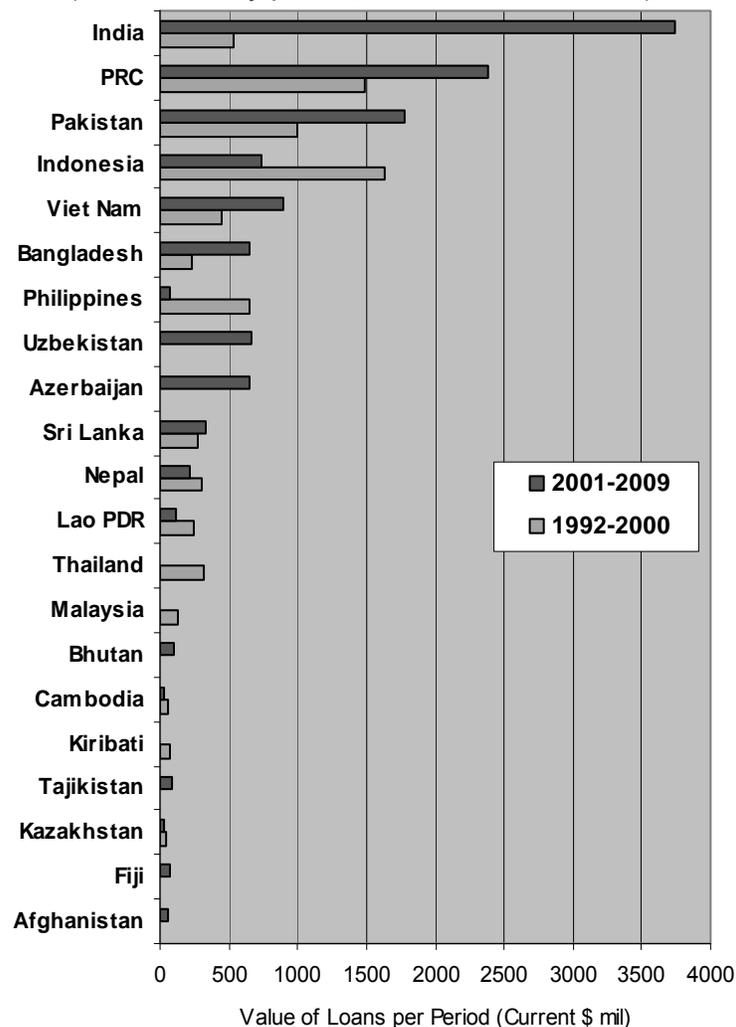
**Table A5.6: Total Value of Project Loans, by Country, 2009**  
(\$ million)

Country	By Period		By Type of Loan			Total
	Pre-2001	After 2001	Multitranche	Project	Sector	
<b>CWRD</b>						
Afghanistan		65		65		65
Armenia		39			39	39
Azerbaijan		60		60		60
Georgia		40		40		40
Kazakhstan	28	36		28	36	64
Kyrgyz Republic	67			34	33	67
Pakistan	520	1,814	1,215	599	521	2,335
Tajikistan		79		79		79
Uzbekistan		305		184	121	305
<b>EARD</b>						
Mongolia	11	33		43		43
People's Republic of China	2,099	2,521	50	4,084	487	4,620
<b>PARD</b>						
Federated States of Micronesia	11	18		29		29
Fiji Islands		50			50	50
Kiribati	10			10		10
Marshall Islands	11			11		11
Papua New Guinea	30			30		30
Samoa		19		19		19
Vanuatu	11			11		11
<b>SARD</b>						
Bangladesh	249	496		353	392	745
Bhutan	7	107		113		113
India	975	3,171	2,272	1,364	511	4,147
Maldives		6		6		6
Nepal	495	110		395	209	604
Sri Lanka	354	301		419	236	655
<b>SERD</b>						
Cambodia	65	34		77	22	99
Indonesia	2,089	818	500	774	1,634	2,908
Lao PDR	273	134		231	176	407
Malaysia	165			29	136	165
Philippines	769	78	207	425	215	847
Thailand	333			333		333
Viet Nam	629	910		1,082	457	1,539
<b>Total</b>	<b>9,201</b>	<b>11,242</b>	<b>4,243</b>	<b>10,924</b>	<b>5,276</b>	<b>20,443</b>

CWRD = Central and West Asia Department, EARD = East Asia Department, Lao PDR = Lao People's Democratic Republic, PARD = Pacific Department, SARD = South Asia Department, SERD = Southeast Asia Department.

Source: Asian Development Bank database.

**Figure A5.6: Total Value of Project Loans by Country**  
(1992–2009 by period, current dollars million)



Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.  
Source: Asian Development Bank database.

**Table A5.7: Total Value of Project Loans, by Subsector and Country, 2009**  
(\$ million)

Country				Water-Based		Total
	Large Hydropower	Irrigation	Multicomponent	Natural Resources	Water Supply and Sanitation	
<b>CWRD</b>						
Afghanistan				65		65
Armenia					39	39
Azerbaijan				27	33	60
Georgia			40			40
Kazakhstan		28			36	64
Kyrgyz Republic		34			33	67
Pakistan	204	1,075	351	184	520	2,335
Tajikistan		54		24		79
Uzbekistan		208			97	305

<b>EARD</b>						
Mongolia			33		11	43
People's Republic of China	973		365	797	2,486	4,620
<b>PARD</b>						
Federated States of Micronesia					29	29
Fiji Islands					50	50
Kiribati					10	10
Marshall Islands					11	11
Papua New Guinea					30	30
Samoa	6				13	19
Vanuatu			11			11
<b>SARD</b>						
Bangladesh		73	225	189	258	745
Bhutan	80		27	7		113
India	1,088	51	2,082	319	606	4,147
Maldives			6			6
Nepal	176	115	39		274	604
Sri Lanka			180	91	384	655
<b>SERD</b>						
Cambodia		53	20		26	99
Indonesia	311	456	1,013	778	349	2,908
Lao PDR	230	30	77	22	49	407
Malaysia				29	136	165
Philippines		259	307	33	248	847
Thailand					333	333
Viet Nam	196	235	177	608	322	1,539
<b>Total</b>	<b>3,264</b>	<b>2,672</b>	<b>4,953</b>	<b>3,173</b>	<b>6,382</b>	<b>20,443</b>

CWRD = Central and West Asia Department, EARD = East Asia Department, Lao PDR = Lao People's Democratic Republic, PARD = Pacific Department, SARD = South Asia Department, SERD = Southeast Asia Department.  
Source: Asian Development Bank database.

27. Multitranches financing facility (MFF) loans are larger; this outcome is consistent with the intent of the MFF modality. There are regional disparities in the size of loans, with loans in regions with a predominance of small and poorer countries being smaller. This outcome reflects the more limited borrowing capacity of these countries and the smaller scale of their projects. Loans funded through ADF are smaller.

**Table A5.8: Summary of Project Loans, 2009**  
(\$ million)

Loan Summaries	Total Loan		Total Water Portion		Number of Projects
	Sum	Average	Sum	Average	
<b>By Region</b>					
Central and West Asia	3,051	80	2,875	76	38
East Asia	4,664	137	4,463	131	34
Pacific	159	16	152	15	10
South Asia	6,271	118	5,028	95	53
Southeast Asia	6,298	87	5,553	77	72
<b>By Type of Loan</b>					
Multitranches	4,218	386	3,701	336	11
Project	9,507	82	9,876	74	134
Sector	4,635	85	4,495	72	62
<b>By Sector</b>					
Large hydro power	3,264	192	3,264	192	17
Multicomponent	2,672	79	2,672	79	34
Water-based natural resources	4,953	110	2,581	57	45
Water supply and sanitation	3,173	88	3,173	88	36
<b>All Projects</b>	<b>20,443</b>	<b>99</b>	<b>18,071</b>	<b>87</b>	<b>207</b>

Source: Asian Development Bank database.

28. Considering all projects, significant improvements in project design were made after 2001 with respect to IWRM, public-private partnerships (PPPs), autonomy of service providers, pollution prevention, and public participation. The improvements can be attributed to an increasing awareness of water issues engendered by the 2001 water policy and related initiatives.

## 2. Factors Influencing Integration of the Water Policy into Loan Projects

29. The discussion in the previous section suggests that there was a significant improvement in loan project design with respect to certain elements of water management after the release of the water policy. Further analysis looked at underlying factors to discover insights into the process of incorporating the water policy in loan projects.

30. Project ratings by sector, region, and loan type are reported in Table A5.9. This breakdown reveals little systematic variation in ratings. The only notable exception involves ratings for hydropower projects—ratings of *good* and *excellent* are less frequent compared with ratings in other sectors. This might be expected since the design of hydropower projects will focus on power and not water resources management. It is notable in this regard that there is no mention of IWRM in the report and recommendation of the President (RRP) for six of the eight projects in the hydropower category.

**Table A5.9: Assessment of Loan Projects Incorporating Water Policy Criteria**

Item	Rated Excellent (%)	Rated Good (%)	Rated Weak (%)	Rated Poor (%)	Number of Projects
<b>Period</b>					
1992 to 2000	37.5	15.4	23.7	23.3	106
2001 to 2009	46.2	17.1	19.3	17.4	101
<b>Type of Loan</b>					
Multitranche	48.8	8.5	26.8	15.9	11
Project loan	41.8	15.6	21.7	20.9	134
Sector loan	41.1	19.3	20.0	19.7	62
<b>Sector</b>					
Large Hydropower	29.6	14.8	26.1	29.6	17
Irrigation and drainage	34.0	17.4	23.7	24.9	34
Multicomponent	38.0	12.5	24.1	25.5	45
Water-based natural resources	51.3	19.6	13.8	15.4	36
Water supply and sanitation	46.4	17.1	21.3	15.3	75
<b>Region</b>					
Central West Asia	39.3	22.4	19.9	18.4	38
East Asia	46.7	19.9	18.0	15.3	34
Pacific	44.9	17.9	21.8	15.4	10
South Asia	42.4	16.5	24.1	17.0	53
Southeast Asia	40.1	10.8	22.1	27.0	72
<b>All Projects</b>	<b>42.0</b>	<b>16.3</b>	<b>21.5</b>	<b>20.3</b>	<b>207</b>

Source: Asian Development Bank database.

## PRIVATE SECTOR INVESTMENT IN WATER

1. The main objectives of this appendix are to (i) assess how private sector operations (PSO) have responded to the seven elements of the 2001 water policy of the Asian Development Bank (ADB) and their implementation, (ii) assess ADB's performance in promoting public-private partnerships (PPPs), private sector investment (PSI) in the water sector and likely contribution toward the targets for private sector participation (PSP) as set out in ADB's Strategy 2020,<sup>1</sup> and (iii) identify key impediments to PSP in the water sector, and future prospects.

### A. Private Sector Investment Globally

2. In the 1990s, PPP and PSI were seen as key solutions to the worsening water crisis. It was hoped that private investment and skills would (i) contribute to filling the capital gap between the demand for services and their supply, (ii) improve utility management and operation, and (iii) insulate utilities from undue political dependency and interference. International water companies, particularly from the United Kingdom and France, were granted concessions. Some were highly successful, others were controversial and failed.

3. In Manila, Philippines, concessions were granted to two companies in 1992. One of them, Manila Water Company, is an international success story, greatly expanding coverage and reducing nonrevenue water from over 50% to 10% by introducing modern management systems and delegating responsibility to area managers. The other company (with part-ownership by a French water company and partly financed by ADB) was badly hurt by the 1997 Asian financial crisis and ultimately went bankrupt in 2004. It is now operating successfully following refinancing. The success of Manila Water Company highlights the role that strong, committed, and consistent management can play in private as well as public water utilities.

4. Although issues relating to tariffs, governance, political interference, and capped returns have limited some western water companies' enthusiasm for investing in the developing world, PSI has continued to expand since the boom years of the 1990s, at least in the number of projects although their average size is now smaller. The World Bank's Private Participation in Infrastructure Project Database has data on more than 4,300 infrastructure projects implemented in 137 low- and middle-income countries since 1984.<sup>2</sup> The database is the leading source of PSI trends in the developing world, and covers projects in the energy, telecommunications, transport, and water and sewerage sectors. Figure A6.1 summarizes private participation in public infrastructure in the water sector.

5. Key findings from the charts are as follows.

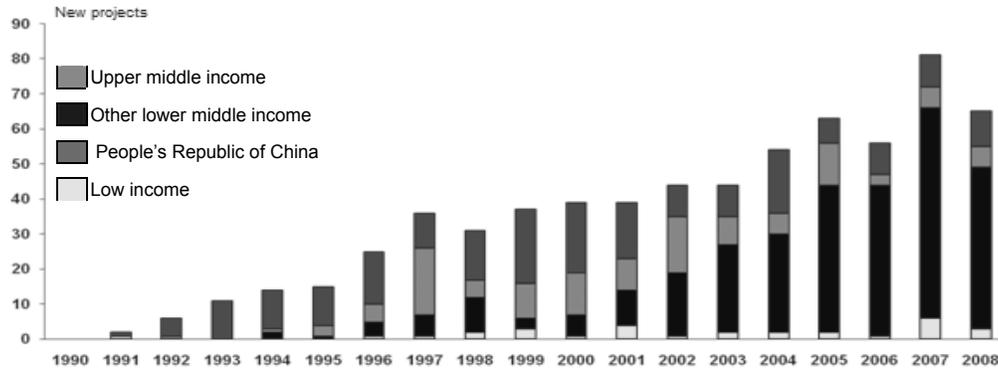
- (i) PSI in the water sector grew steadily since 1990, but with significant downturns following the Asian financial crisis in 1997 and the global crisis of 2008–2009. The number of projects further declined by 46% in 2009, but renewed growth is expected in 2010.
- (ii) Around 75% of global PSI in recent years went to the People's Republic of China (PRC), up from around 10% in 2000. In 2008, 25 of the 46 plants in the PRC were fully funded by Chinese companies and three were partly funded. The Chinese plants averaged a capacity of 67,000 cubic meters per day (m<sup>3</sup>/day)

<sup>1</sup> ADB. 2008. *The Long-Term Strategic Framework of the Asian Development Bank 2008-2020*. Manila (Strategy 2020, approved in April 2008).

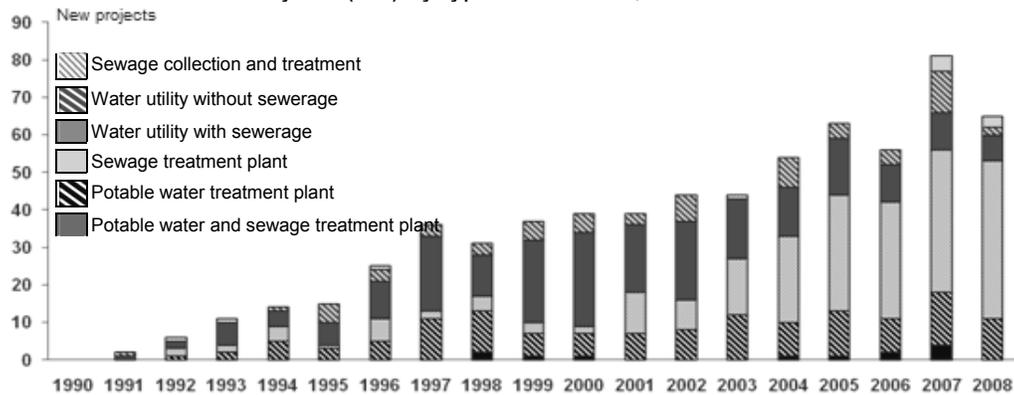
<sup>2</sup> Available: <http://ppi.worldbank.org/>

- and cost \$21 million.<sup>3</sup> Most PRC plants were build-operate-transfer (BOT) processing plants under “take or pay” contracts.
- (iii) Although only 19 plants were built elsewhere with full or substantial PSI (notably in Brazil and Algeria), they were substantially larger, with investment averaging \$135 million.
  - (iv) Sewage treatment had been the dominant subsector since 2004. In 2008, it accounted for around 60% of total investment, up from a low level in 2000.

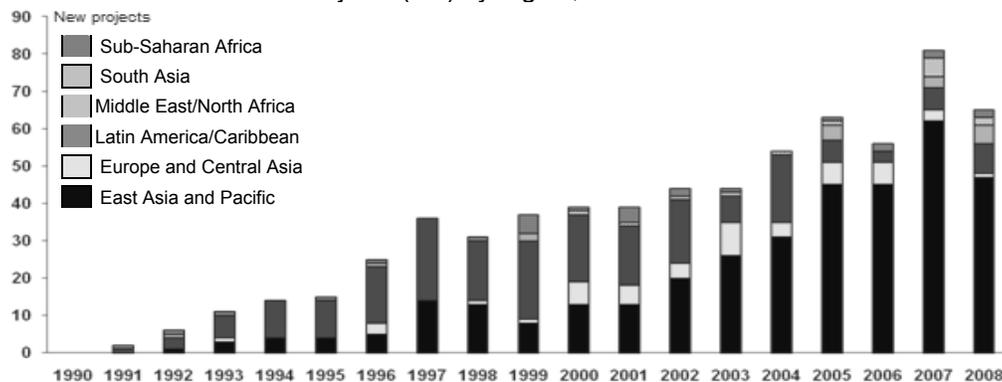
**Figure A6.1: Water Projects with Private Participation in Developing Countries**  
 Projects (no.) by country income group, 1990–2008



Projects (no.) by type of business, 1990–2008



Projects (no.) by region, 1990–2008



no. = number.

Source: World Bank and Public-Private Infrastructure Advisory Facility, Private Infrastructure Project Database.

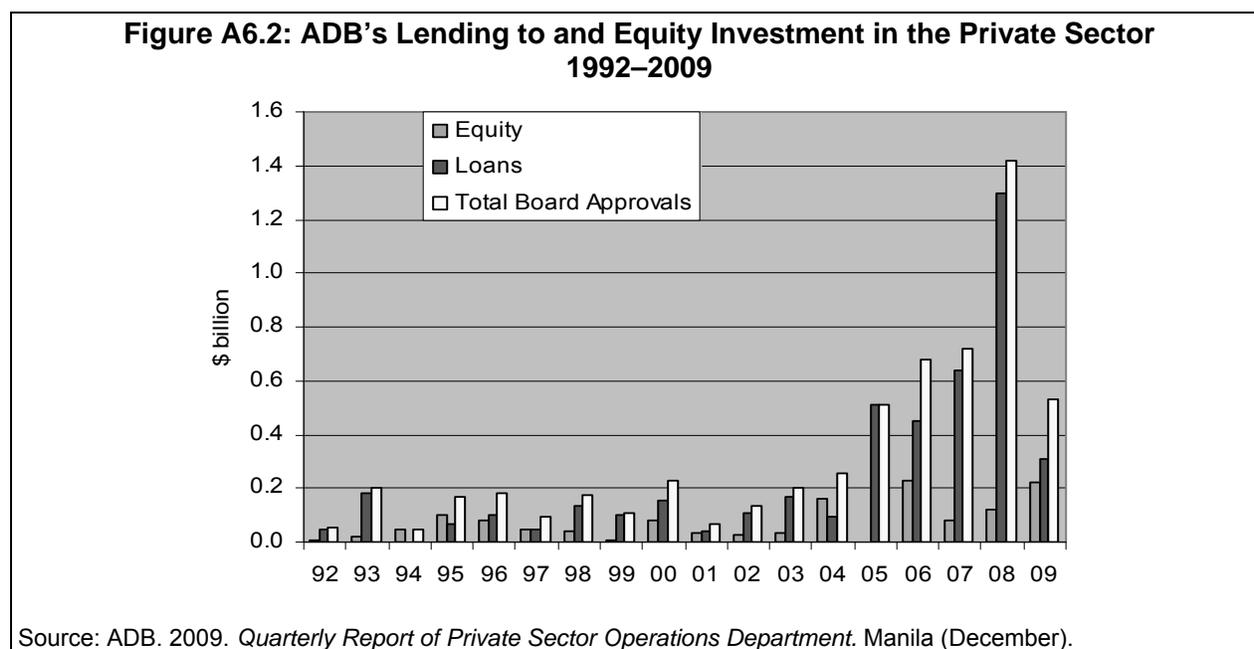
<sup>3</sup> World Bank and PPIAF, PPI Project Database update note 23.

## B. PPP in ADB

6. ADB has a strong commitment to working with the private sector, which it sees as the engine of growth for Asia, a view shared by governments of most developing member countries (DMCs). ADB's Strategy 2020 indicates that private sector development and private sector operations will be one of five drivers of change, and recommends the scaling up of private sector activities to reach 50% of ADB's annual operations by 2020. Strategy 2020 indicates that ADB will

- (i) expand its work with the private sector to generate greater economic growth in the Asia and Pacific region;
- (ii) assume greater risks and act as a catalyst for investments that the private sector might not otherwise be willing to make;
- (iii) do more to help DMCs attract direct private sector investments that support inclusive growth and improve the environment;
- (iv) invest in infrastructure and advise governments on the basics of a business-friendly environment, including reliable rules, regulations, and policies that do not disadvantage private sector enterprise;
- (v) promote PPPs in all of its core operational areas, gaining experience first in the middle-income countries, and then expanding these efforts to all DMCs;
- (vi) emphasize PPPs and private sector engagement in infrastructure operations; and
- (vii) promote a larger role for the private sector in financing infrastructure, as either a project sponsor or an institutional bond or equity investor.

7. Within ADB, the Private Sector Operations Department (PSOD) is responsible for PSI, lending funds to, and investing in private companies. From a low base in 2004, the volume of lending increased rapidly to 2008 before declining again in 2009 (Figure A6.2).



8. While a substantial number of ADB projects have involved private sector activity linked to public sector loans, ADB has done little to date to directly finance PSI in water. Since 1992 there have been six private sector loans, with a total value of \$280 million. Private sector

lending to the water sector has increased substantially after the water policy was released and particularly since the issue of the long-term strategic framework (LTSF), but it remains limited. It represents only 3% of total private sector lending through PSOD, which totaled \$5.4 billion for the period 1992–2009. Most of the lending over the period was to energy (53%), financial institutions (30%), transport and information and communication technology (ICT) (12%).

