



Regional Technical Assistance Report

Project Number: 41316
September 2008

Improved Management of Water Resources in Central Asia

(Financed by the Multi-Donor Trust Fund under the Water Financing
Partnership Facility)

Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
BVO	–	Basejnovoe Vodnoje Ob'edinenie (basin water management organization)
CAR	–	Central Asian republic
CAREC	–	Central Asia Regional Economic Cooperation
CTJRC	–	Chu–Talas Joint Rivers Commission
ICWC	–	Interstate Commission for Water Coordination of Central Asia
IWRM	–	integrated water resources management
NWG	–	national working group
RETA	–	regional technical assistance

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	General intervention
Sector	–	Agriculture and natural resources
Subsector	–	Water resource management
Themes	–	Sustainable economic growth, regional cooperation, capacity development
Subthemes	–	Developing rural areas, regional public goods, institutional development

NOTE

In this report, "\$" refers to US dollars.

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I. INTRODUCTION

1. Regional cooperation among the Central Asian republics (CARs) is necessary to manage natural resources and to optimize sustainable economic growth, two issues that are strongly related in the case of water resources. The Syr Darya and Amu Darya rivers dominate water resources in the CARs and are the sources of the Aral Sea. Together they drain nearly two-thirds of Central Asia.¹ Afghanistan contributes more than one-fifth of the water in the Amu Darya. The Asian Development Bank (ADB) is providing technical assistance to improve the regional management of water resources in Central Asia in response to requests from the governments of the CARs and Afghanistan.²

II. ISSUES

2. **Water Resources and the Aral Sea.** The Syr Darya and Amu Darya support most of the agricultural and rural economy in the Aral Sea basin. The rivers contribute significantly to economic growth and welfare by providing water for irrigation, as well as municipal and domestic use. The rivers' water is essential because much of Central Asia is arid, with rainfall only 100–200 millimeters annually in the southern steppes. Under the Soviet Union, significant development of irrigation infrastructure, mainly for cotton production, exploited the waters of the Amu Darya and Syr Darya. However, the management of water and land resources associated with this development has been unsustainable. The Aral Sea, once the fourth-largest body of freshwater in the world, has shrunk by more than 50% because of reduced flows and has become hypersaline. Its ecosystem has collapsed, causing an environmental, social, and economic disaster for the 4 million people who live in the vicinity of the Aral Sea.

3. In response to the Aral Sea crisis, the governments of the five CARs signed an agreement in 1992 to establish the Interstate Commission for Water Coordination (ICWC) to oversee water allocation. The CARs and their development partners established the first Aral Sea Basin Program and the International Fund for Saving the Aral Sea in 1994. The first Aral Sea Basin Program was finalized in 1997 and included regional water strategies, information systems, water quality management, integrated land and water resources management, and capacity building. In 2003, the CARs prepared the second Aral Sea Basin Program for 2003–2010, but progress has been limited. Despite of the attention and resources devoted to the first Aral Sea Basin Program, little progress has been made in rectifying the environmental, social, and economic problems created through desiccation of the Aral Sea.

4. **Challenges to Improving Regional Cooperation for Water Resources.** Regardless of the ability of the CARs to redress the Aral Sea crisis, regional cooperation to manage water resources is vital to the region's economic well-being. During the time of the Soviet Union, water allocation among the CARs was centrally planned to maximize benefits from irrigation and power generation, with the upstream countries compensated with energy supply in the winter. The arrangements to ensure the transfer of regional benefits from sharing water among the CARs no longer exist. In the absence of any permanent water sharing agreements, allocation is decided annually on ad hoc basis under the ICWC and managed by the basin water management organizations for the Syr Darya (BVO Syr Darya) and Amu Darya (BVO Amu Darya) under the ICWC. In addition, Afghanistan is not included in the current water allocation decision making and the BVO Amu Darya. Water management challenges are also mounting because higher agricultural production and hydropower generation are urgently needed, yet climate change poses uncertainty for water resources planning. The lack of regional cooperation on water resources poses a major threat to economic integration and growth in Central Asia.

¹ Central Asia includes Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan.

² The RETA first appeared in the business opportunities section of ADB's website on 8 February 2008. No activities will take place in a developing member country under the RETA until a confirmation of a no objection in writing has been received from the government of that country.

5. Stronger regional cooperation on water resources, particularly on the Amu Darya, is urgently needed to support regional economic growth. However, the knowledge base must be improved to develop an agreement to manage transboundary water. Inadequate hydrometeorological (hydromet) technical systems, data collection, and protocols for sharing information, combined with the weak capacity of regional and national institutions, hamper regional cooperation. A framework to assess the economic benefits from regional cooperation on water resources is also needed. This requires an agreed methodology to determine the benefits and trade-offs from different water resources management and development scenarios, which can support dialogue for a water allocation agreement on the Amu Darya. To facilitate this, a robust forum is needed for the CARs and Afghanistan to explore options to strengthen institutional arrangements and actions to improve regional management of water resources.