9. The Independent Evaluation Department (IED) undertook a special evaluation study (SES) of PPP in the infrastructure sector in 2008,<sup>4</sup> which included a supplementary appendix on the water sector. This thematic study draws on that work. The SES defined PPP as “a subset of private sector participation (PSP) and includes all modalities that assume some form of partnership and/or contractual relationship between the public sector and private entities with the aim of delivering a public service, such as service and management contracts; leases; build-operate-transfer (BOT) projects and other forms of concessions; and joint ventures.” The report also provides a useful summary of the history of PPP in the Asia and Pacific region:

“After a surge in private foreign investment in the power and ports sectors under BOT type modalities before the Asian financial crisis, investment volumes fell substantially in the aftermath of the crisis, which highlighted deficiencies in utilized PPP approaches and reduced DMC demand. Also, interest declined on the part of foreign project developers and financiers, who saw many earlier contracts renegotiated or cancelled. With economic recovery after the Asian financial crisis, there has been renewed interest in PSP to meet increasing infrastructure investment needs. Furthermore, PPP modalities have evolved since the 1990s. There is an increased use of PPP schemes that involve fiscal support to facilitate PSP in water and road projects, which have had problems attracting private investment due to difficulties associated with predicting demand and charging cost-reflective tariffs. More attention is also being given to PPP modalities that encourage efficiency improvements, although the mobilization of private investment funds continues to be the prime objective for PPPs of many DMCs.” (ADB 2009, footnote 4).

10. Many loans from regional departments involve or are intended to involve PPP, but information is not readily available on the extent to which it is adopted in practice. In some cases, the intention is not realized due to the inability of the government to identify an appropriate private partner, as in the case of the Melamchi project in Nepal. ADB 2009 (footnote 4) concluded that

“ADB support for PPP has not substantially increased actual PPP transactions in most DMCs for a number of reasons, e.g., unaddressed deficiencies in the country’s overall investment environment, lack of DMC institutional capacity, and the long time frame required for implementing underlying infrastructure and public sector reforms. While PSOD projects have performed to a satisfactory level, their impact on the creation of further PPP projects has been limited in DMCs that did not institutionalize demonstrated best practices.”

## **C. Achievements in the Water Sector**

### **1. Loan Projects**

11. PPP is strong in the water sector, with urban water and sanitation projects in particular often being best implemented using a PPP approach. In this SES, projects were classified on a four-level scale: 1 = mention, 2 = minor involvement of PPP, 3 = significant PPP involvement, and 4 = PPP integral to project. Table A6.1 lists the number of projects planned to be operated

<sup>4</sup> ADB. 2009. *Special Evaluation Study on ADB Assistance for Public-Private Partnerships in Infrastructure Development—Potential for More Success*. Manila.

with PPP activities, based on the project scope defined in the report and recommendation of the President (RRP).

**Table A6.1: Extent of PPP in Water Sector Projects, by Country, 1992–2008**

Country	Significant (Level 3)	Integral (Level 4)	Total (Level 3+4)	All Projects	PPP (%)
China, People's Republic of	5	4	9	32	28
Pakistan	5		5	19	26
Nepal	3	2	5	12	42
Indonesia		4	4	21	19
India		3	3	14	21
Sri Lanka	2	1	3	10	30
Lao People's Democratic Republic	1	2	3	13	23
Philippines		2	2	13	15
Bangladesh	1		1	13	8
Uzbekistan		1	1	7	14
Bhutan		1	1	3	33
Tajikistan	1		1	3	33
Mongolia	1		1	2	50
Federated States of Micronesia	1		1	2	50
Kyrgyz Republic	1		1	2	50
Maldives		1	1	2	50
Georgia		1	1	2	50
Samoa	1		1	1	100
Other countries	1	0	1	37	3
<b>Total PPP</b>	<b>22</b>	<b>22</b>	<b>44</b>	<b>207</b>	<b>21</b>

PPP = public-private partnership.

Source: Independent Evaluation Department analysis on SES water policy.

12. PPP and PSI have featured strongly in ADB's water sector project designs, with 44 out of 207 projects (21%) ranking high or moderate with respect to planned application of PPP. Of the 44, half included major involvement—with PRC and Indonesia leading the way with four projects, followed by India and Sri Lanka each with three projects. Table A6.2 shows the 22 projects with strong PPP linkages.

**Table A6.2: ADB Water Sector Projects with Strong Private Sector Links, 1992–2008**

Loan Number	Country	Project	Year	PPP Activity
<b>1. Water Supply and Sanitation</b>				
1379	PHI	Umiray-Angat Transbasin	1995	BOT and private sector Leak control
1575	SRI	Third Water Supply and Sanitation Sector Project	1997	Policy reforms will introduce sewerage tariff, water supply tariff policy, regulatory authority, and PPP in the management of Greater Colombo water supply and sewerage. PPP was not achieved but is planned for a future project.
1820	NEP	Melamchi Water Supply Project	2000	Institutional reforms included establishing a regulatory body, setting up an authority for water resource management and establishing groundwater licensing. A private operator would provide operation and maintenance of the project facilities through a 10-year lease contract.

Loan Number	Country	Project	Year	PPP Activity
2058	NEP	Kathmandu Valley Water Services Sector Development Project	2003	The tendering reached the contract signing stage but was abruptly cancelled by the client.
2026	SAM	Sanitation And Drainage Project	2003	Promotes PSP in provision of urban services by outsourcing a number of utility services to the private sector, and advances private sector development by providing improved infrastructure and business environment.
2237	PRC	Shandong Hai River Pollution Control Project	2006	PSP to be attempted for waste water and solid waste management in some counties, and in pollution control activities
2297	PRC	Nanjing Qinhuai River Environ-mental Improvement Project	2006	Improving service efficiency through increased competition and PSP, including wastewater. Intended to be replicated
2312	IND	MFF-North Karnataka Urban Sector Investment Program	2007	Introduce PSP in selected subsectors in selected urban local bodies
2466	UZB	Surkhandarya Water Supply and Sanitation Project	2008	Prepare a PPP framework together with the sector strategy to enable the Government to promote private sector involvement in the sector more effectively
2487	PRC	Songhua River Basin Water Pollution Control and Management	2008	Project catalyzes both government and private investments aimed at reducing pollution and address the large wastewater treatment funding needs of Heilongjiang Province
7262	INO	West Jakarta Water Supply Development Project	2007	Fund a portion of PALYJA's capital expenditure program for the third 5-year period of the concession 2008-2012
<b>2. Water-Based Natural Resources</b>				
1500	MAL	Klang River Basin Environmental Improvement and Flood Mitigation	1996	Integrating ongoing private and public sector programs for environmental improvement and flood mitigation
2176	PRC	Fuzhou Environmental Improvement Project	2005	Assist the Government's efforts to promote PPPs in the development of public utilities
<b>3. Large Hydropower</b>				
1329	LAO	Theun-Hinboun Hydropower	1994	Government to form a joint venture company with private sector for financing, construction and operation of power plant.
2162	LAO	GMS Nam Theun 2 Hydroelectric Project	2005	Developed by a private company owned by three foreign firms (75%), and the Government (25%). Project is BOOT, with a concession period of 31 years
2461	IND	MFF - Himachal Pradesh Clean Energy Development Investment Program	2008	PS expected to contribute around 40% of total capital needs of power sector (\$7 billion). Promote PSP and PPP through knowledge transfer to promote joint ventures with PS in hydropower development
2463	BHU	Green Power Development Project	2008	Hydropower development promoted by a joint venture company between two private companies through PPP

BHU = Bhutan, BOOT = build-own-operate-transfer, BOT = build-operate-transfer, IND = India, INO = Indonesia, LAO = Lao People's Democratic Republic, MAL = Malaysia, MFF = multitranché financing facility, NEP = Nepal, PHI = Philippines, PS = private sector, PSI = private sector investment, PPP = public-private partnership, PRC = People's Republic of China, PSP = private sector participation, SAM = Samoa, SRI = Sri Lanka, UZB = Uzbekistan.

Source: Asian Development Bank databases.

13. Of the 22 loans, nine antedate the water policy, and 13 from 2003 onward. There is thus increasing weight on the private sector in the program, although in many cases, the projects do not directly address PSI. In some countries, ADB is leading the push to PPP and PSI, but not always bringing local institutions along at the same rate, since some support activities have not achieved their targets, for example Loans 1820 and 2058 in Nepal.

## 2. ADB Technical Assistance

14. Surprisingly, only six advisory TAs (ADTAs) have provided support to the private sector or to the government in supporting the private sector. Only one of them antedates the policy, suggesting stronger, if still limited, support for PSI after the policy. Few regional TAs (RETAs) have significant linkage to PSI (Table A6.3).

**Table A6.3: ADTAs with Private Sector Links, 1992–2008**

Loan No.	Country	Project Name	Approved	Private Sector-Related Activities
2773	PRC	Water Supply Tariff Study	1997	Formulates recommendations on legal and institutional arrangements that would promote private sector participation in the water supply.
3761	INO	Regulatory Framework for Private and Public Water Supply and Wastewater Enterprises	2001	Promotes good governance in the water supply and wastewater sector and create enabling conditions for PSP. TA was rated partly successful due to limited effectiveness and sustainability
4967	PRC	Policy Study on Market-Based Instruments for Water Pollution Control	2007	Reviews experience in mobilizing PSI for constructing and operating public utilities, particularly in the area of wastewater management. Recommends further strengthening of PPP through the proposed market-based instrument and mechanisms for controlling water pollution.
4997	NEP	Promoting Private Sector Participation in the Power Sector	2007	PSP policy framework, and the requirements for successful implementation of PSI. Develops methodology for environmental impact assessment of private sector hydropower projects.
7007	NEP	Supporting Capacity Development for Water Services Operations and PPP	2007	Explores opportunities to contract out services to the private sector
7219	PRC	Enabling the Protection of Jiaozhou Bay Water Quality and Wetland Ecosystem	2008	Supports the establishment of a wastewater treatment plant with private sector involvement for an additional 50,000 cubic meters per day

INO = Indonesia, NEP = Nepal, No. = number, PRC = People's Republic of China, PSI = private sector investment, PPP = public-private partnership, PSP = private sector participation, TA = technical assistance.

Source: Asian Development Bank.

## 3. Private Sector Lending

15. While a substantial number of ADB projects have involved private sector activity linked to public sector loans, ADB has done little to date to directly finance PSI in water. Over the period since 1992 there have been six private sector loans, with a total value of around \$280 million; one of the loans was for \$100 million. Total project cost was \$380 million. Only one loan for around \$30 million was approved in 1999 and thus before the policy, with the remainder between 2002 and 2010. Private sector lending has thus increased substantially after the policy and particularly since the issue of the LTSF, with its increased emphasis on PSI.

### D. Key Impediments—Why is Private Lending so Low in the Water Sector?

16. The water sector has received around 5% of private sector lending over the past 10 years, and the questions can be asked: (i) why is the private sector program so limited, and (ii) is there much potential to increase lending in the future so as to contribute to sector development and the attainment of ADB's LTSF objectives?

17. Low private sector lending in the sector has been due to one or more of the following factors.

- (i) projects are not bankable because of inadequate project preparation and/or development;
- (ii) PPP projects are challenging because of inadequate funding for project preparation, coupled with a longer period for project development;
- (iii) poorly designed contracts with inappropriate risk allocation to public and private sector make projects unattractive;
- (iv) there is no benchmarking of operational performance so that current performance levels that can be used as a starting point for improvement are not known;
- (v) the government has failed to improve the financial health of public operations before bringing in the private sector;
- (vi) progress in most DMCs is limited in terms of regulatory and legal, and sound institutional frameworks for the water sector, water tariff reforms and progress toward meeting full cost recovery requirements;
- (vii) the (often overoptimistic) expectation is that the private operator can implement difficult reforms that the government has not implemented for want of political will (e.g., tariff reform);
- (viii) water supply and sanitation projects are complex compared with, e.g., transport, roads or hydropower projects; and
- (ix) there is low or zero potential for involving the private sector in the irrigation and water-based natural resources sectors of most countries.

18. The perception that water is a public good is also a factor why private investment in water has yet to reach high levels. This can also be a factor why some DMCs have made limited progress in putting in place the necessary framework for private investment in water to succeed.

19. Despite these issues, there is potential for private sector lending to increase in the future, given (i) the size of the investment gap in the water supply and sanitation sector, and (ii) the increased resources ADB will have available to lend. It will be desirable if a future incarnation of the water policy can emphasize this and give adequate attention to supporting private sector investment.

## **E. Conclusion**

20. ADB's support to PPP and PSI in the water sector over the last 20 years is rated *partly successful*. Activity levels have increased markedly since the policy was issued, although probably more in response to the LTSF and international trends than to the policy itself. Numerous loans seek to involve the private sector at a high level, but this has proved difficult in practice, and in many cases, objectives have been only partly achieved. The PRC represents the greatest success story in PSI, with strong central and provincial government support for the concept. The primary reason for the strong performance is that the majority of water and sanitation entities are now corporatized and operate as autonomous corporation. The typical PRC take-and-pay contracts for bulk water supply are also relatively straightforward compared with concession agreements.

21. Given ADB's intention to greatly increase the proportion of its lending involving the private sector, ways need to be found to increase the profile of the water sector in relation to ADB's private sector lending window. There is clearly a large investment gap, which could be partly filled by PPP and PSI if conditions were right. ADB should therefore focus on assisting its

developing member countries (DMCs) to improve the investment environment to make it more attractive to the private sector. At the same time, assistance will be needed to safeguard the situation of consumers, particularly the poor, to prevent the profit motive from overriding the welfare of the consumers. Assistance to DMCs should also include capacity development to enable the governments to structure bankable PPP projects and come up with win-win agreements. This should include focus on safeguarding the interests of consumers.

22. While much of the discussion in this report has involved larger water utilities, across ADB's area as a whole gains are likely to result from the introduction of PPP to medium-sized towns and local authority areas. The development of an improved environment for PPP in these areas has the potential to show high returns, as well as improve water and sanitation service delivery to consumers. A notable example relates to the water companies (PDAMs) in Indonesia, many of which face great difficulty, but with support and an enabling environment could develop into dynamic enterprises.<sup>5</sup>

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<sup>5</sup> As demonstrated under the United States Agency for International Development's (USAID) Local Government Water Supply Project, which developed procedures for water companies to achieve full cost recovery by applying transparent accounting systems. The project also supported the development of corporate plans, including customer satisfaction surveys.

## EVALUATION OF WATER PARTNERSHIPS AND RELATED FUNDS

1. The challenges facing the water sector and subsectors require substantial financing, well beyond the capacity of individual developing member countries (DMCs) and institutions. The water funding facilities of the Asian Development Bank (ADB) include the Cooperation Fund for the Water Sector (CFWS, now closed) and the Water Financing Partnership Facility (WFPP), which aim to help address the water challenges in the Asia-Pacific region. In addition, ADB participates in a range of national, regional, and global partnerships or regional cooperation.

### A. Water Partnerships

2. ADB maintains several formal and a large number of informal partnerships in the water sector. Formal partnerships are listed in Table A7.1.

**Table A7.1: ADB Partnerships for Water**

Agency Name	Instrument	Nature (Institutional/ Activity Specific)	Date of Signing	Date of Expiry	Areas of Cooperation
Global Water Partnership (GWP) <sup>a</sup>	Letter of intent (LOI)	Cooperation on water activities in the Asia and Pacific region	19 Aug 06	None	<ul style="list-style-type: none"> <li>Implementation of Hashimoto Action Plan, specifically the Water Operators Partnerships Program</li> <li>Implementation of integrated water resources management</li> <li>Support to Asia Pacific Water Forum</li> <li>Support to ADB's Water Financing Program (WFP)</li> </ul>
UNESCO-IHE Institute of Water Education and Singapore Public Utilities Board (PUB)	LOI	Cooperation on developing knowledge and lessons for the Asia Pacific Water Forum	15 Jun 07	End 2009, provision for extension subject to evaluation by all parties. Under review.	<ul style="list-style-type: none"> <li>Establishment of Asia Pacific Water Forum's regional water knowledge hubs</li> <li>Review of water capacity development experience</li> <li>Development of water knowledge products</li> </ul>
United States Agency for International Development (USAID) and International Water Association (IWA)	Memorandum of understanding (MOU)	Cooperation on the joint establishment of a regional partnership network for Asia among utilities called "WaterLinks" to coordinate, develop, and implement joint support to Water Operators Partnerships Program (WOPs)	19 Aug 08	None	<ul style="list-style-type: none"> <li>Establishing and facilitating twinning partnerships for utilities and municipal agencies</li> <li>Organizing regional capacity- building activities via workshops and targeted training events</li> <li>Developing and maintaining a WOPs user website that will serve as an information clearinghouse, or "knowledge hub" on WOPs activities and outcomes, best practices, and capacity development materials.</li> </ul>
United Nations Secretary General Advisory Board (UNSGAB)	Joint statement	ADB support for the Hashimoto Action Plan implementation in Asia and the Pacific	01 Jun 07	None	<ul style="list-style-type: none"> <li>Promoting the WOPs program in Asia and the Pacific</li> <li>Financing of water/sanitation projects</li> <li>Sanitation</li> <li>Monitoring and reporting</li> <li>Integrated water resources management</li> <li>Water and disaster</li> </ul>

<sup>a</sup> As an indication of the number of partnerships internationally, GWP has association with nearly 2,200 partnerships in over 70 countries including most of ADB's developing member countries (DMCs).

Source: Water Financing Partnership Facility.

3. Information is not currently available on the number of informal partnerships in which ADB participates. However, in the DMCs with ADB water sector lending programs, ADB is expected to be involved in one or more water-related partnerships for purposes of information sharing and (to some degree) coordination.

## B. Cooperation Fund for the Water Sector

4. ADB established the CFWS in December 2001 as a multidonor facility to help catalyze the implementation of ADB's water policy in its DMCs. Contributions to the fund were received from the Government of the Netherlands (\$19.4 million) and of Norway (\$2.2 million). The fund was completed at the end of 2009 and closed financially on 31 May 2010. Any remaining funds returned to the donors. ADB's Water Committee coordinated and monitored the fund.

5. CFWS's objectives were to (i) add value to the water projects carried out by ADB's regional departments, (ii) increase synergy in ADB's water sector operations, and (iii) strengthen regional cooperation. It focused on six program categories: (i) promotion and public awareness; (ii) building knowledge base and capacity; (iii) pilot and demonstration activity; (iv) water partnerships; (v) regional events and initiatives; and (vi) program coordination, monitoring and evaluation. Activities under CFWS were supported through five regional technical assistance (RETA) projects—Promoting Effective Water Policies and Practices—approved between 2002 to 2006 (Table A7.2).

**Table A7.2: RETAs Funded by CWSF, 2002–2006**

RETA Number	Project Title	Main Focus	Year	Amount (\$'000)
6031	Promoting Effective Water Management Policies and Practices	Supported activities under the six program categories of CWFS	2002	4,000
6093	Promoting Effective Water Management Policies and Practices - Phase 2	Catalyze the implementation of policy and support partnerships including SEAWUN, NARBO, and the Asia Pacific Water Forum	2003	1,000
6123	Promoting Effective Water Management Policies and Practices - Phase 3	Wide range of activities including support to Second ADB Water Week in 2004	2003	4,300
6219	Promoting Effective Water Management Policies and Practices - Phase 4	Lessons supported design of Water Financing Partnership Facility. Supported partnerships for IWRM and water services, knowledge management, capacity development, water reform, and institutional development	2004	5,600
6325	Promoting Effective Water Management Policies and Practices - Phase 5 (including 3 supplementary grants)	Increase in water lending following ADB Management decision in March 2006	2006	5,619
<b>Total</b>				<b>20,902</b>

ADB = Asian Development Bank, CWFS = Cooperation Fund for the Water Sector, IWRM = integrated water resources management, NARBO = Network of Asian River Basin Organizations, RETA = regional technical assistance, SEAWUN = Southeast Asian Water Utilities Network.

Source: Asian Development Bank.

6. The first four RETAs were classified as *successful* by their completion reports. RETA 6325 closed on 31 December 2009, but as yet has not been rated. Total fund allocation was

\$20.9 million; by fund closure, disbursement was \$19.7 million or 92% of contributed funds (excluding interest earned).

7. CWFS also supported 19 technical assistance grants (TAs) including the post-tsunami assistance to the Maldives as part of its Direct Operations or Top-Up Support to regional departments. Support of \$2.1 million was provided to six advisory TAs (ADTAs), 12 project preparatory TAs (PPTAs), and 1 RETA. A total of 39 pilot demonstration activities (PDAs) received funding of up to \$50,000 each. The last PDA began in May 2009—Pilot Project for the Reduction of Mercury and Heavy Metals Contamination Resulting from Artisanal Gold Refining in Meycauyan Bulacan River System—in the Philippines. There was thus a substantial time overlap with the WFPF, which began in November 2006. A final report on CFWS, prepared in April 2010,<sup>1</sup> has a good overview of activities and accomplishments under the fund.

### **C. Water Financing Partnership Facility**

8. In November 2006, ADB approved the establishment of WFPF as the successor fund to CFWS. Its main objective is to mobilize cofinancing and investments from development partners in support of ADB's Water Financing Program (WFP) 2006–2010.

9. According to the WFP agenda (<http://www.adb.org/Water/WFP/agenda.asp>) “investing in partnerships will be the key to delivering results. In such a connected world, water management affects almost all sectors. Partnerships pay huge dividends. ADB's resources and the WFP are a platform for working together with clients and partners. These partnerships can catalyze and leverage investments and pool the region's knowledge in these priority areas, to raise the standard of living for hundreds of millions of poor people in the region and increase water security for all.”

10. A steering committee for WFPF provides strategic direction. It is composed of all directors general (DGs) of regional departments with the DG of Regional and Sustainable Development Department (RSDD) as chair. ADB's Water Committee reviews and makes recommendations on project proposals for assistance from WFPF, and makes policy and procedural recommendations to the steering committee regarding WFPF operations. The Sustainable Infrastructure Division (RSID) of RSDD manages WFPF. The Director of RSID, or his/her designee, acts as the facility manager for WFPF and oversees day-to-day operations, monitoring and evaluation, and reporting of WFPF, with assistance from a team of consultants who have technical and administrative expertise.

11. WFPF focuses on providing support for in-country work on project preparation and implementation as well as for reforms and capacity development, including regional cooperation. According to para. 15 of the Board paper,<sup>2</sup> WFPF is intended to contribute to WFP targets by helping to prepare and implement demonstration projects for innovative approaches and partnerships in rural and urban water services, and in basin water management, which can be easily replicated in the region. WFPF funding can be used to provide TA, and/or to finance goods, works, and services for projects.

12. WFPF supports the production of knowledge products, to help ADB and DMC staff improve the design, implementation, management, and operation of water projects and facilities. In the 2009 annual report, for example, WFPF cites examples of new publications in 2009 in the

<sup>1</sup> ADB. 2010. *Cooperation Fund for the Water Sector*. Manila.

<sup>2</sup> ADB. 2006. *Establishing the Water Financing Partnership Facility*. Board Paper, Manila.

sanitation subsector: (i) Asian Sanitation Databook, (ii) Making Sanitation Everybody's Business, and (iii) India's Sanitation for All: How to Make It Happen.

13. The Board paper establishing WFPF provides that about 70% of its resources are to be allocated for direct project support, and the balance of about 30% for program quality support. Based on cumulative allocations as of end-2009, WFPF registered a ratio of 69–31% (2009 Annual Report, para. 9).

14. Total initial planned contribution for WFPF was \$100 million, of which \$48 million was committed and \$32 million subscribed by the Multi-Donor Trust Fund, Australia, Norway, Austria, and Spain. As of end-December 2009, WFPF had exhausted its funds and only remained (marginally) solvent after using the interest on deposited funds. Spain contributed a further \$5 million in early 2010, which has provided funding through 2010. Urgent steps are required to return the fund to financial liquidity. This will require the meeting of agreed-upon commitments by donors in the short term, particularly in the case of the Netherlands, which has yet to remit the \$11.11 million balance from its total \$19.75 committed contributions, and/or the topping up of the fund by ADB. WFPF will need replenishment from either its existing or prospective new partners, or from both as well as by ADB if it is to continue its work during the next WFP planning period (2011 to 2020). ADB approached a number of new agencies in late 2009 (WFPF 2009 Annual Report, para. 77), but additional commitments had not been obtained as of mid-2010.

15. WFP set challenging targets in its background paper<sup>3</sup> together with the contribution expected from WFPF, based on projects and TAs supported as of December 2009. WFPF management estimates that 38 million people have benefited from activities financed by the fund, although clearly the most benefit comes from project investment, and thus only indirectly from WFPF support. The target of 38 million represents 76% of the 50 million beneficiaries anticipated over the life of the fund, during a period of 2 years of full activity. The annual report anticipates that the target of 40 million would be exceeded by the end of 2010, provided that activities can be maintained through funding support (Table A7.3).

**Table A7.3: Contributions of WFPF to Water Financing Program Target Outcomes**  
(\$ million, as of 31 December 2009)

Objective	Water Financing Program Target	WFPF Expected Contributions from Approved Applications
Number of people with access to safe drinking water and improved sanitation	200	23
Number of people with reduced risk to floods	100	12
Number of people with improved and efficient irrigation and drainage services	40	3
<b>Total</b>	<b>340</b>	<b>38</b>
Introduction of IWRM in river basins	25 river basins	11 river basins

IWRM = integrated water resources management, WFPF = Water Financing Partnership Facility.

Source: ADB. 2009. *Water Financing Partnership Facility 2009 Annual Report*. Manila.

16. Although WFPF has committed almost all of its resources to WFP projects and TAs, fund disbursement has been slow because of the time taken to implement the projects and TAs on the ground. Following approval in principle of a commitment under WFPF, the project still has to pass through the normal ADB approval processes. Experience with implementation

<sup>3</sup> ADB. 2006. *Water for All: The 2nd Five Years of ADB's Water Financing Program 2006-2010*. Manila.

under the water sector (and others) is that disbursement during the first 1–2 years after effectiveness can be slow, often necessitating 3 years or longer before substantial disbursement if effectiveness is delayed. The low level of disbursement (currently around 15% of contributed funds) may be a reason why WFPF donors are apparently hesitating to meet their agreed-upon contribution levels (the Netherlands) or to top up their contributions. Slow disbursement has also been an issue with other ADB funds (e.g., the Japan Fund for Poverty Reduction or the Poverty Reduction Fund of United Kingdom’s Department for International Development [the latter now closed]). In the case of WFPF, it is thought that there are steps that the facility could take in the future to enhance both the relevance of the fund and the level of interaction with donors. For example,

- (i) Seek top-up funding to enable WFPF to continue support during the next phase of WFP (2011-2020).
- (ii) Set clear objectives for the fund and communicate these to donors and project staff. Objectives are defined in the Board paper establishing the facility and in a design and monitoring framework (DMF) included in the 2008 annual report, but they are currently not accessible on the WFPF website (<http://www.adb.org/water/wfpf>). The website itself could usefully be updated, since some of its pages do not contain current information or links.
- (iii) Prepare single-page reports on the application of WFPF funds and their outcomes. These reports could be included in the semiannual reports as annexes, and would be valuable in both assessing facility activities and performance and informing stakeholders of the sort of activities that can be funded. The reports could be prepared either by project proponents or by WFPF secretariat.
- (iv) As in some other facilities and/or funds, include information on application procedures and relevant templates on the WFPF website.
- (v) Review the possibility of a funding mechanism that does not involve the locking up of donor contributions for several years prior to disbursement. For example, if funds could be committed to a project, in advance of donor contribution, this would limit the period that funds remain idle. Such a system would mean that donors would need to program their contribution over several years, and that ADB might have to underwrite the fund, in the event a donor pulls out unexpectedly.
- (vi) Continue the focus on sanitation (with the aim of allocating more than 20% of WFPF resources to the subsector). Given that the sanitation Millennium Development Goal (MDG) targets will not be met in Asia, consider increasing sanitation spending to a minimum of 30–40% in the next WFP period. Actively support the community-led total sanitation approach being adopted successfully in a few ADB projects.

#### **D. Water Community of Practice**

17. The Water community of practice (CoP) conducts regular seminars on water issues and staff development programs for its members (see also Appendix 5, paras. 20–23).

18. The CoP provides a valuable mechanism for coordinating ADB involvement with regional and international forums, for example, the Eye on Asia event in 2009, part of World Water Week in Sweden, and the March 2009 5th World Water Forum in Istanbul, Turkey (Table A7.4). The CoP plays a significant role in partnership development.

**Table A7.4: Examples of Water CoP Partnerships in 2009**

Working Group	Partners	Output
Rural water	International Water Management Institute	Knowledge product
Urban water	Southeast Asian Water Utilities Network (SEAWUN), South Asian Water Utilities Network (SAWUN), and World Bank Institute	Nonrevenue water training
Basin water	Network of Asian River Basin Organizations (NARBO)	Integrated water resources management training
Sanitation	Citynet- UN HABITAT	Knowledge product
	Philippine Ecosan Network	National symposium
Climate change	NARBO, the Center for River Basin Organization and Management, and the National Hydraulic Research Institute of Malaysia	Climate change action planning

Source: ADB. 2010. *Water Community of Practice 2009 Annual Report*. Manila.

19. The CoP is considered *highly relevant* in relation to networking and information sharing within ADB and is rated *satisfactory* in this special evaluation study (SES). It is most valuable in headquarters, where it provides access to knowledge and skills and capacity development among ADB's water sector staff, as well as information to the wider ADB community. There is a need to increase its relevance to staff in the resident missions, and perhaps also to integrate its activities with non-ADB staff, especially in the DMCs. The CoP itself is in the process of reviewing the desirability of moving from an in-house community to perhaps embrace the wider water community, including government staff, water utility managers, nongovernment organizations, and donors. There are likely to be both pros and cons to such a development. However, it is believed that in the interest of knowledge dissemination, it would be beneficial to open up selected CoP activities to non-ADB staff, particularly those in the resident missions. It would allow ADB to take on a stronger leadership role, and promote understanding of the goals expressed in its water policy.

20. Areas for future focus of the CoP may include (i) strengthening linkages between CoP activities and knowledge products in the water sector as well as across related sectors such as agriculture and natural resources, urban and energy; (ii) establishing output and outcome indicators to measure and monitor CoP performance; (iii) further building its networks, and particularly strengthening its links to the Global Water Partnership, and assessing the benefits of joining additional regional or national networks; (iv) publishing a CoP directory, listing the locations, contact numbers, and areas of expertise of CoP members; and (v) considering establishing its own website, probably within the [www.adb.org/Water](http://www.adb.org/Water) site, with both an open area (e.g., listing all available CoP publications) and an area for members, with (among others) future activities and the directory suggested in (iv).

## **E. Overall Assessment and Recommendation**

21. Overall, ADB's approach to the establishment and operation of partnerships and funding facilities in the water sector is rated *satisfactory*. CFWS was slow to get going after its formation in December 2001. However its RETAs and pilot demonstration activities made a significant contribution to ADB's water sector investments and WFP over its early years, carried on by WFPF. While the latter facility has been successful to date, its current financial limitations are restricting its relevance. Based on the program (as of end-2009), there are shortfalls in terms of expected contributions from approved applications (Table A7.3). The Water CoP is a dynamic body that is making a useful contribution to networking and knowledge dissemination for its members, particularly in ADB headquarters. It needs to be active in horizontal interactions with related CoPs at headquarters, and also involve more resident mission staff in CoP activities.

## WATER SECTOR PROJECT RESULTS

### A. Overview of Water Portfolio Performance

#### 1. Success Rates

1. The performance of Asian Development Bank (ADB) projects over the past years is summarized in Table A8.1 by sector and water subsector. Over the 40-year period, 61.9% of water subsector projects in aggregate achieved a *successful* rating compared with 63.4% for all projects. Performance improved substantially between the 1968–1991 and 1992–2000 loan approval periods, with the proportion of successful water projects increasing from 58% to 66%. Performance for the 2001–2007 period was higher again, with 89% successful water projects. Although this performance is promising, the number of completed projects (nine projects) is too small to allow the drawing of firm conclusions.

**Table A8.1: Successful and Total Projects, by Period**  
(success rate of projects by year of approval, water sector shaded)

Sector/Subsector	1968–1991			1992–2000			2001–2009			1992–2009		
	S (no.)	Total (no.)	S (%)									
<b>Agriculture and natural Resources (ANR)</b>												
Irrigation, drainage, flood protection	37	63	58.7	10	20	50.0	1	1	100.0	11	21	52.4
Water-based natural resource management	2	4	50.0	7	12	58.3	2	2	100.0	9	14	64.3
Other ANR	59	179	33.0	34	59	57.6	3	7	42.9	37	66	56.1
Subtotal	98	246	39.8	51	91	56.0	6	10	60.0	57	101	56.4
<b>Education</b>	27	43	62.8	44	54	81.5	3	4	75.0	47	58	81.0
<b>Energy</b>										0	0	
Large Hydropower	14	18	77.8	8	9	88.9		1	0.0	8	10	80.0
Other Energy	83	106	78.3	46	56	82.1	4	4	100.0	50	60	83.3
Subtotal	97	124	78.2	54	65	83.1	4	5	80.0	58	70	82.9
<b>Finance</b>	40	90	44.4	27	43	62.8	8	11	72.7	35	54	64.8
<b>Health and social protection</b>	7	18	38.9	16	25	64.0		1	0.0	16	26	61.5
<b>Industry and trade</b>	27	41	65.9	5	13	38.5	5	7	71.4	10	20	50.0
<b>Multisector</b>	11	16	68.8	24	31	77.4	11	14	78.6	35	45	77.8
<b>Public sector management</b>				8	16	50.0	10	19	52.6	18	35	51.4
<b>Transport and ICT</b>	93	118	78.8	89	102	87.3	9	11	81.8	98	113	86.7
<b>Water and other municipal infrastructure and services</b>										0	0	
Housing and slum upgrading	4	4	100.0							0	0	
Other municipal infrastructure	11	16	68.8	15	27	55.6	1	1	100.0	16	28	57.1
Waste management/sewage	2	4	50.0	2	3	66.7	1	1	100.0	3	4	75.0
Water supply and sanitation	23	46	50.0	22	30	73.3	4	4	100.0	26	34	76.5
Subtotal	40	70	57.1	39	60	65.0	6	6	100.0	45	66	68.2
Total water	78	135	57.8	49	74	66.2	8	9	88.9	57	83	68.7
Total nonwater	362	631	57.4	308	426	72.3	54	79	68.4	362	505	71.7
<b>TOTAL</b>	<b>440</b>	<b>766</b>	<b>57.4</b>	<b>357</b>	<b>500</b>	<b>71.4</b>	<b>62</b>	<b>88</b>	<b>70.5</b>	<b>419</b>	<b>588</b>	<b>71.3</b>
<b>Percent Water</b>	<b>22</b>	<b>21</b>		<b>16</b>	<b>17</b>		<b>15</b>	<b>11</b>		<b>16</b>	<b>16</b>	

ICT = information and communication technology, no. = number, S = successful.

Note: Successful projects are those rated GS = generally successful, HS = highly successful, and S = successful.

Source: Compiled from Independent Evaluation Department database.

## 2. Financial and Economic Returns

2. Available estimates of the financial and economic internal rates of return (FIRR, EIRR) were compiled from the report and recommendation of the President (RRP) documents to evaluate expected project efficiency at entry. FIRR values were obtained for 110 projects (59%) and EIRR values for 156 projects (83%). Overall, the average FIRR was 10.6%, and the average EIRR was 20.8%—well above the project acceptance threshold of 12%. The high averages suggest that the overall performance of water sector projects is strong at entry from both economic and financial perspectives.

3. An analysis of FIRR and EIRR data classified by alternative group as well as by the evaluation criteria of the water policy provided evidence that there are few significant systematic variations in economic or financial performance (Table A8.2 and Table A8.3). Only water supply and sanitation projects departed from the norm, having lower estimates of FIRRs than projects in other sectors. Related to this finding, projects rated highly for the water policy criterion for subsidies also have lower FIRRs; the associated projects are most likely in the water supply and sanitation (WSS) sector. Local government resistance to tariff increases will cause water supply and sanitation projects to have lower estimated FIRR values.

**Table A8.2: Relationship between Performance and Project Classification**

Project Classification	FIRR <sup>a</sup>		EIRR <sup>a</sup>	
	Average (%)	Projects (no.)	Average (%)	Projects (no.)
<b>Region</b>				
Central and West Asia	8.4	16	21.7	31
East Asia	8.9	26	18.9	26
Pacific	6.7	8	16.2	8
South Asia	10.6	25	21.1	39
Southeast Asia	10.1	35	21.6	52
<b>Period</b>				
1992 to 2000	10.2	56	20.0	74
2001 to 2009	8.7	54	21.5	82
<b>Area</b>				
Basin	10.3	13	18.0	28
Rural	10.5	10	21.9	52
Urban	9.3	84	21.1	74
Urban/rural	6.1	3	19.1	2
<b>Sector</b>				
Large Hydropower	8.9	7	15.7	7
Multicomponent	11.2	31	23.9	36
Water-based natural resources	12.9	18	19.8	60
Water supply and sanitation	<b>7.3<sup>b</sup></b>	54	20.4	53
<b>Type of Loan</b>				
MFF	8.7	8	21.6	5
Project	9.8	81	20.2	102
Sector	8.3	21	21.9	49
<b>All Projects</b>	<b>10.6</b>	<b>110</b>	<b>20.8</b>	<b>156</b>

EIRR = economic internal rate of return, FIRR = financial internal rate of return, MFF = multitranchise financing facility, no. = number.

<sup>a</sup> Groups of EIRR and FIRR data classified as above were tested to discern significant differences from the overall population and from other groups within the class (e.g., returns to MFF loans compared with returns to project loans). The ranks-based Kruskal-Wallis test was used for this purpose rather than a *t*-test to overcome problems with outliers in the data.

<sup>b</sup> FIRRs for water supply and sanitation projects tested significantly different from those for multisector projects ( $P = 0.0023$ ), water-based natural resources projects ( $P=0.0026$ ) and all projects ( $P=0.0793$ ).

Source: Asian Development Bank database.

Table A8.3: Relationship between Performance and Project Ratings

Rating Category	FIRR		EIRR	
	Average (%) <sup>a</sup>	Projects (no.)	Average (%) <sup>a</sup>	Projects (no.)
<b>Water Policy Criterion</b>				
<b>IWRM</b>				
Poor	9.2	57	21.1	69
Weak	11.2	22	21.8	28
Good	7.2	7	20.7	12
Excellent	9.2	23	19.8	45
<b>Basin</b>				
Poor	7.2	3	17.6	4
Weak	17.8	2	16.6	2
Good	6.8	3	16.6	5
Excellent	11.4	5	18.7	12
<b>PPP</b>				
Poor	11.3	30	19.9	30
Weak	8.8	40	21.2	38
Good	7.7	12	23.2	18
Excellent	7.8	18	22.7	16
<b>Autonomy</b>				
Poor	11.7	14	22.6	25
Weak	9.4	21	20.4	27
Good	9.0	18	20.0	22
Excellent	8.2	47	21.4	50
<b>Legislation</b>				
Poor	5.2	1	na	0
Weak	3.7	3	30.8	4
Good	26.8	8	18.8	13
Excellent	7.7	17	18.7	34
<b>Water conservation</b>				
Poor	9.6	16	19.4	28
Weak	7.2	14	19.4	21
Good	9.8	10	23.4	19
Excellent	9.2	55	20.5	60
<b>Subsidies</b>				
Poor	11.6	20	21.4	36
Weak	11.1	14	19.7	18
Good	8.9	16	22.5	23
Excellent	8.2 <sup>b</sup>	41	20.5	48
<b>Tariff reform</b>				
Poor	14.6	3	25.6	8
Weak	12.1	12	20.8	23
Good	9.5	14	19.9	25
Excellent	8.3	76	20.2	86
<b>Wetlands</b>				
Poor	na	0	18.9	3
Weak	4.7	1	13.5	2
Good	10.0	1	14.8	4
Excellent	29.5 <sup>c</sup>	8	19.5	18
<b>Water quality</b>				
Poor	9.6	4	27.2	5
Weak	10.9	12	19.7	18
Good	6.6	12	20.1	18
Excellent	9.3	48	20.3	54
<b>Participation</b>				
Poor	11.6	7	31.9	5
Weak	9.9	45	19.0	41
Good	8.1	24	19.7	35
Excellent	8.8	28	21.4	58
<b>WUA</b>				

Rating Category	FIRR		EIRR	
	Average (%) <sup>a</sup>	Projects (no.)	Average (%) <sup>a</sup>	Projects (no.)
Poor	16.4	1	27.6	4
Weak	na	0	22.4	5
Good	na	0	20.5	4
Excellent	16.4 <sup>d</sup>	4	20.0	29
<b>PCR project ratings<sup>e</sup></b>				
Highly successful	8.2	5	22.5	5
Successful	11.2	29	20.7	33
Partly successful	8.0	6	18.7	14
Unsuccessful	14.0	2	21.4	4
<b>All Projects</b>	<b>10.6</b>	<b>110</b>	<b>20.8</b>	<b>156</b>

EIRR = economic internal rate of return, FIRR = financial internal rate of return, IWRM = integrated water resources management, MFF = multitranche financing facility, na = not applicable, no. = number, PPP = public-private partnership, WUA = water user association.

<sup>a</sup> See footnote a in Table A8.2.

<sup>b</sup> FIRRs for projects rated excellent for the WETLAND criterion tested significantly different from all projects (P=0.0047).

<sup>c</sup> FIRRs for projects rated excellent for the SUBSIDIES criterion tested significantly different from those rated poor for the SUBSIDIES criterion (P=0.0782).

<sup>d</sup> FIRRs for projects rated excellent for the WUA criterion tested significantly different from all projects (P=0.0945).

<sup>e</sup> Combines ratings for the new rating system (highly successful and successful) with the older rating system (Generally successful).

Source: Compiled by the study team from Asian Development Bank database on loan documents.

### 3. Compliance with Covenants

4. Information on loan covenants in project completion reports (PCRs) was analyzed to assess the impact of the water policy. This section addresses the following evaluation framework components: (i) achievement of the key policy elements (the seven mentioned in the 2001 policy) through water sector operations (loans, grants, and technical assistance); and (ii) extent of achievement and/or progress in terms of intended inputs, output, and outcomes of water sector operations. A total of 97 PCRs have been produced for water sector projects approved since 1992, with nine of these for projects approved after adoption of the water policy. Of the 97, 92 contained detailed ratings data that could be used to define project success and performance against core evaluation criteria.

5. Information on the status of the loan covenants was compiled for each project. The covenants were classified by general theme and the status was described using one of the following descriptors: (0) no covenant where one could have been applied, (1) covenant in place but no compliance, (2) covenant with partial compliance, and (3) covenant with full compliance. Table A8.4 shows the themes for covenants.<sup>1</sup>

**Table A8.4: Classification of Covenants**

Covenant Class	Factors Included
Monitoring	Water quality and/or quantity monitoring or assessment, monitoring program, modeling analysis
Road map	Water sector road map, agenda, master plan
IWRM	Integrated water resources management, integrated flood management
RBO	River basin organization or coordination mechanism

<sup>1</sup> The "no covenant" category indicates the absence of a covenant in cases where a covenant could have been imposed, e.g., a water supply project without a tariff covenant. A fourth category, "not applicable", was used to designate projects where the imposition of a certain type of covenant would not have made sense.