6. **ADB Support for Regional Cooperation.** ADB has been engaged in the CARs only since 1994. However, regional cooperation has always been an important element of ADB's program in the CARs, most notably through the creation of the Central Asia Regional Economic Cooperation (CAREC) Program.³ CAREC's first ministerial conference in 2002 confirmed the three priority areas of its program—transport, energy, and trade. CAREC's comprehensive action plan, adopted in 2006, broadened its mission to include human development, agriculture, environment, and tourism. However, CAREC's program does not include water resources, and ADB developed a separate regional technical assistance (RETA) to address water resources.

7. ADB supported regional cooperation for water resources in the CARs under a RETA project entitled Improved Management of Shared Water Resources in Central Asia, which was approved in 2003 and closed in December 2007.⁴ This RETA included support to (i) establish and operate the Chu–Talas Joint Rivers Commission (CTJRC) between Kazakhstan and the Kyrgyz Republic, (ii) facilitate regional water policy discussions, and (iii) build regional water management capacity. The CTJRC has achieved the following: (i) cost-sharing of operations and maintenance on shared facilities, (ii) improvement in the interstate agreement for water resources in the Chu and Talas basins, and (iii) installation of a management information system to help operate the Kirov reservoir. The CTJRC is an excellent example of regional cooperation for water resources that provides mutual benefits. Additional actions are planned to strengthen the CTJRC through support for its secretariat and expert working groups. However, this requires financial support until the CTJRC becomes self-financed and fully institutionalized.

8. The 2003 RETA supported dialogue to review and improve the 1998 framework agreement on the use of water and energy resources in the Syr Darya basin. This culminated in a new draft agreement, but more work is needed to finalize the agreement and to ensure its approval at higher levels of government. Based on this experience, and given the importance of water resources for sustained regional economic growth, it is essential that a water resources agreement be discussed in the broader context of economic integration and regional growth. The dialogue must be conducted at the highest levels to ensure these broader issues are addressed, and that senior policy makers are involved to endorse the process and outcomes. Sustainable and acceptable agreements and their implementation, require a long-term commitment, adequate resources, and an established forum for dialogue at the highest levels.

³ CAREC includes the following countries: Afghanistan, Azerbaijan, the People's Republic of China, Kazakhstan, the Kyrgyz Republic, Mongolia, Tajikistan, and Uzbekistan. It also includes the following institutions: ADB, European Bank for Reconstruction and Development, International Monetary Fund, Islamic Development Bank, the United Nations Development Programme, and the World Bank.

⁴ ADB. 2003. *Technical Assistance for Improved Management of Shared Water Resources in Central Asia*. Manila (RETA 6163). In addition, the Pyanj River Flood Management Project supports regional cooperation between Afghanistan and Tajikistan for flood management in the upper Amu Darya. ADB. 2008. *Technical Assistance to Afghanistan and Tajikistan for the Pyanj River Basin Flood Management Project*. Manila (RETA 6452).

III. THE PROPOSED TECHNICAL ASSISTANCE

A. Impact and Outcome

9. The impact of the proposed RETA will be sustainable economic development in the CARs and Afghanistan through improvements in regional cooperation on transboundary water resources management. The RETA outcomes are (i) an improved knowledge base and capacity for water resources management of the Amu Darya; (ii) a stronger institutional framework for water resources management of the Amu Darya and Syr Darya, and an institutionalized forum and process to support dialogue and further actions; and (iii) a more reliable water supply in the Chu and Talas basins. The design and monitoring framework is in Appendix 1.

B. Methodology and Key Activities

10. The RETA will have two sets of activities. The first set (components 1 and 2) will support improvements in regional cooperation for Amu Darya and Syr Darya. The second set (component 3) will focus on the Chu and Talas basins. For the Amu Darya and Syr Darya interventions, a steering committee will be established to develop and endorse the work program of the RETA, decide policy, and provide guidance for the RETA. National working groups (NWGs) will execute the work program with support from a technical secretariat under the direction of the steering committee. The RETA will support continued dialogue among the riparian states to finalize for government consideration the draft agreement on the use of water and energy resources in the Syr Darya basin initiated under the 2003 RETA project (footnote 4). However, this proposed RETA will expand the scope of the dialogue to include the development of a draft agreement on water resources of the Amu Darya, including Afghanistan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. The RETA approach will allow the steering committee broad latitude over the program of work, the pace and content of the dialogue, and analytical work to generate consensus and ownership of the process and RETA outcomes.⁵

11. The RETA will also seek to institutionalize dialogue and development of agreements and action plans concerning regional cooperation on water resources under a more permanent forum. It is also important that the broader issues of regional integration and economic growth are part of the dialogue, and that the dialogue receives the attention of the highest policy makers. Given the vital importance of transboundary cooperation on water resources for regional economic growth, one promising option is to bring water resources under the CAREC program. However, this approach would require deliberate discussions with all stakeholders. The CTJRC that was established with support from the 2003 RETA project will implement the activities for the Chu–Talas component. All RETA activities will include capacity development.