Covenant Class	Factors Included
PPP	Public-private partnerships, investor participation, private sector engagement
Autonomy	Autonomy and/or accountability of public sector service providers (corporatization, improved financial management, performance reporting)
Legislation	Review, revise, update legislation or regulations for water charges, water use, discharge control, allocation, water user associations
Water conservation	Water conservation, water efficiency, loss reduction, demand management, water audit
Subsidies	Phase out or rationalize general subsidies, target subsidies for affordability
Tariff reform	Tariff reform, tariff increase, other viable strategies for cost recovery
Wetlands	Protect, improve terrestrial ecosystems linked to water resources (forests, wetlands, grasslands)
Water quality	Urban or rural water quality control, pollution prevention, effluent reuse, overland erosion control
Participation	Participatory approaches (other than irrigation)
WUA	Water user associations for irrigation systems
Poverty	Poverty reduction, poverty action plan, livelihood support.
Gender	Gender-based approach, gender action plan, gender employment policy

IWRM = integrated water resources management, RBO = river basin organization, PPP= public-private partnership, WUA = water user association.

Source: Asian Development Bank.

6. Summaries of covenant compliance data are in Table A8.5. This indicates that the most frequently covenanted water policy elements are tariff reform, service provider autonomy, water conservation, and participatory mechanisms including water user associations (WUAs) for irrigation works. This is not surprising considering that the merits of these elements of water resources management were well understood before the issue of the water policy. Of these five themes, full compliance with covenants for participatory approaches is common (>85%) but is much less frequent for tariff reform, service provider autonomy, and water conservation covenants (<60%). Poor levels of compliance relate to political constraints and, in the case of water conservation, the long gestation periods required for effective implementation of programs.

7. The differentiation of compliance levels by project type in Table A8.6 reveals interesting patterns:

- (i) Levels of compliance are somewhat lower in Central West Asia and the Pacific but higher in East Asia.
- (ii) Hydropower projects and those involving river basin-wide programs or classified as "water-based natural resource" projects (which include irrigation projects) are subject to fewer covenants relating to water management and exhibit poorer compliance with covenants that are imposed. This is problematic, considering these types of projects usually involve the greatest volumetric use of available water resources.
- (iii) Projects financed using sector loans are also subject to fewer covenants relating to water management and exhibit poorer compliance with covenants that are imposed.
- (iv) Not surprisingly, projects rated *partly successful* or *unsuccessful* by PCRs exhibit the poorest level of compliance with covenants.

**Table A8.5: Water Project Covenants Compliance Levels, by Subsector**  
(%)

Item	Monitoring	Road Map	IWRM	RBO	PPP	Autonomy	Legislation	Water Conservation	Subsidies	Tariff Reform	Wetlands	Water Quality	Participation	WUA	Poverty	Gender
<b>A. No covenant</b>																
All water projects	86	91	88	90	92	65	85	73	88	34	94	97	70	75	81	77
WSS	76	82	85	100	94	41	82	50	74	41	100	100	82	97	79	79
Irrigation	84	95	89	74	100	89	89	95	100	53	95	95	63	16	84	53
WBNR	80	87	80	80	100	100	93	100	100	80	67	100	73	67	87	73
Large Hydropower	100	100	100	100	90	60	100	60	90	30	100	100	80	100	80	100
Multicomponent	100	100	89	89	74	58	68	79	89	21	100	89	47	89	74	89
<b>B. No Compliance</b>																
All water projects	1	2	1	0	1	3	2	4	0	9	1	1	3	1	1	2
WSS	0	3	0	0	3	6	3	3	0	9	0	0	0	0	3	3
Irrigation	5	0	0	0	0	5	0	5	0	11	5	0	5	5	0	0
WBNR	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Large Hydropower	0	0	0	0	0	0	0	10	0	20	0	0	0	0	0	0
Multicomponent	0	0	5	0	0	0	5	5	0	11	0	5	11	0	0	5
<b>C. Partial compliance</b>																
All water projects	3	2	1	1	1	11	6	8	2	22	1	0	1	1	5	5
WSS	9	3	0	0	0	18	6	18	6	12	0	0	0	3	6	3
Irrigation	0	5	5	5	0	0	0	0	0	5	0	0	0	0	11	16
WBNR	0	0	0	0	0	0	7	0	0	0	7	0	0	0	0	0
Large Hydropower	0	0	0	0	0	20	0	0	0	20	0	0	10	0	10	0
Multicomponent	0	0	0	0	5	16	16	11	0	21	0	0	0	0	0	5
<b>D. Full compliance</b>																
All water projects	10	5	10	9	6	21	7	14	10	35	4	2	26	23	12	15
WSS	15	12	15	0	3	35	9	29	21	38	0	0	18	0	12	15
Irrigation	11	0	5	21	0	5	11	0	0	32	0	5	32	79	5	32
WBNR	20	7	20	20	0	0	0	0	0	20	27	0	27	33	13	27
Large Hydropower	0	0	0	0	10	20	0	30	10	30	0	0	10	0	10	0
Multicomponent	0	0	5	11	21	26	11	5	11	47	0	5	42	11	26	0

IWRM = integrated water resources management, PPP = public-private partnership, RBO = river basin organization, WBNR = water-based natural resources, WUA = water user association, WSS = water supply and sanitation.

Source: Asian Development Bank database.

**Table A8.6: Relationship between Covenant Compliance and Project Classification**

Project Class	Average Proportion of Covenants in Each Group (%)				Number of Projects
	Number of Covenants	Level of Compliance with Covenant			
		None	Partial	Full	
<b>Region</b>					
Central West Asia	77.9	4.7 ***	3.2 **	14.1	12
East Asia	80.6	0.0 **	3.8	15.6 *	10
Pacific	77.5	2.5	11.3 ***	8.8 **	5
South Asia	77.8 *	1.9	5.0	15.3 *	20
Southeast Asia	82.0 *	1.7	4.7	11.6	34
<b>Period</b>					
1992 to 2000	80.1	2.1	5.0	12.8	76
2001 to 2009	76.3 **	1.3	2.5 **	20.0 ***	5
<b>Area</b>					
Basin	86.1 ***	2.4	2.4 ***	9.1 ***	13
Rural	80.2	2.0	3.5 *	14.3	25
Urban	78.2	1.7	6.4 **	13.8	41
Urban/rural	71.9 *	6.3 *	6.3	15.6	2
<b>Sector</b>					
Large Hydropower	85.4 **	4.2 *	6.3	4.2 **	3
Multicomponent	80.0	0.7 **	4.3	15.0	18
Water-based natural resources	82.1 *	2.3	2.5 ***	13.1	30
Water supply and sanitation	77.1 **	2.3	7.4 ***	13.2	30
<b>Type of Loan</b>					
MFF	na	na	na	na	0
Project	78.9	1.6	5.1	14.4	55
Sector	82.1 *	2.9	4.4	10.6 **	26
<b>Overall PCR project rating</b>					
Highly successful	81.3	1.0	5.2	12.5	6
Successful	79.9	1.3	4.5	14.3	47
Partly successful	78.8	1.7	7.8 ***	11.7	15
Unsuccessful	78.1	14.1 ***	1.6 **	6.3 ***	4
<b>Grand total</b>					
<b>All projects</b>	<b>79.9</b>	<b>2.0</b>	<b>4.9</b>	<b>13.2</b>	<b>81</b>

MFF = multitranches financing facility, na = not applicable, PCR = project completion report.

Note: \*\*\*, \*\*, \* = Significant difference from group average at 1%, 5% and 10% levels (based on *t* tests), respectively.

Source: Asian Development Bank database.

8. Multivariate analysis confirms the patterns seen above with respect to hydropower projects and sector loans. It also suggests that full compliance is lower for projects involving water governance reforms, but is higher for projects that effectively incorporate elements of the water policy into their design, confirming the effectiveness of the water policy.

## B. Evaluation Lessons in Water Sector Operations

### 1. Lessons Identified by ADB Evaluation Reports

9. An impact evaluation study<sup>2</sup> revealed that (i) components and mechanisms that help water utilities meet the cost recovery targets increase the likelihood of long-term sustainability (People's Republic of China [PRC]); (ii) low levels of nonrevenue water (NRW) in the range of 20%–25% are feasible in PRC water companies; (iii) reducing NRW significantly from 60% to 30% or less is also possible, as demonstrated by the achievement in central Kedah, Malaysia; and (iv) leakage detection is only one of many options. In the early stages of program planning, the key is raising awareness among stakeholders, combined with basic information on NRW management for decision making.<sup>3</sup> Controlling NRW requires a long-term commitment in terms of proper follow-up system maintenance to sustain benefits. The required maintenance program should include an ongoing long-term leak detection and repair, and the service provider needs political support to implement effective measures to eliminate illegal connections and other activities that contribute to high losses.<sup>4</sup> The caretaker approach coupled with benchmarking the performance of water utilities can be a useful tool. An effective demand-side management program is an alternative to expanding supply, particularly in areas suffering from water shortages. With political support and appropriate awareness campaigns aimed at conservation by customers, demand-side management can succeed, as observed in Dalian in the PRC.<sup>5</sup>

10. A study<sup>6</sup> that reviewed 16 projects approved between 1990 and 1997, covering urban projects, rural projects, and combined urban and/or rural projects, and focused about equally on water supply and water supply and/or sanitation projects found no discernible difference in the success rate between urban and rural projects. Successful WSS projects benefited their intended beneficiaries by providing them with a better quality of life. Benefits were generally long-term and pro-poor, and tended to impact women, children, and other disadvantaged groups proportionately more than men and other socially empowered groups. Successful WSS projects contributed directly to the attainment of the Millennium Development Goals (MDGs). The projects directly addressed MDG Target 10 (halving by 2015 the proportion of people without sustainable access to safe drinking water and improved sanitation).

11. Ongoing and efficient operation and maintenance (O&M) was an important issue in ensuring the long-run sustainability of the benefits of WSS facilities. Successful projects typically were those that (i) were run by financially self-sustaining water supply institutions, (ii) put in place water user committees (WUCs), and (iii) adopted the “user pays” principle. A lesson learned from one project was that the early establishment of WUCs fostered greater beneficiary participation, resulting in project beneficiaries’ stronger sense of ownership and willingness to accept O&M responsibility.

12. Many factors influence project success. A review<sup>7</sup> of 33 self-evaluation (i.e., project completion) reports on ADB-funded water supply projects for the period 1995–2008 cite

<sup>2</sup> ADB. 2002. *Sector Evaluation Study on Water Supply and Sanitation Projects in Selected DMCs*. Manila.

<sup>3</sup> ADB. 2009. *Sector Assistance Program Evaluation Study on Water Supply and Sanitation Sector in Viet Nam*. Manila.

<sup>4</sup> ADB. 1999. *Impact Evaluation Study of Bank Assistance in the Water Supply and Sanitation Sector in Indonesia*. Manila.

<sup>5</sup> ADB. 2003. *Project Performance Evaluation Report for Dalian Water Supply Project in the People's Republic of China*. Manila.

<sup>6</sup> ADB. 2007. *Best Practices in Water Supply and Sanitation: Learning from Successful Projects*. Manila.

<sup>7</sup> ADB. 2009. *Key Lessons Learned and Good Practices in Water Resources, Water, and Waste Water Management*. Part 1 Draft report, Independent Evaluation Department. Manila.

capacity development, government commitment, community participation, cost recovery and prudent financial management, monitoring, and good coordination as key requisites of successful projects.

13. Capacity development in general is very important to WSS project success. Successful projects in the PRC and Mongolia attributed their success to capacity development and strong government support for institutional and regulatory reforms. Weakness in capacity was cited as a contributory factor to projects rated less successful in Indonesia, Malaysia, and Philippines. In the Pacific DMCs,<sup>8</sup> training for board members of public utility companies was needed; more must be done to ensure that data generated from the introduction of performance-based principles in the utilities are used in decision making and that they are acted upon when performance falls short of targets; efforts to change operational procedures can be effective only if the management of the utility and staff take full ownership of necessary changes; stakeholders need to support corporatization plans to build politically acceptable solutions, increase transparency, and ensure sustained implementation of institutional changes; and private ownership is not a precondition to efficient operations. However, corporate structure is an important ingredient for defining the identity of utilities, and developing corporate goals and institutional culture. The evaluation also highlighted the need for creating greater awareness (and transparency of corporate performance), not only of water resource management issues but also of the financial and operational implications of the current status of water utilities.

14. While cost recovery has been recognized as one of the most critical factors for water projects, the self-evaluation reports (footnote 3) reveal several challenges in implementing cost recovery in reality. Public acceptance has been frequently cited as a major obstacle in achieving cost recovery. Despite the difficulty and challenges of tariff reforms and related cost recovery, a number of projects in ADB's water portfolio have implemented successful tariff reforms. Experience in these projects shows that important elements of a successful approach to tariff reforms can be identified: (i) effective stakeholder communication and consultations, (ii) tariff structures that are perceived to be fair and affordable, (iii) reforms that are accompanied by service improvements, (iv) metered rates so customers can manage their service bill by controlling consumption, (v) gradual tariff adjustments, (vi) crisis conditions that legitimize investments and related tariff reforms, and (vii) credible and legitimate service providers.

15. As of 2007, only 1% of ADB's total private sector infrastructure investment operations had gone to WSS compared with 83% for power generation and transmission. ADB can do more non-sovereign operations, given the significant political and regulatory risks in water and the declining level of private sector investments in water (although the number of projects is increasing), and developing member country (DMC) governments' inadequate financing for water infrastructure. The examples of well-functioning public utilities in other parts of the world indicate that (private) ownership is not necessarily essential to efficient operations. However, corporate structure is an important ingredient to defining the identity of utilities and to helping develop corporate goals and institutional culture. As shown in the special evaluation study (SES) (footnote 8), commercialization does not follow automatically from changes in corporate structure. Among the four utilities, the Papua New Guinea Waterboard has the strongest commercial orientation but is still struggling to instill this as corporate culture at all levels.

16. One of the key assumptions behind private sector participation (PSP) or ownership of water supply is that private provision is more efficient than public provision. Recently, however,

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<sup>8</sup> ADB. 2003. *Sector Evaluation Study for ADB Capacity Building Assistance for Managing Water Supply and Sanitation to Republic of Fiji Islands, Kiribati, Papua New Guinea, Republic of Marshall Islands*. Manila.

a consistent stream of empirical evidence has shown no systematic significant difference between public and private operators in terms of efficiency or other performance measures. One third of projects in the 1990s had PSP as the objective, with generally promising results in terms of coverage or service quality, better institutional development impacts, and were twice more likely to be sustainable compared with non-PSP projects. ADB has also its share of successful water projects with PSP.

17. The Fuzhou Water and Wastewater Project included a build, operate, and transfer (BOT) scheme for a WWTP with a capacity of 50,000 cubic meters per day facilitated by the local government (the implementation cost of \$84.86 million was financed by the borrower and \$66.61 million by ADB). The project helped the provincial and/or city governments to attract private sector investment in the water and wastewater sectors by promoting good governance and tariff reforms. Mechanisms for tariff setting were set in place to improve the cost-recovery capability of water supply and/or wastewater companies and encouraged participation of the private sector. As a result, similar projects are under way and the PRC is now the world leader in PSP in wastewater.

18. Studies<sup>9</sup> have also shown that actual investments by PSPs on the ground, particularly in connecting poor households, often required public finance and/or guarantees from government or government-owned development banks. Private water companies do not necessarily bring in new sources and volumes of investment finance, but instead rely heavily on the same sources that are available to the public sector. For instance, most private companies relied on sources that are also available to governments—donors, commercial and development banks, bonds, and operating surplus. Private equity was rarely used by private investors. Private water companies are also not interested in investing in small towns and cities. Metro Manila's PSP experience is limited to the use of water concessionaires. Connected households benefited from piped water supply. Poorer households benefited from water for all program- funded additionally. Concessions did not bring about much-needed private sector capital to finance physical infrastructure rehabilitation, particularly in the south of Manila.

19. In the Philippines,<sup>10</sup> greater attention was needed on assessing demand-side issues and reduction of the high levels of NRW, providing adequate maintenance of the existing water supply facilities and, investment for rehabilitation, and improving transparency and accountability in preparing concession agreements.

20. In Bangladesh,<sup>11</sup> problems are increasing in the larger cities, especially in housing, transport, slums, and solid waste. Special problems are posed by arsenic contamination in rural water supplies and by water supply in Dhaka. There is a need for more comprehensive frameworks for investments, policy and institutional reform, and capacity development. Development partners should support financing mechanisms that engender greater municipal accountability as well as promote local resource mobilization to ensure the sustainability of subprojects. There should be greater coordination, aid agency harmonization, and alignment with government systems and priorities, although the Government should also play a leading role.

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<sup>9</sup> Hall, David and Emmanuelle Lobina. 2006. *Pipe Dreams – The Future of the Private Sector to Invest in Water Services in Developing Countries*, PSIRU Reports, University of Greenwich, London, March; and ADB. 2008. *ADB Assistance to Water Supply Services in Metro Manila*. Manila.

<sup>10</sup> ADB. 2008. *Sector Evaluation Study for ADB Assistance to Water Supply Services in Metro Manila*. Manila.

<sup>11</sup> ADB. 2009. *Sector Assistance Program Evaluation for Urban Sector and Water Supply and Sanitation in Bangladesh*. Manila.

21. In Viet Nam,<sup>12</sup> ADB should explore the possibility of reducing project startup time by ensuring that implementation consultants are hired, the feasibility studies are reviewed, and any revisions in project scope and initial design are made during project preparation rather than during implementation. The risk analyses in the RRP's must be strengthened and critical project issues viewed realistically.

22. A project-level evaluation of provincial towns WSS project in Viet Nam<sup>13</sup> reported that when coordinating with other agencies in recruiting consultants, rigorous assessment of needs and quality control are needed; the government must draw up a long-term strategy on (i) which agency will be responsible for the development and maintenance of drainage; (ii) whether sewerage operations should be integrated with water supply or kept separate; (iii) how to sustain the technical and financial burden of sewerage, either from local taxes or a specific tariff; and (iv) the need to maintain various project impact data, including health and socioeconomic data, to continuously monitor improvements in public health and livelihood that social infrastructure projects will yield.

23. Although, some ADB water projects, such as the Punjab Community Water Supply and Sanitation Sector Project in Pakistan, benefited greatly from exemplary community participation, overall community participation has not reached its true potential as indicated by "mixed results" mentioned in the PCR's. In addition, there are considerably more challenges in some countries than in others. For example, difficulties in implementation were reported more frequently in projects from Indonesia and Sri Lanka, where the main challenges are not the lack of attention to community participation in the project design stage, but an ineffective approach, unrealistic requirements and targets, and the ignorance of disadvantaged groups in communities. The greatest obstacle to successful participatory development is convincing institutional players that it is indeed possible. Success stories from Malaysia and the Philippines show that often just one committed person can lead the community participation process.

24. The importance of government support as a determining factor for project success was clearly recognized in all evaluation reports. Projects from the PRC and Viet Nam often attributed their success to strong government support. In the case of the Punjab Community Water Supply and Sanitation Project, the active support of the provincial government was cited as critical to the project's success. Government support might be more important in some subsectors than in others. Strong government support is essential in subsectors, such as tariff reform, institutional reform, regulatory reform, and water conservation, where long-term commitment from the government is critical to overcome significant resistance to changes.

25. The evaluation of the Rural Water Supply and Sanitation Project<sup>14</sup> in Indonesia listed the following lessons: (i) The provision of WSS services to remote rural communities presents unique technical, implementation, and operational challenges; appropriate provisions need to be made in advance of construction. (ii) ADB should not attempt to implement in small communities over-complex technical solutions, which are beyond the capability of the organizational structure in place. (iii) ADB should not combine target groups that require different operational modalities. Projects should be either community-based or water authority-based to avoid the tendency to focus on the easier-to-implement, more profitable larger schemes. (iv) Standard designs are acceptable in certain circumstances but must not be over-

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<sup>12</sup> ADB. 2009. *Sector Assistance Program Evaluation for Urban Services and Water Supply and Sanitation in Viet Nam*. Manila.

<sup>13</sup> ADB. 2008. *Evaluation of Second Provincial Towns Water Supply and Sanitation Project in Viet Nam*, Manila

<sup>14</sup> ADB. 2004. *Evaluation of Rural Water Supply and Sanitation Project in Indonesia*. Manila.

utilized if schemes are to remain both appropriate and financially efficient. (v) Major changes in the project context (such as those stemming from decentralization) should normally lead to adjustments in implementation arrangements.

26. A quasi-experimental impact study<sup>15</sup> of the Rural Water Supply and Sanitation Sector projects in Punjab, Pakistan, shows that the projects (i) significantly improved households' access to water supply, (ii) reduced drudgery among the lowest socioeconomic group, (iii) improved high school attendance of the girls in the middle socioeconomic group, and (iv) increased leisure time for female members of households. However, the project interventions had no significant impact on primary health such as the incidence and intensity of diarrhea; significant reduction in incidence was found in the middle socioeconomic group. Similarly, at the aggregate level, the projects had no impact on labor force participation and hours worked, although disaggregated analysis shows a significant but negative impact in the middle socioeconomic group. Thus, increase in high school attendance rates came either from the withdrawal of working children from the labor force, particularly in the middle socioeconomic group, or from the reduction of time spent in fetching water. The lack of impact on labor force participation and work hours indicates that the time saved from fetching water documented in the study had not been translated into more income generation, contrary to the projects' expectation.

27. Limited project assistance for sanitation, facilitating access to credit, and improving hygiene education also had no significant impact on households. Overall, 80% of the subprojects were functional and had no problem with presence of heavy metals, but the majority of them had bacteriological contamination and sanitary hazard problems, at both the source and distribution points. Similarly, only 43% of the community-based organizations (CBOs) managing these subprojects were partly or fully functional and had low functional maturity and reflected weak capacity in managing WSS systems. Similarly, while several CBOs could meet O&M costs from user charges, the majority of them lacked resources for capital replacement and routine maintenance work.

28. The study recommendations are as follows: (i) Rural WSS projects must significantly benefit female household members, especially by reducing drudgery and increasing high school attendance. (ii) The current focus of WSS projects' designs should go beyond improving access to water supply, and include wastewater and solid waste management; increased role of nongovernment organizations and the private sector in supporting CBOs responsible for subprojects, improving water quality, and additional provisions for improving access to WSS for the poor and other disadvantaged groups who cannot afford piped water connection to their homesteads. (iii) Valid baseline data based on relevant indicators with relevant counterfactuals (comparisons) are crucial for results monitoring and evaluation and, hence, efforts are required to collect such data before the projects start. (iv) It is important to safeguard and maximize project benefits by conducting post-project monitoring and carrying out corrective measures on time. Such measures may include, but not be limited to, assistance to bridge finance O&M in the initial years of operations even after project completion; strengthening the capacity of CBOs to address technical, managerial, and financial management issues; and strengthening linkages between CBOs and provincial, district, and local agencies involved in WSS delivery and services.

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<sup>15</sup> ADB. 2009. *Rural Water Supply and Sanitation Sector Projects in Punjab, Pakistan*. A rigorous impact evaluation study report. Manila.

## 2. Analysis of Lessons Identified by Evaluation Reports

29. The Independent Evaluation Department (IED) maintains a database of lessons identified by its evaluation reports, referred to as the evaluation information system (EVIS). A quick analysis of lessons from evaluated water sector projects indicates many policy factors were related to various aspects of sustainability.

**Table A8.7: Analysis of Lessons Identified by Evaluation Reports**

Factor	Projects (%)	Major Aspects
Planning/budgeting	35.1	The need for improved project planning and budgeting
Participation, water users association (WUA)	20.6	The essential role of participation in the design and implementation of water supply and sanitation (WSS) and irrigation projects
Training, capacity development	20.1	The need to strengthen the capacities of ADB's implementing agencies (IAs) and facility management. The important role of training and the use of technical assistance (TA).
Financial sustainability and tariff reform	15.8	<p>Financial performance of WSS utilities is a key determinant of sustainability. Adequate support (TA, if necessary) needs to be provided.</p> <p>WSS utilities should not be forced to take on systems that are mostly unprofitable and for which they had little or no involvement in planning and design. Residents are willing to pay for good-quality water and a reliable service. Failure to meet nonrevenue water (NRW) targets can greatly affect project benefits. Financial risks associated with regulated public utilities are closely tied to the regulatory policies and practices of the government.</p> <p>Water fees often pay for routine operation and maintenance (O&amp;M) but do not provide reserves for capital reinvestment. WSS utilities and cooperatives need to focus on O&amp;M rather than on external income-generating activities.</p> <p>Poor financial performance can lead to repeat cycles of deferred maintenance and rehabilitation in irrigation projects.</p>
Monitoring and evaluation (M&E)	13.8	M&E was often weak, limiting the availability of data that is important to managers, regulators, and agencies responsible for M&E. Successful projects are closely monitored by executing agencies (an indication of strong ownership) and also by ADB.
Management	12.8	Varied lessons but some focus on the need for simple project design and implementation arrangements. New management structures take time to establish. Management of both the water user associations (WUAs) and irrigation management companies is important. Need for understanding of ADB procedures by IAs.
Consultants/contracting	11.2	<p>High quality consultants have an essential role to play in a wide range of aspects of water projects, from design to construction supervision, to e.g., substituting for weak IA capacity, safeguards assessment and NRW reduction. Delays in recruiting consultants are common and often damaging to project outcomes. Advance recruitment of consultants can improve operational procedures and overall efficiency. Engaging two or more teams of consultants to manage implementation of a project may be ineffective, and may lead to duplication.</p> <p>Specifications in tender documents should be explicit. The quality of works undertaken by farmers and/or WUAs is usually better than that of contractors. However, strong support is needed. Contract monitoring procedures and training should be provided to new IAs. Construction quality control should be strengthened through effective monitoring by beneficiaries.</p>
Coordination	10.8	Improved interagency coordination is often required for effective implementation, particularly of complex projects.
Institutional reform	8.7	Institutional analysis at design is important. Institutional development may be needed at various levels from water user groups to provincial/national agencies.
Technical sustainability		WSS technical sustainability may be promoted by (i) high quality of construction, (ii) financial viability of the operator, (iii) simplicity and robustness of works, (iv) low O&M requirements, (v) adequate capacity or capability of staff (often requiring capacity

Factor	Projects (%)	Major Aspects
		development), and (vi) provision of spare parts by or service agreements with suppliers. Project investments that respond to strong demand by the community or utility management are more likely to be sustainable (e.g., system ownership).  Irrigation systems require adequate commissioning and support periods. Community organizations can often construct high quality assets, leading to strong sense of ownership. Investment at the primary level needs to be accompanied by improvement at lower levels. Implementation should be at the lowest level of government (or CBO) that has sufficient capacity. Institutional capability to manage, operate, and maintain investments requires realistic assessment
Environmental and social	7.1	Mainly relating to resettlement and the need for good planning and implementation

Source: Compiled from Evaluation Information System (EVIS), Independent Evaluation Department.

### 3. Summary of Lessons and Issues from the Review of Project Completion Reports

30. Ninety-seven PCRs of water sector projects were reviewed to identify lessons and issues that can be useful for improving the ongoing and formulating new operations in the future. The lessons and issues identified are specifically related to ADB Water Policy elements and project management in general.

#### a. Relevance of Water Policy Elements

31. **National Focus on Water Sector Reform.** PCRs indicate that the success of water projects is strongly linked with institutional reforms. For instance, the reduction of NRW could not be successfully carried out through infrastructure repairs (e.g., rehabilitation and upgrading of pipelines) alone. Policies and regulations have to be adopted as well to encourage affordable connections and prohibit pilferage.

32. In areas where there are resource limitations, better understanding of political economy and in-depth consultations leading to proper agreements prior to project formulation proved to be beneficial in minimizing implementation delays and ensuring project sustainability. Similarly, public dialogues led to policy reforms that paved the way towards accelerated privatization of water supply operations, improved water utility operations and well-established water regulatory bodies.

33. The development of a long-term strategy is likewise perceived to be helpful in addressing issues on (i) which agency will be responsible for the development and maintenance of water projects; (ii) whether sewerage operations need to be integrated with water supply, or kept separate; and (iii) how to sustain the technical and financial burden of the sewerage, either from local taxes or a specific tariff. This somehow ascertains that beyond the assistance period, specific responsibilities are delegated to appropriate authorities to ensure the operation and maintenance of the water systems.

34. **Integrated Management of Water Resources (IWRM).** To avoid conflicts with other water users and to secure the water source in the rural areas, the availability of water should have been carefully examined, and its projected use with other users should be coordinated at the design stage. In urban areas, on the other hand, there should be a clear understanding on how water and land issues are interlinked. The impasse between the government and landowners over development of water resources, coupled with the reluctance of landowners to vacate the water reserves, are examples of such. Government efforts to manage water

resources are often at odds with the landowners' traditional views thus concerns over the agricultural sustainability of their land become an issue. Further, a lack of alternative land for settlement also constrains effective protection of water reserves.

35. **Improving and Expanding the Delivery of Water Services.** Tariff increases were effective in decreasing the water demand of high consumption households in the rural areas, but not enough to substantially reduce overall water demand. Other measures, such as public awareness, should be undertaken in parallel to control water demand. Development and use of management information system, accounting, and monitoring and evaluation systems should likewise be promoted to effectively carry out WSS services.

36. Applying the principles of full cost recovery and determining on-lending rates must be properly evaluated, especially for small utilities in rural communities with limited financial capacity. The assumptions on revenue growth and tariff increases must be based on social indicators that are not unrealistically high while much greater analysis is required before designing tariffs, particularly when alternative sources of water are accessible.

37. To extend services to the poor, connection fee on concessionary terms and low lifeline tariff should be considered. Similarly, sanitation development should be an integral part of rural water supply projects, to maximize development and poverty reduction impacts. Demonstration latrines, hygiene education, and awareness campaigns are not adequate and should be complemented by more tangible support (e.g., revolving funds), to encourage households to build more durable sanitation facilities.

38. Meanwhile, handover of water supply to local communities should ensure continued support during the transition and follow-up periods especially in the areas of operation and maintenance as well as financial management. Most rural water utilities are lacking in appropriate skills and manpower as experts tend to seek better opportunities in urban areas.

39. For urban WSS projects, on the other hand, autonomy is often a concern. Setting the water tariffs to meet financial needs to operate and maintain the water supply and sanitation system to acceptable standards or expanding area coverage is sometimes politicized. Thus, dependence on budgetary support from the government remains unless the authority for setting water tariffs is delegated.

40. In WSS projects where covenants include granting of autonomy and restructuring of water utilities' organization, technical assistance could provide the appropriate support for policies and procedures inasmuch as new approaches on business cycles are being digested, tested, and established but the required regulation for such should also be put in place.

41. The objective of providing water to low-income populations by providing public stand pipes appears to run counter to the objective of the water districts becoming financially viable. Similarly, failure to increase water and wastewater tariffs to meet targets for cost recovery and to cover weak implementation of tariff policies could significantly jeopardize financial sustainability. Thus, a corporate development plan for water utilities is advisable in the project design.

42. In deciding on the mode of WSS services, the culture surrounding water consumption should be taken into account aside from the willingness to pay for water and the water supply management capacity. For example, some cultures may prefer drinking boiled water for tea rather than drinking chlorinated water directly from the tap. The high investment costs of

producing clean and safe drinking water for a small population should be weighed against cheaper and technically less complex solutions that may rely on separate supply systems for non-drinking use.

43. Low connection is sometimes discouraged by high upfront connection charges despite of water tariff affordability. Future water projects should explore the establishment of revolving funds and special lending facilities in local government banks that could provide the initial capital for water connections at a more affordable repayment arrangement.

44. Any increase in water tariff can incite a negative consumer response. Such response would be easier to deal with if consumers, consumer groups, and government officials were made aware that tariff increases would be necessary before they were imposed thus WSS projects need to devote considerable attention to an adequate public communication and education. Even though a population may prove willing to accept the water systems and the tariffs, it should be well informed about the need for and the benefits of water supply treatment and wastewater drainage, availability of lifeline block supplies, and payment methods. Customer data and performance indicators must be reported properly to the management in a timely manner to allow necessary adjustments in O&M, budgets, and connection programs as well as to improve administration and customer relations. Meanwhile, the community should also be encouraged to report more detailed incidents of water-borne diseases to assist in identifying the problem areas that need more sanitation education.

45. Water demand forecasts should be realistic otherwise an overestimation could result in over supply of water. Development plans of water supply networks should be gradual and carefully scheduled to be sustainable. The institutional capacity should likewise keep pace with the rapid physical expansion of service networks. A master plan matching institutional capacity with service expansion is advisable. However, possible water shortage in the project area should be closely monitored and contingency measures to mitigate the same should be prepared.

46. In scheduling construction works, upstream water source development should be synchronized with installation of downstream distribution lines to expedite cost recovery as gaps in the construction schedule increase the interest paid by the water utilities.

47. Typically, all expenses associated with septic tank installation and maintenance is fully borne by households thus, sanitation due to indiscriminate septic discharges among urban poor is a major concern especially in areas where sewer system connections is not possible. To resolve this, some WSS projects extended concessional loans with flexible repayment schemes to low-income households through government-owned banks for septic tanks installation. In more developed urban areas with possible sewer connections, however, water utilities and/or local government need to strategize how to achieve greater sanitation coverage to improve local hygiene conditions through financial incentives like initial subsidy for the connection and discounted price for regular desludging of the tanks. Moreover, the cost recovery of wastewater services should be reconsidered. The assumption that people will voluntarily connect to a central wastewater disposal system with the understanding they will be charged for it is not realistic, unless there is a direct benefit. The revenues of a central wastewater treatment plant should be paid by those who benefit—either directly (e.g., through improved health) or indirectly (e.g., through increased tourism)—from the plant. Resource mobilization approaches should focus on formulating the benefits, identifying the beneficiaries, developing the charging mechanism, and implementing a comprehensive connection program.

48. **Conservation of Water and Increasing System Efficiencies.** The target for NRW reduction should be kept reasonable and achievable. Effective and sustained reduction of NRW needs a comprehensive and detailed action plan with monitoring milestones. An NRW action plan should include a substantial commitment of financial and human resources, careful planning and delineation of achievable targets, and periodic program monitoring and evaluation. In addition, information exchange among water authorities would help solve common problems associated with NRW and would reinforce NRW control efforts. Most of them have developed or are developing NRW control programs but implementation has been hampered by financial constraints. In light of this experience, a key focus of loan projects for NRW control should be the establishment of ongoing and sustainable NRW programs.

49. **Regional Cooperation and Beneficial Use of Shared Water.** Given the active involvement of many development partners—government agencies, external aid agencies, and non-government organizations (NGOs)—in the water supply and sanitation sector, interventions in the sector need to be well coordinated and complementary to each other, to ensure efficient resource use and effective service delivery.

50. As far as exploitation of new water sources is concerned, firmer assurances on their availability should be obtained before completion of detailed engineering design. This was particularly true for the eight large or medium-sized subprojects in the province of Bulacan in the Philippines that were relying on the Bulacan bulk water supply scheme. The cancellation of this scheme led to the cancellation of the eight subprojects after much work had been undertaken.

51. **Improving Governance.** Project preparation should involve extensive consultation with stakeholders including those affected by the development proposals. Lack of adequate consultation at project preparatory stage and at design stage with the end user and other stakeholders can reduce the impact of a project. Consultations that cover type and level of proposed facilities, size, costs involved, probable tariffs, affordability, and willingness to pay are vital for the sustainability of the project. Sufficient time needs to be dedicated for social mobilization activities, and construction activities should not be rushed. Adequate social mobilization is essential for full understanding of project objectives and procedures at the community level, stronger community ownership and participation, and effective implementation and sustainability. Social mobilization should not be limited to water utility customers only and should be aimed at the community at large, through effective mechanisms, such as training of local school teachers, community leaders, and political leaders. It should likewise ensure equitable distribution of benefits especially among women and children since they are mostly responsible for water collection.

52. The involvement of beneficiaries in all aspects of development, implementation, and O&M can create a sense of ownership and improve the sustainability of the Project. The success of a community-based approach depends on local hydrogeological, socio-cultural, economic, and political conditions, and the capacities of NGOs and CBOs. An effective community-based approach should therefore include CBO capacity development and empowerment. This can be done by entrusting organizations with more responsibility and giving them decision-making roles in subproject planning and implementation, including roles related to financial and procurement matters. This, accompanied by clear and transparent working procedures, will help promote community ownership of the implementation process and project facilities from the beginning. A pilot project could be implemented to examine these conditions before introducing a full-scale project.

53. During construction, a public awareness campaign on the merits of piped water and a calibrated marketing campaign to attract new customers are essential to optimize construction schedules and cost recovery. In most cases, distribution lines and service connections were installed separately because customers had not decided to subscribe to the service when distribution lines were laid. It would be more efficient to install distribution lines and service connections at the same time to avoid repeated excavation and restoration works. Implementation should be planned in detail and undertaken through effective supervision, monitoring, and cost control.

54. There is also a need to maintain various project impact data, and socioeconomic data, to continuously monitor improvements in the public health and livelihood that social infrastructure projects will yield. Many departments within the provincial government are “compartmentalized” and concerned only on micro issues. For example, the health department may only be involved in the design to incorporate health and sanitation concerns, but once the construction work starts, the officials are no longer involved in the water supply and maintenance of the new water treatment plant.

#### **b. Role of Project Management**

55. **Project Implementation Design.** Unrealistic work schedules, poor procurement planning, inadequate implementation details, and loose monitoring targets cause prolonged implementation, delays, and inaccuracy during processing. Optimistic implementation plans with no margin for unexpected delays and no consideration for seasonal impacts should therefore be avoided. The lack of an adequate monitoring and reporting framework introduces the risk of noncompliance with loan conditions, suspension, or early closure of the loan.

56. Some technical lessons for WSS projects that need to be taken into account when designing similar projects include: (i) differentiation of technical and social mobilization needs for lowland villages vis-à-vis highland villages; (ii) differentiation of water utilities’ schemes vis-à-vis community-managed schemes; (iii) minimization of systems based on pumps and/or treatment plants in small communities and, if unavoidable, need extra attention; (iv) special attention to be given to ethnic and cultural differences between areas in the approach, as some communities need more focus in terms of health and hygiene education, and mobilization; (v) promotion of house connection-based systems based on the principle of recovery of investment and operational costs by the beneficiaries; and (vi) provision of pour-flush sanitation systems in areas without a suitable water supply.

57. The project design and the consequent loan size must take into consideration the size of the utility and population of the project location. Over ambitious projects can become a burden of the government and the community. When designing future assistance, the selection of the reservoirs and other materials to be used should take into account local knowledge on atmospheric conditions (for instance, water systems in the island communities could be prone to corrosion). Conducting groundwater investigations over a period of time sufficient to determine variations in yield and recharge rates could avoid water shortages in the future.

58. Better understanding of local conditions, the operational setup of the utilities concerned, and the cultural environment in which the project will operate, are vital to proper design and implementation. Demand-driven, community-based development requires a flexible design to accommodate community preferences in which substantial investment in time is required at the outset to overcome initial hesitation by communities.

59. When a large number of subprojects are involved in a project and each subproject requires a number of activities in sequence, i.e., design, procurement, and construction, the effect of compound delays should be properly and conservatively assessed and reflected in the appraisal implementation schedule. For a project consisting of a large number of geographically dispersed subprojects, strong central project coordination at the state rather than the central level is essential for smooth implementation and dissemination of useful information to participating water districts.

60. Since policy change takes time to be accepted in an established bureaucracy, a more careful assessment is needed of political risks that may inhibit reform progress. Government leadership is critical in the policy formulation and consultation processes. More upfront consultation with key officials and the public should be done. A more process-oriented methodology may also be considered where policy reforms are developed in a step-wise manner, enabling wider consultations to ensure acceptance by all stakeholders. Government leadership is critical in the policy formulation and consultation process.

61. Overly optimistic objectives in a limited implementation period should be avoided. A gradual, step-by-step approach consistent with local realities and government processing requirements should be adopted. As such, government's procedures and the in-house capabilities of executing and implementing agencies should be thoroughly explored and reviewed at appraisal, and project implementation schedules should take them into consideration.

62. **Project Implementation.** A key element in the success of any project is the government's strong commitment to it. This ensured that schedules were kept, procedures adhered to, and guidance at the highest level was given when necessary. The organizational structure should be in place before implementation starts. In the case of new management structures, it should be anticipated that this will take time, and adequate resources should be allocated. A functional monitoring system should be established to manage large numbers of subprojects effectively. Thus, the choice of the executing agency (EA) is critical and should be carefully and realistically done with due regard for its capacity and experience in working with ADB. The EA's team should consist of dedicated professionals with a demonstrated track record.

63. Projects to be implemented through an EA without prior working experience with ADB should have easy and simple targets. The project timeframe should have provided adequate time for developing adequate knowledge and understanding; establishing the required processes, procedures, and project implementation framework; and slowly attaining momentum in implementation. Inadequate time caused complexity and failure to complete the project.

64. Packaging civil works together with procurement of necessary materials is not always the best approach. Unless the sites are widely scattered, establishing storage, purchasing materials in bulk, providing contractors with necessary materials, and keeping books under the responsibility of the employer may work better. This arrangement is also advantageous in fully utilizing purchased materials even after the project period is over.

65. In general, water utilities need to enhance their capabilities to supervise contractors. During bidding and construction, they could be misled by the contractors' alternative proposals for different materials and construction methods from the original specifications. Sometimes the alternatives turned out to be of poor quality, resulting in a delay to secure the necessary quality.

66. The lack of understanding of ADB procedures by participants in bid evaluations invariably led to procurement delays. Given the need to have representatives from all the project towns in attendance for bid evaluations, delays in the approval of questions to and responses from contractors for the international competitive bidding contracts proved inevitable. Technical assistance could be extended in building the capacities at the water utilities and governments.

67. **Project Implementation Monitoring.** Establishment of suitable and appropriate indicators is important to properly monitor and evaluate the effectiveness of the Project during implementation. These should include water quality baseline data to evaluate improvements in quality under the Project. However, most EAs do not perceive the benefits and significance of monitoring, more so of having baseline data on their operations or day-to-day decision making. Thus, they are not willing to spend the money necessary to collect the data. Experience from the Project indicates a need for more policy dialogue with government and project staff on preparing practical and functional project performance monitoring system. Project targets should be linked to project activities. Methods to monitor achievement of these targets should be based on readily measured indicators.

68. Involving resident missions in monitoring, advising, and coordinating helped resolve issues concerning slippage, inordinate delays, unmet conditions, and poor performance in a timely fashion. In the case of unrecoverable delays, the EA should seek to reduce the project scope, close the loan early, or suspend the loan until all compliances are met.