12. **Component 1: Improved Knowledge Base for the Amu Darya.** The RETA will support technical and analytical work to establish the foundation needed to enhance regional cooperation in the Amu Darya basin. This will include strengthening the hydromet network for Amu Darya through (i) analysis of the existing network and the collection and exchange of data among agencies with recommendations for improvement; (ii) recommendations for physical and technical improvements to the hydromet network; (iii) development of a framework for efficient and effective hydromet data exchange and analysis among national and regional water management organizations, such as the International Fund for Saving the Aral Sea, ICWC, and BVO Amu Darya; and (iv) scoping technical studies to strengthen knowledge of hydrological, morphological, and other water resources issues to improve management of the basin.

⁵ Additional initiatives for regional cooperation are under way, such as a new European Union-established water energy institute in Bishkek and United Nations-sponsored initiative on regional water issues. The RETA will coordinate with these activities as appropriate to enhance the impact and outcomes of the RETA.

13. The RETA will develop a methodology to assess economic, social, environmental, and other benefits of regional cooperation with regard to Amu Darya water resources. It will explore the impacts of managing and developing water resources under various scenarios throughout the Amu Darya basin. The work will assess the benefits and trade-offs of regional cooperation on water resources management as a basis to help draft an agreement on water resources of the Amu Darya. The RETA will identify and research additional priority issues that are needed to enhance regional cooperation on water resources, or that are of common concern for RETA participants, such as integrated water resources management (IWRM), irrigation management, and water conservation. The NWGs, with steering committee oversight, will be responsible for supporting component 1. International and local specialists within the technical secretariat will support the NWGs and help with capacity development. Outputs will include studies, a framework and assessment of the benefits of regional cooperation on water resources, reports, and capacity development materials.

14. **Component 2: Strengthened Institutional Framework and Institutionalization of Regional Cooperation for Water Resources.** This component will facilitate dialogue and institutional strengthening to enhance regional cooperation on water resources management of the Syr Darya and Amu Darya basins. Technical and analytical work carried out by the NWGs and the technical secretariat under component 1 will support the dialogue and the steering committee's program of work at regular meetings. This component will (i) review the institutional and organizational framework for transboundary water management in the Amu Darya basin, (ii) recommend ways to strengthen cooperation, and (iii) develop a draft interstate agreement of the Amu Darya basin that includes Afghanistan for government consideration. The RETA will also support finalization of the draft agreement on the use of water and energy resources in the Syr Darya basin for government consideration.⁶ The steering committee, with NWG and technical secretariat support, will evaluate options, especially CAREC, to institutionalize the dialogue and actions to strengthen regional cooperation for water resources. It will also develop a long-term program of work, budget, and implementation arrangements for continued dialogue and development of agreements, and strategies and action plans for regional cooperation on water resources. Specialists in the technical secretariat will help facilitate steering committee meetings and present topical seminars on transboundary water management. Outputs will include briefing documents; technical analysis; steering committee meeting minutes; an institutional analysis for management of the Amu Darya; seminars and capacity development materials; draft cooperation agreements for the Syr Darya and Amu Darya; and a long-term plan, budget, and implementation arrangements to support dialogue and action for regional cooperation on water resources management.

15. **Component 3: Support to the Chu–Talas Joint Rivers Commission.** Building on the foundation established under the 2003 RETA on managing water resources in Central Asia, this RETA will continue supporting the CTJRC, its secretariat, and expert working groups. Under the 2003 RETA, the CTJRC secretariat prepared a detailed program to be implemented through April 2011. Outputs will include (i) revision of the 2000 agreement between Kazakhstan and the Kyrgyz Republic on interstate water facilities in the Chu and Talas basins; (ii) testing and introduction of computerized water assessment and allocation modules for the Chu and Talas

⁶ While the RETA will support continued development and refinement of draft agreements for the two rivers, formal approval of the agreements by the governments will be subject to political considerations. Accordingly, the RETA's impacts should be measured largely against the development of a common understanding and framework for water resources management, an improved knowledge base, the extent of information sharing and capacity development, and technically sound agreements for better regional cooperation for water resources management, rather than solely upon the immediate approval of the agreements. While work will be initiated on the draft agreements under the RETA, it may not be completed until after the end of the RETA. In this case, activities would continue under a new program of work.

basins; (iii) preparation of IWRM plans for each basin; and (iv) IWRM knowledge dissemination in the Chu and Talas basins.