## RISK AND PROJECT SUSTAINABILITY

1. A content analysis was completed on the report and recommendation of the President (RRP) and project completion report (PCR) documents to characterize the manner in which these documents identified risk factors and risk mitigation measures. The focus of the analysis was the specific impact of the 2001 Water Policy on project sustainability. The content analysis considered whether the risk assessment sections of the RRP and PCRs identified any of the following risk factors and risk mitigation measures (Table A9.1):

**Table A9.1: Description of Risk Factors**

<b>Risk Factors</b>	
Financial risk	Any risk arising from financial insecurity due, for example, to low revenues, high costs, poor cash flow, high fixed costs, etc. This factor includes low tariffs, failure to reform tariffs, failure to increase tariffs, and failure to reform or phase out subsidies.
Legal shortcoming	Any impediment to undertake a project activity arising from a constraint associated with deficiencies in laws and regulations. Examples include: project organizations that have no legal status, project agencies that have no authority to raise revenue from beneficiaries, ill-defined authority over tariff adjustments.
Technical design	A weakness or deficiency in the design of project assets; e.g., over or under capacity, failure to optimize the design, poor quality materials, poor engineering design.
Social design	A weakness or deficiency in the design of project social structures; e.g., lack of community input or participation, ineffective user associations.
Inadequate operation and maintenance (O&M)	Failure to develop an effective project O&M plan for reasons other than financing; e.g., poor scheduling of tasks, unrealistic expectations regarding ongoing local contributions in kind.
Inadequate capacity	Inadequate quality of human and technical resources required for management, operations, or monitoring; e.g., lack of control and monitoring equipment and lack of trained and experienced staff.
Institutional structure	Deficiencies in institutional structures that may jeopardize project sustainability including overlapping or ill-defined jurisdictions.
Institutional function	Deficiencies in institutional function that may jeopardize project sustainability including a failure to enforce regulations and poor financial management and accounting.
Poor water resource management	Risks arising from a failure to manage available resources effectively; e.g., over-allocation, poor management of water waste and loss, poor pollution control.
Water resource constraint	Risks arising from a basic water resource deficiency; e.g., insufficient source of supply, variable seasonal supply, flooding.
Climate change	Risks arising from impending water resource deficiencies caused by climate change; e.g., increasing scarcity and increasing severity of extreme events.
<b>A. Water Policy Mitigation Measures</b>	
New legislation	New laws or regulations to establish required authority, regulate tariffs, and authorize local organizations prohibit certain activities.
Integrated water resources management (IWRM)	Various planning activities based on IWRM that strive to overcome risk.
Participatory approach	Measures to encourage local community engagement in a project, including participation in planning, management, and operations.
Phasing out of subsidies	Improve financial sustainability by eliminating subsidies or refining them so that they target poverty households.
Pollution prevention	Pollution prevention efforts to increase the availability and safety of water supplies.
Terrestrial ecosystems	Efforts to protect or enhance terrestrial ecosystems so as to improve the quality or quantity of water resources.
Public-private partnership (PPP)	Use of PPPs to overcome deficiencies related to financial risk, technical capacity, poor O&M.
Autonomy and accountability	Institutional reforms to increase the autonomy of local water resource management agencies and their accountability to beneficiaries.
Tariff reform	Measures to increase tariffs, improve collections, restructure tariffs, or reform the way in which tariff adjustments are approved.

<b>Risk Factors</b>	
Water conservation	Measures to reduce nonrevenue water and water use inefficiency, including water audits, leak detection and repair, customer and distribution system metering, irrigation canal lining, irrigation flow scheduling, etc.
Water user association	Participatory approaches applied specifically to irrigation systems.
Gender-based action	Measures to enhance benefits through actions targeting women; e.g., mandated positions for women on local organizations, hiring quotas for project work, training and community organization efforts that target women, project designs that address gender inequality.
Poverty alleviation	Measures to enhance benefits through actions targeting poor households; e.g., hiring quotas for project work, training and community organization efforts that target poor households, subproject selection based in part on poverty.
Comprehensive water policy	Development of comprehensive policies at a regional or national scale to overcome risks associated with resource availability and resource mis-management.
Sector assessment	Thorough assessment of water resources, resource users, and related institutional arrangements and structures.
Apex body	A central government body providing oversight and direction in water resources management and development.
<b>B. Other Mitigation Measures</b>	
Capacity development	Staff training and resourcing to upgrade technical capabilities.
Provide qualified technical staff	Provision of staff with the technical training and experience required for project implementation and management.
Robust analysis in project preparatory technical assistance	A thorough technical analysis at the design stage to anticipate risks and offset them through appropriate planning and design.
Monitoring and evaluation	Establishing an apparatus for effective, ongoing project monitoring and evaluation so that adverse project developments can be identified early and overcome.
Project administration	Establishing a more effective project administration to assure better quality project implementation.
Project design	Using design elements that offset risk factors; e.g., infrastructure design standards that accommodate increasing severity of extreme events, designs that minimize O&M requirements.

Source: Independent Evaluation Department.

2. For each project, the following coding scheme (Table A9.2) was applied to all of those elements. In practice, the “0” coding proved difficult to apply accurately. The codes “0” and “blank” were therefore combined and interpreted to mean “not identified,” without reference to applicability.

**Table A9.2: Coding Scheme**

<b>Code</b>	<b>Interpretation</b>
Blank	Not applicable
0	Applicable but not identified in the RRP or the PCR
1	Identified in the RRP
2	Identified in the PCR but not in the RRP
3	Identified in both the RRP and the PCR

PCR = project/program completion report, RRP = report and recommendation of the President.

Source: Independent Evaluation Department.

### **A. Risk Assessment by Period**

3. Detailed risk assessment data are summarized in Table A9.3. The data are presented as a figure in the main text. Statistical tests indicate, starting in 2001, a marked increase in RRP's identifying financial risk, legal shortcomings, social design, inadequate capacity, and institutional function as risk factors. There was also a significant decrease in assessments where technical

design was considered a risk factor. There was a significant increase in RRP's recommending participatory approaches to mitigate risk, a tool advocated by the water policy. Moreover, most of the general risk mitigation measures considered in this analysis were more heavily prescribed after 2001.

**Table A9.3: RRP's that Identify Risk Factors and Mitigation Measures**

	<u>All Data</u>		<u>Pre-2001 Water Policy</u>		<u>Post-2001 Water Policy</u>		<u>Pre-/Post- 2001 Test of Significance<sup>a</sup></u>	
	(%)	(number)	(%)	(number)	(%)	(number)	Chi Square Statistic	p
<b>Total Number of RRP's</b>	<b>207</b>		<b>106</b>		<b>101</b>			
<b>RISK FACTOR</b>								
Financial risk	47.3	98	43.4	46	51.5	52	7.51 ***	0.006
Legal shortcoming	16.9	35	9.4	10	24.8	25	5.63 **	0.018
Technical design	24.2	50	32.1	34	15.8	16	16.87 ***	0.000
Social design	26.6	55	20.8	22	32.7	33	3.97 **	0.046
Inadequate O&M	34.8	72	34.0	36	35.6	36	4.09	0.129
Inadequate capacity	53.1	110	41.5	44	65.3	66	9.32 ***	0.002
Institutional structure	7.2	15	2.8	3	11.9	12	0.88	0.349
Institutional function	31.9	66	12.3	13	52.5	53	9.16 ***	0.002
Poor water resource management	7.2	15	8.5	9	5.9	6	0.43	0.511
Water resource constraint	8.2	17	11.3	12	5.0	5	0.30	0.585
Climate change	4.8	10	3.8	4	5.9	6	0.08	0.774
<b>WP Mitigation Measure</b>								
New legislation	16.4	34	9.4	10	23.8	24	2.73 *	0.098
IWRM	2.4	5	0.9	1	4.0	4	0.08	0.779
Participatory approach	38.2	79	20.8	22	56.4	57	14.80 ***	0.000
Phasing out of subsidies	1.9	4	0.9	1	3.0	3	0.04	0.835
Pollution prevention	0.5	1	0.0	0	1.0	1	0.06	0.810
Terrestrial ecosystems	3.4	7	1.9	2	5.0	5	0.15	0.696
Public-private partnership	4.3	9	1.9	2	6.9	7	0.11	0.741
Autonomy and accountability	15.0	31	9.4	10	20.8	21	5.09	0.024
Tariff reform	33.3	69	29.2	31	37.6	38	4.61	0.032
Water conservation	5.8	12	4.7	5	6.9	7	0.23	0.632
Water user association	8.2	17	7.5	8	8.9	9	0.10	0.758
Gender-based action	1.9	4	0.0	0	4.0	4	0.31	0.578
Poverty alleviation	2.9	6	0.0	0	5.9	6	na	
Comp. water policy	4.3	9	2.8	3	5.9	6	0.17	0.679
Sector assessment	1.9	4	0.9	1	3.0	3	na	
Apex body	8.2	17	2.8	3	13.9	14	1.29	0.256
<b>General Mitigation Measure</b>								
Capacity development	49.3	102	38.7	41	60.4	61	10.43 ***	0.001
Provide qualified technical staff	24.6	51	6.6	7	43.6	44	9.19 ***	0.002
Robust PPTA analysis	7.7	16	5.7	6	9.9	10	0.39	0.532
Monitoring and evaluation	7.2	15	1.9	2	12.9	13	5.18 **	0.023
Project administration	33.3	69	15.1	16	52.5	53	17.33 ***	0.000
Project design	30.9	64	25.5	27	36.6	37	8.15 ***	0.004

IWRM = integrated water resource management, O&M = operation and maintenance, PPTA = project preparatory technical assistance, RRP = report and recommendation of the President, WP = water policy.

<sup>a</sup> Chi square test to determine if post 2001 risk assessment performance differs from pre-2001 performance.

Note: \*, \*\*, and \*\*\* = 90%, 95% and 99% confidence intervals (2 tail), respectively.

Source: Independent Evaluation Department.

4. A summary of risk assessment data is given in Tables A9.4–A9.7. Significance tests indicate an overall increased emphasis on risk assessment after the policy as measured by the number of risk elements considered in RRP's.

**Table A9.4: Frequency of Risk Factors and Mitigation Measures in RRP**

Number of Risk Elements Identified in each RRP	Risk Factor		Risk Mitigation Measure				
	(number)	(%)	WP Policy		General		
	(number)	(%)	(number)	(%)	(number)	(%)	
<b>All Years</b>	0	10	5	48	23	46	22
	1	34	16	78	38	66	32
	2	59	29	40	19	49	24
	3	57	28	22	11	33	16
	4	25	12	14	7	11	5
	5	15	7	3	1	2	1
	6	4	2	1	0.5		
	7	3	1	1	0.5		
Total	207	100	207	100	207	100	
<b>Pre-2001 Water Policy</b>	0	10	9	37	35	37	35
	1	21	20	47	44	46	43
	2	35	33	18	17	18	17
	3	27	25	1	1	3	3
	4	6	6	2	2	2	2
	5	5	5	1	1	0	0
	6	2	2	0	0		
	7	0	0	0	0		
Total	106	100	106	100	106	100	
<b>Post-2001 Water Policy</b>	0	0	0	11	11	9	9
	1	13	13	31	31	20	20
	2	24	24	22	22	31	31
	3	30	30	21	21	30	30
	4	19	19	12	12	9	9
	5	10	10	2	2	2	2
	6	2	2	1	1		
	7	3	3	1	1		
Total	101	100	101	100	101	100	
<b>Pre-/Post-2001 test of significance</b>							
Chi square statistic		12.399		22.117		28.882	
<i>p</i>		0.088*		0.002***		0.000***	

no. = number, RRP = report and recommendation of the President, WP = water policy.

Notes: (i) Chi square test to determine if post-2001 risk assessment performance differs from pre-2001 performance.

(ii) \*, \*\*, and \*\*\* = 90%, 95%, and 99% confidence intervals (2 tail), respectively.

Source: Independent Evaluation Department.

## B. Risk Assessment and Mitigation

5. Interrelationships in the risk assessment data were evaluated to characterize responses to identified risk factors. This was done for water supply and sanitation (WSS) and irrigation projects. RRP for 45 out of 75 WSS projects identified financial risk as an important element of risk. Of these, 32 (71%) proposed risk mitigation measures that one would expect in response to financial risk (Table A9.5).

**Table A9.5: Mitigating Financial Risk in Water Supply Projects**

Water Policy Mitigation Measure	Number of RRP
Tariff reform	20
Autonomy and accountability	5
Phase out subsidies	0
Autonomy and accountability, and tariff reform	7

RRP = report and recommendation of the President.

Source: Asian Development Bank database.

6. Of 34 irrigation project RRP, eight identified financial risk as important. Of the eight, six (75%) proposed water policy risk mitigation measures that would be expected in response to financial risk (Table A9.6)

**Table A9.6: Mitigating Financial Risk in Irrigation Projects**

<b>Water Policy Mitigation Measure</b>	<b>Number of RRP</b> s
Tariff reform	1
Autonomy and accountability	1
WUA	3
Phase out subsidies	1

RRP = report and recommendation of the President, WUA = water user association.  
Source: Asian Development Bank database.

7. Of 34 irrigation project RRP, 10 identified social design as an important risk. Eight (80%) proposed water policy risk mitigation measures that one would expect in response to this risk (Table A9.7).

**Table A9.7: Mitigating Social Design in Irrigation Projects**

<b>Water Policy Mitigation Measure</b>	<b>Number of RRP</b> s
WUA	4
Participatory approach	1
Participatory approach and WUA	3

RRP = report and recommendation of the President, WUA = water user association.  
Source: Asian Development Bank database.

## CRITICAL AND CROSS-CUTTING ISSUES

### A. Institutional Reform

#### 1. Government Support

1. The political economy dimension of a project concerns the degree of government and agency support that the project receives. Many issues will influence this support—from the concerns of government officials over personal influence and access to resources, to their political concerns over community stability and public protest.

2. Strong government support is important to project success, particularly with respect to tariff reform, institutional and regulatory reforms, and water conservation. The support of a city's mayor or a provincial or state minister can quickly resolve intermunicipal and interagency conflicts, overcome local bureaucratic resistance to change, resolve seemingly intractable problems relating to local regulations, and ease project access to critical information and resources.

3. The Dalian Water Supply Project provides clear evidence. This project achieved its objectives in terms of the construction and operation of physical outputs, the provision of a 24-hour water service, tariff reforms and financial sustainability, and capacity development. The project performance audit report concluded:<sup>1</sup>

“The evaluation reconfirms two important lessons. First, as Dalian Municipal Government demonstrated in this Project, the commitment by the local government is the most important factor contributing to the success of water supply and sanitation projects. Second, consumers accept and understand the need for higher tariffs only if the water supply services are adequate and reliable, as in this Project.”

4. The corollary is that weak government support including political opposition can scuttle a project as was the case with the institutional reform agenda of the Water Resources Management Project (Loan 1757-SRI). The project was plagued by, among other things, a loss of Government commitment to pursue the difficult and complex issues that were encountered and relocation of the executing agency from one ministry to another six times during the project. In the end, political opportunism during a state election fueled strong public opposition to proposed institutional reforms. The project completion report for this project concluded:<sup>2</sup>

“A strong political will to proceed with such reforms is a product of public confidence and the common acceptance of the proposed reforms. Adequate mechanisms are needed to produce that level of public awareness, confidence, and acceptance—initially by absorbing views of diverse interest groups and analyzing them in terms of program objectives, and finally adjusting the design of the programs to suit the majority views.”

5. Asian Development Bank (ADB) staff interviewed for this special evaluation study (SES) confirmed the critical role of government and the need to account for local political concerns, particularly with respect to tariff reforms. The local political reality often makes radical tariff reform completely unacceptable, sometimes for reasons of affordability but also due to local conventions and beliefs around water supply or distrust in the service provider.

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<sup>1</sup> ADB. 2003. *Project Performance Audit Report on the Dalian Water Supply Project in the People's Republic of China*. Manila. (PPA: PRC 25013, Loan 1313-PRC).

<sup>2</sup> ADB. 2007. *Completion Report, Project Number: 32188, Loan Number: 1757 Sri Lanka: Water Resources Management Project*. Manila.

6. Under such circumstances, the typical loan project does not give ADB sufficient leverage to impose tariff reform. While such reforms may be covenanted, covenanting alone does not assure compliance. What can work in such circumstances, the staff suggested, was a long-term commitment to the water sector in a country by means of a succession of interrelated loans as we are now seeing using the multitranche financing facility (MFF). Long-term commitment gives ADB several advantages not otherwise available. They include

- (i) opportunities to build relationships and trust;
- (ii) opportunities to work with the client to develop technical and administrative capacity over the course of several years, thus allowing a more sustainable improvement in service delivery;
- (iii) opportunities to demonstrate the impact of reform in a gradual manner over the course of two or more projects; and
- (iv) opportunities to assist the client in gaining public trust.

7. It is trivial to say that government support must be substantial and sincere, but from a project implementation perspective, it is noteworthy since that support cannot be guaranteed. A telling example occurred in the Pacific region. ADB granted a series of technical assistance (TA) grants to promote the autonomy of water utilities through corporatization in the Fiji Islands, Kiribati, Republic of the Marshall Islands, and Papua New Guinea. Corporatization was attained or strengthened, but it did not translate into improved service delivery and commercialization of operations. In one case, corporatization was implemented in name only. The water utility remained administratively within the government and had no independent decision making authority and no financial independence.<sup>3</sup>

8. The significant role of government support is certainly not a new finding; several studies reviewed under the SES reach this conclusion:

- (i) ADB. 2003. *Special Evaluation Study on Participatory Approaches in Forest and Water Resource Operations in Selected Developing Member Countries*, SST: REG 2003-32.
- (ii) ADB. 2002. *Impact Evaluation Study on Water Supply and Sanitation Projects in Selected Developing Member Countries*, IES: REG 2002-17.
- (iii) ADB. 1999. *Impact Evaluation Study of Bank Assistance in the Water Supply and Sanitation Sector in Indonesia*, IES: INO 99004.
- (iv) ADB. 2009. *Sector Assistance Program Evaluation, Urban Sector and Water Supply and Sanitation in Bangladesh. An Exploratory Evaluation of the Programs of ADB and Other Aid Agencies*, SAP: BAN 2009-02.

9. The lack of political will to implement institutional reforms is a major cause of unsatisfactory project outcomes.

## 2. Beyond Government Support<sup>4</sup>

10. Successful institutional reform requires more than just government support. Reinforcing elements include right timing and sequencing, good leadership on the side of the borrower,

<sup>3</sup> ADB. 2003. *Special Evaluation Study on Asian Development Bank Capacity Building Assistance for Managing Water Supply and Sanitation to Republic of the Fiji Islands, Kiribati, Papua New Guinea, and Republic of the Marshall Islands*. Manila (SST:REG 2003-08).

<sup>4</sup> Based on The Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore. 2009. *Key Lessons Learned and Good Practices in Water Resources, Water, and Wastewater Management, Part 1: Main Report*. Submitted to the Independent Evaluation Department, Asian Development Bank.

significant local political motivating factors, and coordination among donors. Consider two projects:

- (i) *Phnom Penh Water Supply and Drainage Project* (CAM) – rated highly successful<sup>5</sup>
  - Visible reform champion
  - Strong support by a government with a reform strategy
  - Underlying political issues too salient to allow failure
  - Motivation for reform due to from fiscal constraints on the Central Government
  - Enterprise autonomy and tariff reforms were achieved
  - Measurable performance indicators in place
  - Implemented by the appropriate agency with strong capacity
  - Leveraged aid agency coordination (ADB, OPEC fund, NORAD)
  - Strong focus on capacity development (consultants, twinning, foreign training)
- (ii) *Provincial Towns Improvement Project* (Loans 1725-CAM and 2013-CAM)—rated unsuccessful<sup>6</sup>
  - No visible reform champion, consultant-driven
  - No government reform strategy
  - Political issues less salient, politics as usual
  - Lack of significant local triggers and incentives
  - Institutional reforms (decentralization, revenue generation) not achieved
  - Unclear performance indicators
  - Weak implementation capacity in an inappropriate executing agency
  - Weak aid agency coordination (World Bank, ADB)
  - Weak capacity development (consultants only)

11. Other critical features of the Phnom Penh project were good communication and effective management of public perception. Reforms are inherently political and protracted. They therefore need credible champions and a reform coalition to oppose the inevitable collection of entrenched stakeholders who will defend the status quo. Communicating and managing perceptions are essential for defining the issues and winning the arguments in favor of reform.

12. Flexibility and gradualism were key features of the Phnom Penh Water Supply Authority (PPWSA) project design. The policy reform component allowed flexible implementation and a "learning by doing" approach, given that new ideas and best practices in the water sector were not well known in Cambodia. PPWSA received specialized TA services supported by a training center and twinning arrangements.

13. Performance targets created legally binding obligations to restructure PPWSA into an autonomous agency, implement tariff reform, downsize the utility, introduce performance-based incentives, and enforce cleanup of accounts receivable. These targets were tracked by intensive ADB monitoring and were linked to credible and enforceable sanctions.

14. Enabling institutional arrangements are at times critical to further institutional reform. For instance, the success of participatory project structures depends in part on enabling institutional arrangements including an implementing agency with a well-established participatory culture, and a policy and legal framework that supports participation. This is seen in Viet Nam where a

<sup>5</sup> ADB. 2005. *Project Completion Report Phnom Penh Water Supply and Drainage Project*. Manila (IN.118-05, Loan 1468-CAM[SF]).

<sup>6</sup> ADB. 2008. *Project Completion Report Provincial Towns Improvement Project in Cambodia*. Manila (IN.351-08, Loans 1725-CAM and 2013-CAM).

1998 decree on democratization underpins participatory planning and in the Lao People's Democratic Republic where national policy dictates farmer management of irrigation assets.<sup>7</sup>

## B. Sector Policy

15. From the perspective of the water policy, the institutions that matter are those identified in the policy: river basin organizations (RBOs), the policy and legal framework, road maps, apex bodies, and sector assessments.

16. The merit of a well-developed national institutional framework lies in the guidance it provides in planning, especially in balancing social, economic, and environmental values. A review of best practice in water supply and sanitation (WSS) projects noted that less than successful projects suffered from a failure to balance economic, financial, and social objectives in project design and operation.<sup>8</sup>

17. Sector institutions for 23 countries are briefly described in Table A10.1. ADB had a formative role in developing these institutions in nine of the countries through its advisory technical assistance (ADTA) and loan projects. This is a significant accomplishment.

18. Accomplishment of sector reforms can be described in terms of the percentage of specific reform elements that are in place (coded **Yes**) and partly developed (**Partial**). Across all countries, 48% of the reform elements are coded Yes and 39% are coded Partial. All countries in the table have made some progress toward national institutional reform with at least one element in place.

**Table A10.1: Summary of Status of Water Sector Reforms in DMCs**  
(as of end-2009)

Region/ Country	National Water Policy	Comprehensive Water Sector Assessment	Neutral Water Sector Apex Body	Updated Water Legislation	Water Sector Road Map, Agenda, or Plan	River Basin Organizations
<b>Central West Asia</b>						
Afghanistan	<b>Yes</b> - well-designed policy framework based on the new Water Law	<b>No</b> - severe lack of data, poor monitoring capability and resources	<b>Partial</b> - Ministry of Energy and Water, Ministry of Agriculture, Irrigation, and Livestock	<b>Yes</b> - Water Law, 2009	<b>Yes</b> - National Development Strategy, Government's water sector policy framework	<b>Partial</b> - in place but poorly resourced
Armenia	<b>Yes</b> - Government approved water policy in 2002	<b>Partial</b> - available sector information suggests some level of assessment	<b>Yes</b> - The State Committee of Water Systems established in 2002 as a key sector governing body	<b>Yes</b> - Law on Water Code (2002), Law on National Water Policy (2005), Law on National Water Program (2006)	<b>Yes</b> - National Water Program - water action agenda	<b>Partial</b> - river basin management supported in the Water Program

<sup>7</sup> ADB. 2003. *Special Evaluation Study on Participatory Approaches in Forest and Water Resource Operations in Selected Developing Member Countries*. Manila (SST: REG 2003-32).

<sup>8</sup> M. Gatti. 2007. *Best Practices in Water Supply and Sanitation: Learning from Successful Projects A Case Study from the 2006 Annual Evaluation Review*. ADB. Manila.

Region/ Country	National Water Policy	Comprehensive Water Sector Assessment	Neutral Water Sector Apex Body	Updated Water Legislation	Water Sector Road Map, Agenda, or Plan	River Basin Organizations
Azerbaijan	<b>Partial</b> - for water supply and sanitation with <b>support from ADB</b>	<b>Partial</b> - for water supply and sanitation with <b>support from ADB</b>	<b>Partial</b> - Azersu Joint Stock Company responsible for water supply and sanitation (WSS); State Amelioration and Irrigation Committee (SAIC) manages irrigation, drainage, flood control	<b>Yes</b> - Water Code of 1997, National Water Supply and Wastewater Law passed (1999)	<b>Partial</b> - 2000 Water Supply and Sanitation Strategy	<b>Partial</b> - River Basin and Flood Management Planning Cell to be created under SAIC by 2004
Kazakhstan	<b>Partial</b> - Potable Water Sector Program 2002–2010	<b>Partial</b> – monitoring water quality, groundwater	<b>Yes</b> - Water Resources Committee within Ministry of Agriculture	<b>Yes</b> - Water Code 2003; Law on Rural and Consumer Cooperatives of Water Users 2006	<b>Partial</b> - 2002–2010 program for drinking water, agricultural water use strategy	<b>Partial</b> - basin water organizations in place but not empowered
Kyrgyz Republic	<b>Partial</b> - Government five-year, medium-term policies, 1999	No information	<b>Partial</b> - Water Resources Directorate in the Ministry of Agriculture and Water Resources	<b>Yes</b> - Law on Water (1994) + draft water code, Law On Water User Associations (2002)	<b>Partial</b> – planning requirements specified in the law on water	<b>No</b> – water management by ministries and municipalities
Pakistan	<b>Yes</b> - National Drinking Water Policy (2009), Local Government Ordinance (2001)	<b>Yes</b> - national water sector profile completed in 2002 with <b>support from ADB</b>	<b>Partial</b> – national committee oversees flood management, policy includes apex body formation	<b>No</b> – no indication of new legislation	<b>Yes</b> - Water Sector Strategy and Sector Profile prepared in 2005 with <b>support from ADB</b>	No
Tajikistan <sup>a</sup>	No	<b>Partial</b> – for WSS	NO	<b>Yes</b> - water code, 2000	<b>Yes</b> - water sector strategy, 2005	No
Uzbekistan	<b>Partial</b> – WSS policy	<b>Yes</b> - 2007, comprehensive overview of the water sector prepared with help of United Nations Development Programme (UNDP)	<b>No</b> – responsibility vested in three agencies	<b>Partial</b> - Law on Water and Water Use (1993)	<b>Partial</b> - 2000, Irrigation and Drainage Sector Strategy and Study	<b>Yes</b> – Min. Agriculture and Water Resources organized on a basin basis
<b>East Asia</b>						
Mongolia	<b>Yes</b> - National Water Policy Program 1999	<b>Partial</b> - available sector information suggests some level of assessment	<b>Yes</b> - National Water Committee, 2000	<b>Yes</b> - Law on Water	<b>Partial</b> - National Water Policy Program	<b>Partial</b> - Ministry of Nature and Environment has established Water Authority Agency

Region/ Country	National Water Policy	Comprehensive Water Sector Assessment	Neutral Water Sector Apex Body	Updated Water Legislation	Water Sector Road Map, Agenda, or Plan	River Basin Organizations
People's Republic of China <sup>a</sup>	<b>Yes</b> - Adopted Water Law in 1988 that includes policies	<b>Yes</b> - National water sector profile prepared as <b>part of ADB Strategic Options Study</b>	<b>No</b> - Water Resources Management Committee proposed	<b>Yes</b> – Water Law (2002)	<b>Yes</b> – various plans for irrigation, water, wastewater	<b>Yes</b> - Yellow River Basin Commission
<b>South Asia</b>						
Bangladesh	<b>Yes</b> - National Water Policy 1999	<b>Partial</b> - establishing a National Water Resources database	<b>Yes</b> - Water Resources Planning Org. is the secretariat to the National Water Resources Council	<b>Partial</b> – several laws but nothing comprehensive	<b>Yes</b> - National Water Management Plan	<b>Partial</b> - Bangladesh Water Development Board
Bhutan	<b>Yes</b> - Bhutan Water Policy (2003)	No	<b>Yes</b> - National Environment Commission	<b>Yes</b> - Draft Bhutan Water Act (2002), Law for water (2009)	<b>Partial</b> - Bhutan WSS sector master plan	<b>Partial</b> – management by basin legislated
India	<b>Yes</b> . – National Water Policy 2002, state water policies	<b>Yes</b> – Integrated Water Resource Development – A Plan for Action 1999, state water plans	<b>Yes</b> - National Water Resources Council, state water councils/boards	<b>Partial</b> - For some states (e.g., regulatory authority acts)	<b>Yes</b> - 2004-2006 country strategy program (CSP) includes agriculture, natural resources, and urban sector road maps which cover water resources and irrigation and water supply	<b>Partial</b> – national legislative framework, some states have pilot RBOs (e.g., Orissa)
Maldives	<b>Partial</b> - Health Master Plan 1996 – 2005, Second National Environmental Action Plan 1999	No	<b>Partial</b> - Environmental Protection Agency	No	<b>Yes</b> - 2006, Road map for water sector regulations and standards	No
Nepal	<b>Yes</b> - National Water Supply Sector Policy (1998), National Water Plan (2005), National Urban Policy (2007).	<b>Partial</b> - for Kathmandu Valley	<b>Yes</b> - Water and Energy Commission	<b>Yes</b> - National Water Act	<b>Yes</b> - National Water Plan prepared in 2005	No information
Sri Lanka	<b>Yes</b> - Water Resources Policy	<b>Yes</b> - national water sector profile completed in 1996, with <b>support from ADB</b>	<b>Yes</b> - Water Resources Council and Water Resources Secretariat (1996)	No	<b>Yes</b> - Strategic Framework and Action Plan for Comprehensive Water Resources Management 1995	<b>Partial</b> - Mahaweli Authority, enabling legislation in place
<b>Southeast Asia</b>						
Cambodia	<b>Yes</b> - National water policy 1999	<b>Yes</b> - National water sector profile, capture and management of data and information	<b>Partial</b> - Cambodia National Mekong Committee, Ministry of Water Resources and Meteorology	<b>Yes</b> - Law on Water Resources Management (2005)	<b>Yes</b> - National Water Resources Strategy and Strategic Action Plan	<b>Partial</b> - Mekong River Commission (86% of country)

Region/ Country	National Water Policy	Comprehensive Water Sector Assessment	Neutral Water Sector Apex Body	Updated Water Legislation	Water Sector Road Map, Agenda, or Plan	River Basin Organizations
Indonesia	<b>Yes</b> - Adopted in 1993 based on Guidelines of State Policy	<b>Partial</b> - For water supply and sanitation with <b>support from ADB</b>	<b>Partial</b> - National Development Planning Agency, APEX body being considered.	<b>Yes</b> - Water Law No. 7, 2004	<b>Yes</b> - water sector profile was drafted in 2005 with <b>support from ADB</b>	<b>Yes</b> - 133 hydrologically defined RBOs
Lao People's Democratic Republic	<b>Yes</b> - National strategic action plan, 1999	<b>Yes</b> - national water sector profile completed in 1997, 2001 with <b>support from ADB</b>	<b>Yes</b> - Water Resources Coordination Committee, 1999	<b>Yes</b> - Water and Water Resources Law (1996)	<b>Yes</b> - Sector Strategy and Action Plan prepared in 1999 with <b>support from ADB</b>	<b>Partial</b> - management plan for the Nam Ngum watershed with help from ADB, Integrated Watershed Management Unit
Malaysia	<b>Yes</b> - National Water Policy 2001, National Policy for Rural Water Supply and Sanitation	<b>Yes</b> - national water sector profile completed in 1996	<b>Partial</b> - Water Resources Council and Water Resources Secretariat, National Water Resources Committee	No	No	<b>Partial</b> - enabling legislation in place
Philippines	<b>Yes</b> - policy, coordination and development functions in place	<b>Partial</b> - water and sanitation subsector profile completed in 2001 with <b>support from ADB</b>	<b>Yes</b> - National Water Resources Board	<b>Partial</b> - Adopted Water Code in 1975 – revisions under consideration	<b>Yes</b> - National Strategy and Action Plan for Water Supply and Sanitation prepared in 2001 with <b>support from ADB</b>	<b>Partial</b> - Pasig River Rehabilitation Commission
Thailand	<b>Yes</b> - national water policy and vision statement	No	<b>Yes</b> - National Water Resources Committee	<b>Yes</b> - Water Law No. 7/2004	<b>Partial</b> - Road Map for Integrated Water Resources Management in the Citarum River Basin with <b>ADB support</b>	<b>Yes</b> - river basin management organizations under the Water Law
Viet Nam	<b>Yes</b> - for WSS, working paper on national goals for water	<b>Yes</b> - completed in 1994 with support from ADB, National Water Sector Profile, National Water Resources Atlas	<b>Yes</b> - National Water Resources Council formed in 1998 with <b>ADB support</b>	<b>Yes</b> - Water Resources Law 1999. ADB helped implement the law	<b>Partial</b> - Water Vision for 2025, Framework for Action for water resources management, National Water Resources Strategy	<b>Partial</b> - RBOs established in 2001 but not yet effective

DMC = developing member country.

<sup>a</sup> Information for two countries (Tajikistan and the PRC), came primarily from ADB. 2006. *Water for All: Translating Policy into Action, Comprehensive Review of ADB's Water Policy Implementation, Final Report and Recommendations of the Review Panel.*

Source: Information in this table was obtained primarily from the sector assessment discussion in recent report and recommendation of the President (RRP) documents. Other sources include a variety of occasional documents from ADB.

## 1. Capacity Development

19. This section addresses the evaluation framework component on adequacy of institutional capacities. Capacity development initiatives targeting ADB clients include knowledge products launched under the Water Financing Program (WFP) for member countries and training opportunities provided through capacity development components built into most loan projects.

20. WFP has aggressively cultivated and pursued various opportunities for knowledge creation and management:

- (i) performance benchmarking and peer reviews among national water apex bodies and RBOs,
- (ii) production of the data book on the benchmarking of water utilities,
- (iii) support to the network of Southeast Asian Water Utilities and the Network of Asian River Basin Organizations (NARBO),
- (iv) the 'Water for All' publication series and Water Voices TV documentaries, and
- (v) a number of regional meetings and conferences.

21. Under WFP, pilot and demonstration activities are used to test new project concepts and technologies. Completed pilot demonstration activities now number 38 and another 18 are ongoing.<sup>9</sup>

22. These are new and exciting initiatives, but ADB's primary tools for knowledge transfer and capacity development are the training opportunities provided in loan projects. While total expenditures by WFP from 2006 to mid-2009 for "program quality support" were \$9.68 million<sup>10</sup> or about \$2.4 million annually, training and capacity development budgets for water portfolio loan projects approved in 2008 alone totaled \$31.8 million.

23. This seems to be a robust budget for capacity development, but certain operational staff interviewed for this SES expressed concern with the merits of training provided through many loan projects. Their concern is that the training benefits are not sustainable for various reasons:

- (i) Training programs are often short-term workshops or seminars. Trainers are not available for follow-up support.
- (ii) Opportunities for ongoing mentoring and learning on the job are not provided.
- (iii) Operational employees typically receive training, but managers do not. Without a basic technical understanding, managers are more reluctant to support the initiatives of their newly trained staff.
- (iv) Staff turnover results in the loss of trained individuals.

24. The risk to project operations due to unsustainable training was evident in a review of subprojects for the Punjab Rural Water Supply and Sanitation Project:<sup>11</sup>

"In 21 of the schemes surveyed, trained operators were operating the schemes. In the remaining 7, new operators had come in to replace the original trained operators, and they were operating the schemes satisfactorily. Financial management and record-keeping is entrusted to volunteers in most cases, and was found to be good in 8 of the sample schemes and average to poor in the others."

<sup>9</sup> Available: <http://www.adb.org/Water/PDA/>

<sup>10</sup> This component includes "Knowledge, capacity and innovation services; engaging civil society; and regional cooperation." ADB. 2009. *Water Financing Partnership Facility Semi-annual Progress Report*. Manila.

<sup>11</sup> ADB. 2003. *Project Completion Report Punjab Rural Water Supply and Sanitation (Sector) Project*. Manila (IN.294-03, Loan 1349-PAK).

25. Observations and recommendations from other evaluation studies echo a concern with capacity development efforts offered through grant and loan projects:

- (i) **Indonesia.** “Strengthen the monitoring and evaluation of its capacity development efforts by introducing appropriate targets and performance measures in all future projects.”<sup>12</sup>
- (ii) **Bangladesh.** Due to the adverse institutional context, project-based assistance can only temporarily alleviate some of the capacity constraints.<sup>13</sup>
- (iii) **Viet Nam.** “To help the [water supply companies] modernize their management and financial systems each project provided for capacity development—with mixed results. Except for the very first project, capacity development has been mostly confined to 1 week of training. Some companies have profited more than others, and some have retained very little. To be more effective, institutional development assistance should be broad-based. Instead of concentrating on a few systems; it should help the company as a whole to obtain a better vision for its future, and to develop corporate development plans, with continuous TA support. Insufficient resources and the limited focus of the TA projects have made such broad-based assistance difficult.”<sup>14</sup>
- (iv) **Pacific region.** “ADB’s capacity development approach needs to change. The institution undergoing change needs to be fully committed and systematic institutional diagnostics should be undertaken jointly before a decision is made on the areas and direction of change. A medium-term strategy for capacity development should be developed, providing the framework for continuous assistance with interim milestones (targets to be attained through individual TAs). Terms of reference of consultants need to be changed to give greater emphasis to the capacity development role.”

26. Not all project capacity development efforts are wasted. Capacity development has been cited in some project completion reports as a key to success. The Tianjin Wastewater Treatment and Water Resources Protection Project<sup>15</sup> in the People’s Republic of China (PRC) identified the value of comprehensive training as a factor of success. Staff training in water tariffs was cited as a factor contributing to the success of the Provincial Towns Improvement Project in Mongolia.<sup>16</sup> In another example, the North Java Flood Control Sector Project in Indonesia<sup>17</sup> recognized from past lessons that the capacity of the executing agency to coordinate and manage project was important for success, but in the end the lack of capacity for planning and implementation became an obstacle to full success.

27. An innovative approach to capacity development that overcomes the transient nature of project-based capacity development efforts involves twinning client service providers with established operations that have a solid track record of performance. Since 2008, ADB has initiated eight twinning arrangements among water utilities. Four of these involve private sector “expert twins.”

<sup>12</sup> ADB, 1999. *Impact Evaluation Study of Bank Assistance in the Water Supply and Sanitation Sector in Indonesia*. Manila. (IES: INO 99004)

<sup>13</sup> ADB. 2009. *Sector Assistance Program Evaluation, Urban Sector and Water Supply and Sanitation in Bangladesh An Exploratory Evaluation of the Programs of ADB and Other Aid Agencies*. Manila (SAP: BAN 2009-02).

<sup>14</sup> ADB. 2009. *Sector Assistance Program Evaluation Viet Nam: Urban Services and Water Supply and Sanitation Sector*. Manila (SAP: VIE 2009-27).

<sup>15</sup> Loan-1797-PRC: Tianjin Wastewater Treatment and Water Resources.

<sup>16</sup> Loan-1560-MON: Provincial Towns Basic Urban Services.

<sup>17</sup> Loan-1425-INO(SF): North Java Flood Control Sector.

28. While much is made of the need for adequate operational funding to assure sustainability of investments, the observations above on capacity development suggest that funding is only part of the equation. The current model of capacity development employed in loan projects may need to be supplemented or replaced with a model that assures ongoing technical support for operations and comprehensive training for all service delivery agency staff.

## **2. Strategic Planning**

### **a. Integrated Water Resources Management**

29. Most ADB river basin projects focus on tackling environmental challenges, such as water pollution and flood control. Projects dealing with environmental challenges differ from those that focus on quantity aspects of water resource management. The shift in focus requires changes in policy instruments and the institutional framework, notably with respect to planning, permitting, monitoring, and enforcement activities related to pollution. A basin-wide approach is critical to the success of both flow and quality management programs in a river basin.

30. The importance of basin-wide approach can be seen clearly from two ADB projects examined in the study. The Songhua River Basin Water Pollution Control and Management Project<sup>18</sup> considered water supply and wastewater services in 26 counties and cities located throughout the basin. This allowed water supply, water quality, and in-stream flow requirements to be assessed at a basin level. In contrast, the effectiveness of the Klang River Basin Environmental Improvement and Flood Mitigation Project<sup>19</sup> was negatively affected because insufficient attention was placed on the project's downstream impacts and on the views of the downstream communities.

31. One of the factors contributing to the success of the Songhua River Basin Water Pollution Control and Management Project is that it was a timely investment initiative. The PRC State Council approved the Songhua River Basin Water Pollution Prevention and Control Master Plan which specified a wastewater treatment rate of 70% by 2010 for large and medium cities in the Songhua River Basin.

32. The Water Policy is clear in its endorsement of basin organizations. ADB Staff have advised us that this element of the policy must be interpreted in a flexible manner. It is not meant as a prescription for a specific type of basin organization, but rather it simply recognizes the need for coordination of water management actions in a watershed. Coordination can be achieved by virtue of a fully empowered basin authority or an umbrella organization of existing agencies with individual mandates covering different aspects of water management. Whatever structure is used it must accommodate local political and institutional realities.

33. Successful river basin projects require a long-term commitment. It takes a long time to build awareness, acquire necessary knowledge, promote a basin-wide approach, and develop effective institutions. As a result, the time frames for developing successful river basin projects are often longer than the length of typical loan projects. A continuing involvement in targeted river basins through policy dialogue, sector work, technical assistance as well as lending operations is essential to the development of successful projects. ADB's involvement in Songhua River Basin offers a good example of this kind of long-term commitment. Its involvement began as early as 1999 when Harbin Water Supply Project was prepared, and

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<sup>18</sup> Loan 2487 PRC: Songhua River Basin Water Pollution Control and Management.

<sup>19</sup> Loan 1500 MAL: Klang River Basin Environmental Improvement and Flood Mitigation.

though sustained commitment and involvement during the next 10 years, ADB has successfully processed three loan projects for the basin.

### **b. Water Conservation**

34. In developed countries, the status of water conservation has evolved from an afterthought in project planning in the 1960s to a core element of water supply and wastewater infrastructure planning today. Aggressive water conservation strategies are devised and implemented in order to defer and reduce water supply and wastewater treatment capacity investments, to manage operating costs and to safeguard sources of water supply and water bodies that receive treated effluent. The ADB Water Policy mirrors this approach. It promotes a substantive incorporation of water conservation into water portfolio projects, advocating better control of non-revenue water and better management of customer demand.

### **c. Non-revenue water**

35. Water and wastewater sector projects completed since 1995 were reviewed to determine how NRW was considered in project designs. Six of the completed projects clearly identified reduction of NRW as a key component, and one (Provincial Towns Improvement in Cambodia) set a target in the loan covenants. In general, these projects dealt with municipal water supply and started with high NRW at appraisal. Only four of these projects managed to lower NRW levels.

36. The Phnom Penh Water Supply and Drainage project was the only highly successful project among the six. NRW reduction at the end of the project was 17%, down from the estimated 45% at appraisal. These achievements are clearly sustainable considering that NRW has been further reduced to 6.07% by 2008. Success in NRW reduction came from the success in eliminating illegal connections, and, replacing old pipes.<sup>20</sup>

37. The key in NRW reduction for water conservation is sustainability. Controlling NRW requires a long-term commitment in terms of proper follow-up system maintenance to sustain benefits. The required maintenance program must include an ongoing long-term leak detection and repair. As well, the service provider needs political support to implement effective measures to eliminate illegal connections and other activities that contribute to high losses.

38. The successful projects noted above implemented cost recovery measures to cover operation and maintenance (O&M) but to different degrees. The Philippines Small Towns project reported that small districts would have difficulty maintaining their system because of a lack of financial and human resources.<sup>21</sup> In fact service providers face many challenges in trying to control NRW, ranging from the social risks of trying to control illegal connections to the technical difficulty of leak detection and the financial challenge of securing sustainable program funding. The project completion report (PCR) for another project in the Philippines advised that:<sup>22</sup>

“NRW reduction is a more complex and difficult task than it initially appears. Projections of NRW reduction need to be conservatively estimated at appraisal to avoid overestimating project benefits. A project approach alone is not sufficient to reduce NRW. The utility must take responsibility for NRW reduction in terms of a routine operational

<sup>20</sup> Water Voices documentary, “The Connection”.

<sup>21</sup> ADB. 2006. *Project Completion Report Small Towns Water Supply Sector Project*. Manila (Loan 1472-PHI), IN.213-06.

<sup>22</sup> ADB. 2004. *Project Completion Report Umiray-Angat Transbasin Project*. Manila (Loan 1379-PHI), IN.270-04.

activity. Experience shows that covenanting NRW reduction should be done with caution, as drivers for NRW are often difficult to get under control.”

39. Despite the difficulty of NRW reduction it is feasible and, at high levels of loss, economically beneficial. Water supply companies in Malaysia and PRC have demonstrated that NRW targets of 30% or less are achievable even when starting levels are twice this.<sup>23</sup> In the early stages of program planning the key is awareness raising among stakeholders combined with basic information on NRW management for decision makers.

### **C. Reduction in Customer Demand**

40. The other component of effective water conservation is controlling the wasteful use of revenue water. Success stories in reducing customer water use usually involve all the water conservation tools: education, technology, financial incentives and regulation. This is reflected in the ADB Water Policy which advocates rewarding conservation and penalizing waste and promotes awareness and education for water conservation. These tools could be more visible in ADB water projects.

41. Out of 21 completed water supply-related projects from 1995 to 2008, 15 included a public education component. Three of these 15 projects occurred after release of the Water Policy. Another three projects that occurred after the Water Policy did not include public education but these projects were not closely related to domestic use. This suggests that water supply projects included water conservation education even before release of the policy.

42. While the majority of ADB-funded water supply projects support customer metering, the objective of tariff reform in most projects is still at the level of cost recovery, often just for operating and maintenance costs at that, and falls short of pricing for water conservation. This issue was discussed above in the context of the political economy of tariff reform. Demand side management based on the tariff as a conservation measure is usually a distant option to be used only when there is public support of meters and user charges. Demand management therefore needs to include a social dimension to win that support.

43. A community-based approach was beneficial in the rural Punjab water supply and sanitation project. This project managed to implement customer metering in 63 communities by the end of the project in spite of a cultural bias against charging for water. The approach for subproject formulation, implementation, and operation was designed to foster local ownership and ensure sustainability of project facilities.

44. While the Punjab example applies to rural water supply, cities can also find innovative community approaches to promote water conservation. A well known example of this was applied by Manila Water in its efforts to reduce NRW. Manila Water managed to reduce NRW from 63% in 1997 to 35% in 2005. A major factor in this achievement was the manner in which Manila Water expanded services in a ‘Water for the Community’ program. Rather than metering individual customers, communities of up to 100 households were bulk metered at the community service entry point. This simple arrangement turned NRW beyond the bulk meter into revenue water paid for by the community. The bulk metered communities assumed responsibility for

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<sup>23</sup> ADB. 2002. *Impact Evaluation Study on Water Supply and Sanitation Projects in Selected Developing Member Countries*. Manila (IES: REG 2002-17).

losses and took action to prevent illegal connections and leakage past the bulk meter. This model worked well to share the benefits of water conservation with the customers.<sup>24</sup>

45. It must be remembered that efforts to reduce customer water usage target wasteful use resulting, for example, from plumbing leaks. In contrast to the water conservation objective, many water supply projects in rural and slum areas are specifically meant to improve water supply services so that households have sufficient water for basic consumption and sanitation needs. In one project review it was found that domestic beneficiaries of improved services in Philippines, PRC, and Sri Lanka had substantially increased their water consumption.

## 1. Water Scarcity and Allocation

46. The Asian Water Development Outlook 2007 argued that the water crisis is mainly not because of the physical scarcity of water, but because of the mismanagement of water resources. This fits with the main objective of the ADB Water Policy, which is to be an integrated, cross-sectoral approach to water management and development.<sup>25</sup>

47. The Water Policy advocates water allocation through markets of transferable water rights supported by appropriate institutional and legal frameworks. As an interim strategy the policy proposes water entitlements, or usage rights that account for the needs of the poor.

48. In order to evaluate application of these principles in operations, loan projects in the water portfolio from 1992 to 2008 were screened to identify rural and basin projects with irrigation or water supply components. In all, 43 projects were identified comprising 32 basin projects and 11 rural projects. Thirty of these included measures addressing water scarcity or drought (16% of all loan projects). Of the projects dealing with water scarcity through various structural measures, 47% also addressed water allocation. Allocation was understandably a greater concern for irrigation projects (65%) than WSS (45%).

49. The overwhelming emphasis in discussions of water allocation was on entitlement and administrative allocations based on need as estimated, for instance, by irrigated land area. Only two projects contemplated transferable and tradable water rights: MFF - Integrated Citarum Water Resources Management Investment Program – Tranche 1 (Loan 2500-INO) and the Water Resources Management Project (Loan 1757-SRI). The Citarum project actually proposed implementation of a water pricing and allocation strategies as an output for 2016.<sup>26</sup>

50. This evaluation of projects suggests that water allocation issues are being addressed in less than half the projects where allocation could be significant. The focus on allocation did not appear to increase after release of the Water policy.

## 2. Pollution prevention and sanitation

51. Loan projects that can have a pollution prevention outcome include those with components dealing with sanitation and wastewater as well as overland agricultural erosion controls or wetlands. Counts for projects with these components are shown in Table A10.2. This

<sup>24</sup> Wu Xun and Nepomuceno A. Malaluan. 2008. A Tale of Two Concessionaires: A Natural Experiment of Water Privatization in Metro Manila. *Urban Studies* 45(1): 207-229.

<sup>25</sup> ADB. 2007. *Asian Water Development Outlook 2007: Achieving Water Security for Asia*. Manila.

<sup>26</sup> ADB. 2008. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranchise Financing Facility and Administration of Grant and Technical Assistance Grant Republic of Indonesia: Integrated Citarum Water Resources Management Investment Program*. Manila (Project Number: 37049).

table also shows the distribution against ratings for the Water Policy pollution prevention criterion. One fifth of the projects were not motivated by a pollution prevention objective. This is most evident for the sanitation projects which are often motivated by health concerns.

52. From the perspective of integrated resources planning, this represents a potential failing. At issue is the fate of sanitary wastes. It is important to dispose of these for health reasons and the earliest waste management initiatives in North America and Europe practiced disposal by discharge into the nearest water courses—this is the risk arising from sanitation loan projects that do not address pollution prevention. Fortunately there has been a shift in the period following the Water Policy, 26% of projects did not address pollution prevention prior to 2001 compared to 18% afterwards.

**Table A10.2: Pollution Prevention Loan Projects**

Rating	Projects by Component			All Projects		All Projects
	Sanitation	Wetlands	Erosion Control	1992–2000	2001–2008	
Doesn't address pollution prevention	18	2	1	9	9	21
Pollution prevention addressed in the project design	65	4	6	25	40	75
<b>Totals</b>	<b>83</b>	<b>6</b>	<b>7</b>	<b>34</b>	<b>49</b>	<b>96</b>

53. WSS projects included in the 187 loan project database were separated out to better understand the allocation of resources to sanitation. The classification of these projects is provided in Table A10.3. Urban projects make up 71% of all projects and they are evenly distributed between the two services. Rural projects on the other hand focus more on water supply. Looking at the distribution of projects across time in this table, it is evident that the emphasis on sanitation increased after 2000.

**Table A10.3: Water Supply and Sanitation Loan Projects, 1992–2008**

Part A Sector	Urban		Rural/Small town		All Projects	
	(number)	(%)	(number)	(%)	(number)	(%)
Sanitation only	21	21.6	1	2.6	22	16.0
Water supply only	18	18.6	16	41.0	34	25.0
Water supply and Sanitation	58	59.8	22	56.4	80	59.0
All projects	97	100.0	39	100.0	136	100.0
Part B Sector	1992–2000		2001–2009		All Projects	
Sanitation only	9	9.3	13	13.4	22	16.2
Water supply only	21	21.6	13	13.4	34	25.0
Sanitation and Water supply	35	36.1	45	46.4	80	58.8
All projects	65	67.0	71	73.2	136	100.0

Source: Asian Development Bank database.

54. The increased emphasis on sanitation and on pollution prevention is consistent with the opinions of many reviewers in the sector (footnote 28, Footnote 14, footnote 15). Their views reflect a growing concern with the health and environmental impacts of inadequately treated wastewater, especially where people are concentrated in urban and town settings. However it is not always the case that sanitation improvements are warranted in rural settings. A recent

evaluation of rural water supply and sanitation investments in Punjab indicated that the benefits of the sanitation component were less than expected.<sup>27</sup> Because most households boiled drinking water, the overall reduction in waterborne disease was insignificant (although this was not the case for the middle socioeconomic group). The provision of latrines at schools did not affect the drop out rate.

55. The lesson from this project is not that rural sanitation is unimportant, rather it is that project outcomes can not necessarily be known in advance and that project design should therefore be sufficiently flexible to account for this. For instance, perhaps a sanitation and hygiene education campaign alone would have been just as effective in achieving the intended health outcomes in the Punjab; or perhaps a well informed community driven design approach would have eliminated the sanitation component. Admonitions from experts to increase the investment in sanitation should not override sound community based project design.

#### **D. Private Sector Partnerships<sup>28</sup>**

56. ADB has had some success in promoting private sector partnerships through its water portfolio lending program, notably in PRC. The Fuzhou Water and Wastewater Project led to the first build, operate, and transfer schemes for the water supply and sanitation sector in PRC. The project helped attract private sector investment by promoting good governance and tariff reforms. Mechanisms for tariff setting were set in place to improve cost-recovery capability of water supply and/or wastewater companies, which encouraged participation from the private sector.<sup>29</sup>

57. Despite this early success, only 1% of ADB's total private sector infrastructure investment operation, as of 2007, went to water supply and sanitation compared with 83% for power. This outcome likely reflects the available market for private sector investment initiatives. Water projects have significant political and regulatory risks that make them less attractive to private finance compared with telecoms, transport and energy. Water projects also tend to have higher cost of capital and lower rates of return compared to those other sectors. In response, private sector participation in the water sector has increasingly shifted from concession contracts to treatment plants such as in Fuzhou. Treatment projects are less risky than concession projects because investors deal only with one client, the municipal service provider, on a wholesale basis and at a pre-defined price.

58. Judging from the private sector portfolio, ADB could do more but an increasing role in promoting the private sector provision of water supply and wastewater services must be based on a realistic assessment of opportunities and constraints in the sector and the actual performance of private sector service providers. Recent research has dispelled certain myths about the private sector.

59. One of the key assumptions is that private provision is more efficient compared with public provision. However there has been a stream of empirical evidence showing that there is no systematic and significant difference between public and private operators in terms of efficiency or other performance measures. ADB's own project experience suggests that the key

<sup>27</sup> ADB. 2009. *Impact of Rural Water Supply and Sanitation in Punjab, Pakistan*. Manila (IES: PAK 2009-26).

<sup>28</sup> This section addresses the following evaluation framework component: the extent of public-private partnerships. It is based in part on The Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore. 2009. *Key Lessons Learned and Good Practices...* (footnote 4).

<sup>29</sup> ADB. 2004. *Project Completion Report Fuzhou Water Supply and Wastewater Treatment Project*. Manila (Loan 1636-PRC, PRC 28223).

to improved efficiency, regardless of the operator, is good coordination. Of the 55% of reviewed ADB project completion reports which indicated a need for better coordination, most also called for clearer assignment of responsibility among agencies.<sup>30</sup>

60. Research has also shown that private sector investments, particularly in connecting poor households, often required public finance or guarantees from governments or development banks.<sup>31</sup> Private companies do not necessarily have access to new sources of investment finance but rely instead on the same sources that are available to the public sector. Private equity in particular is rarely used by private investors. Private water companies are also not interested to invest in small towns and cities.

61. Most successful private sector projects are controlled by domestic firms sometimes in partnership with an international firm. Of the 42 BOT treatment projects in China in 2007–including several ADB supported projects—39 were either fully owned by domestic firms tied to state owned enterprises or were partnered with foreign firms. In contrast, most failed private sector water projects in Latin America were controlled by foreign companies. Of the more than 220 contracts awarded for water utilities in 1990–2005 worldwide, 16% failed, most of them in Latin America. These failed projects accounted for about 37% of the total investments in the water sector over that period.

62. A consultation on the private sector's role in the water service provision was undertaken by the ADB in 2005.<sup>32</sup> This consultation generated a number of recommendations that can specifically inform ADB financing strategies:

- (i) Take measures to mitigate political and currency risk.
- (ii) Help develop transparent, accountable, credible and independent regulators.
- (iii) Help develop public sector capacity to prepare private sector contract documents.
- (iv) Help mitigate the high cost of expanding service coverage to the poor.
- (v) Improve access to financing in key areas to expand coverage in poor communities (e.g. rural public utilities, private sector operators with proven track records, equity participation in private sector enterprises, Small Scale Private Water Providers).

63. ADB had already initiated action on these recommendations prior to the consultation. A local currency loan product was introduced in 2001 and incorporated into core lending operations in 2005. ADB is also authorized, as of 2005, to lend directly to sub-sovereign borrowers including local governments and public enterprises.<sup>33</sup> The Pilot and Demonstration Activities program provides a mechanism for exploring financing options in response to the consultation recommendations but to date only one project out of 56 completed and ongoing projects deals with a private sector financing theme.<sup>34</sup>

64. The ADB has room to increase private sector lending operations in the water portfolio but its contribution to private sector participation in water projects should account for specific circumstances in that sector:

<sup>30</sup> For example: Phnom Penh Water Supply and Drainage Project (Loan 1468-CAM) and Tianjin Wastewater Treatment and Water Resources Protection Project (footnote 17).

<sup>31</sup> Hall, David & Emmanuelle Lobina. 2006. *Pipe Dreams – The Failure of the Private Sector to Invest in Water Services in Developing Countries*. PSIRU Reports, March.

<sup>32</sup> ADB. 2005. *ADB's Water Policy Implementation Review, Consultation Report for the Private Sector Consultation*. Manila.

<sup>33</sup> ADB. 2010. *ADB Financial Products* (<http://www.adb.org/Documents/Brochures/ADB-Financial-Products>, accessed 18 Feb 2010), and ADB. 2009. *Asian Development Bank Annual Report 2008*. Manila.

<sup>34</sup> Philippines Financing Models for Small Scale Water Service Providers. Available: <http://www.adb.org/Water/PDA/>

- (i) A key contribution that ADB can make concerns political and financial risk management. As we have seen this can involve several approaches including capacity development in regulation and contract design and tailored lending modalities or guarantees.
- (ii) Greatest need exists for challenging projects, especially rural water supply and sanitation and service provision to the poor. Innovation is the key here, for example:
  - (a) Finding ways to support small scale private water providers.
  - (b) Promoting viable community based approaches for the provision and funding of basic social services by nongovernment organizations and the private sector.<sup>35</sup>
  - (c) Creating funding mechanisms to fill critical gaps such as the high cost of service connections for poor households.
  - (d) Transitional funding mechanisms to cover operating deficits as gradual tariff reforms are implemented.
- (iii) In PRC, there are more than 600 cities with varying sizes many of which still need a big push on private sector involvement.

## E. Sustainability<sup>36</sup>

65. Sustainability concerns the likelihood that a project will continue to generate the intended outputs and outcomes over its anticipated lifetime. In a commercial enterprise, sustainability is narrowly conceived and is determined by financial performance. For public sector endeavors sustainability is more complex and has social, environmental and financial dimensions. While they are all important, they do not all come to bear on a project at the same time or in the same way.

66. For many water sector projects, especially those involving services to individual households and businesses, financial and social factors are probably the first determinants of sustainability. These are closely interrelated. The public has to believe that a project is sufficiently beneficial, that sufficient resources are allocated to it at least for O&M, and eventually for asset management. This usually requires that they also accord some degree of legitimacy and trust to the project operating authority. This leads directly to the issue of financial sustainability. In the first several years following project implementation, cash flow is the most important determinant of financial sustainability. Over a longer period, full cost recovery, profitability, and risk management are important. Environmental sustainability will usually play out over a longer time frame and depends on the secure flow of ecological goods and services that are altered by the project. This section focuses on social and financial sustainability.

67. Armored river embankments that fail with the first major flood because of shoddy construction, unwelcome water meters that are broken within months of installation, concrete irrigation canals that are breached by farmers because off-takes are poorly planned, new sewage treatment plants that sit idle because collectors have not been built: these are all projects the author has experienced in the field. The inappropriate design of project assets, illustrated by these examples, is implicated in project sustainability (footnote 13).

<sup>35</sup> Operations Evaluation Department, ADB. 2005. *Sector Assistance Program Evaluation for the Social Sectors in Pakistan (Final)* SAP:PAK 2005-08

<sup>36</sup> This section addresses the following evaluation framework component: Identification and mitigation of major risks to long-term sustainability.

68. Inappropriate design would be less likely if lessons from the past were followed. The author of a recent case study review identifies common features of successful water supply and sanitation projects:<sup>37</sup>

- (i) Ability to learn from past lessons.
- (ii) Technical innovation.
- (iii) A participatory approach.
- (iv) Strong commitment by government.
- (v) Original objectives and overall design remain unchanged during implementation.
- (vi) Close project monitoring (ADB fielded 10–12 review missions per project).

69. Learning from past lessons about participatory approaches was addressed in a background study to this SES). A significant number of ADB projects fail to use substantive participatory approaches to aid in project design. The Philippines' Island Provinces Rural Water Supply Project was approved in 1985.<sup>38</sup> It was judged to be unsustainable in 1995 because over half the completed subprojects were no longer operational or were at risk of failure due to poor construction, inadequate O&M and weak institutional support. This outcome was attributed to the top-down supply driven approach of the project. Despite this key lesson, the successor project in 1991, the Second Island Provinces Rural Water Supply Project,<sup>39</sup> repeated the same mistakes, and the third successor project repeated same mistakes of the first two.

70. The failure to apply a participatory approach is not restricted to the Philippines. In Kazakhstan, a recent rural water supply project – the Rural Area Water Supply and Sanitation Sector Project,<sup>40</sup> approved in 2003 – relied mainly on a top down, government driven approach with little role for communities while in neighboring Uzbekistan, a similar project provides a contrasting example. This neglect of the participatory approach appears to have been systemic prior to release of the Water Policy. Of 69 water sector loan projects approved before 2001, 40% did not actively promote participation. Since 2000, however, community-based approaches to small towns and rural water supply projects are increasing in numbers particularly in Indonesia, Nepal and Pakistan.

71. Even if implementation progresses well, there remains plenty of opportunity for project failure during subsequent operations. Ongoing and efficient operation and maintenance is critical to the sustainability of benefits from water supply and sanitation facilities. A recent case study analysis from the ADB determined that successful projects: (i) are run by financially self-sustaining entities, (ii) rely on water user committees to monitor performance, and (iii) live by the “user pay” principle. Water user committees in particular foster greater participation, generating a sense of ownership and a willingness to accept responsibility for the service.

72. Unfortunately, living by the ‘user pay’ principle is often not feasible for a variety of reasons including affordability, customer resistance to tariff increases or to any tariffs at all, government reluctance to authorize effective enforcement instruments for collection of arrears and so on. Sometimes smaller semi-rural municipalities lack the resources or capacity to achieve sustainable operations, and must rely on ongoing financial and institutional support. Community based organizations that are established to promote sustainability are themselves at risk of failure if they are not adequately trained.

<sup>37</sup> ADB. 2007. *Best Practices in Water Supply and Sanitation: Learning From Successful Projects A Case Study from the 2006 Annual Evaluation Review*, ADB. Manila.

<sup>38</sup> Loan 812 PHI: Island Provinces Rural Water Supply Sector.

<sup>39</sup> Loan 1052-PHI: Second Islands Provinces Rural Water Supply.

<sup>40</sup> Loan-2006 KAZ: Rural Area Water Supply and Sanitation Sector.

73. Many reviewers argue that innovative approaches are needed, particularly with respect to finance, if these problems are to be successfully addressed. A key concern is bridge financing in the initial years of operations after project completion. The need for bridge financing may arise perhaps because tariff revenue increases are too slow to arrive or because connection fees are too steep and prospective customers do not connect to the new services. The funding solutions do not have to be complex. Take the example of the unaffordable connection fee, a problem that also occurs in North America. The simplest solution to this problem is to finance connection costs with the original loan and recover costs gradually either as a special charge against new customers or as a blended component of the tariff. Since it is poor households that have trouble with connection fees the cross subsidy implied by recovery through the tariff should be acceptable in most cases.

74. Whatever the cause, potential problems with financial sustainability should be anticipated and their root causes addressed during project preparation. Unfortunately, the task of risk assessment in project preparation is often completed in a cursory and rushed manner as the project preparatory technical assistance team struggles to tie up loose ends prior to appraisal. Work on risk and sustainability undertaken for this study and prior experience suggests that a new approach to risk assessment and monitoring would be useful under ADB project designs, perhaps based on the risks and assumptions included in the design and monitoring framework. If the DMF is well researched, it should identify all significant risks. This means that key risks should be identified reasonably early in the design period, offering the potential to include ways to monitor and manage the risks at an adequate level under the PPTA and appraisal.