C. Cost and Financing

16. The RETA is estimated to cost \$1.178 million, of which \$0.998 million will be financed on a grant basis by the ADB Multi-Donor Trust Fund⁷ under the Water Financing Partnership Facility, and administered by ADB. The governments will contribute local currency equivalent to \$180,000. Detailed cost estimates and the financing plan are in Appendix 2.

D. Implementation Arrangements

17. ADB will be the Executing Agency for the RETA, which will start in October 2008 and run for 18 months. The members of the NWGs, who will be appointed by the governments of participating countries, will comprise representatives of water, hydromet, environment, planning, and other agencies, as appropriate. Heads of the NWGs will be members of the steering committee and have the authority to represent their countries in all meetings and sign documents, such as draft agreements and meeting minutes. The NWGs will be responsible for executing all RETA activities with support from the technical secretariat.

18. The steering committee will comprise the heads of the NWGs and other national representatives, as appropriate, and representatives from regional organizations such as the International Fund for Saving the Aral Sea, ICWC, the BVO Syr Darya and Amu Darya, and the other relevant organizations. It will meet regularly to provide policy guidance and to coordinate with national governments and ADB.⁸ The steering committee and NWGs will be supported by the technical secretariat, which will include national and international consultants to provide technical inputs and administrative assistance to the steering committee and NWGs.⁹ Capacity development activities will be established in consultation with the steering committee, NWGs, technical secretariat, and ADB. The NWGs will be provided with resources to recruit on a short-term basis national consultants or government institutes with relevant expertise to implement specific tasks for the steering committee's program of work. Implementation of the Chu–Talas component of the Project will be undertaken by the CTJRC secretariat, expert working groups, and national consultants supported by the RETA. It is anticipated that 17 person-months of international consulting services and 144 person-months of national consulting services will be required in (i) water resources management and engineering, (ii) hydrology and hydrometeorology, (iii) irrigation, (iv) economics, (v) law, and (vi) institutional analysis, among others. The terms of reference are in Appendix 3. ADB will recruit consultants on an individual basis in accordance with ADB *Guidelines on the Use of Consultants* (2007, as amended from time to time). Procurement will be in accordance with ADB *Procurement Guidelines* (2007, as amended from time to time). RETA outputs and the outcome evaluation will be disseminated through the ADB and CTJRC websites; CAREC meetings and materials; and brochures and video.

IV. THE PRESIDENT'S DECISION

19. The President, acting under the authority delegated by the Board, has approved ADB administering technical assistance not exceeding the equivalent of \$998,000 to be financed on a grant basis by the Multi-Donor Trust Fund under the Water Financing Partnership Facility for the Improved Management of Water Resources in Central Asia, and hereby reports this action to the Board.

⁷ Contributors: the governments of Australia, Austria, and Norway.

⁸ Steering committee members from regional organizations will be confirmed during the RETA's inception and serve in an ex-officio capacity.

⁹ The location of the technical secretariat will be determined during the RETA inception mission.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/ Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p>Impact</p> <p>Sustainable economic development in the CARs and Afghanistan through better regional cooperation in transboundary water resources management</p>	<p>1% increase in economic growth by Afghanistan, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan attributable to better regional cooperation on water resources by 2015</p> <p>At least three new projects developed as a result of better regional cooperation on water resources by 2013</p>	<p>National and regional level economic data</p> <p>Reporting from relevant national ministries related to water resources</p>	<p>Assumption</p> <p>Political will and commitment by all countries in the region to improve regional cooperation</p>
<p>Outcome</p> <p>(i) an improved knowledge base and capacity for water resources management on the Amu Darya, (ii) a stronger institutional framework for water resources management of the Amu Darya and Syr Darya, and (iii) more reliable water supply in the Chu and Talas basins</p>	<p>Improvements in water assessment and allocation among the CARs recorded by ICWC</p>	<p>Review missions</p> <p>RETA reports</p>	<p>Assumption</p> <p>Regional and national institutions are able to participate effectively with adequate capacity to support the RETA.</p> <p>Risk</p> <p>Political obstacles hinder effective implementation of the RETA.</p>
<p>Outputs</p> <p>1. Hydromet network and mechanisms for collection, analysis, and exchange of hydrometeorological data in the Amu Darya basin improved</p> <p>2. Methodology developed and assessment of the benefits and trade-offs from different regional cooperation scenarios in the Amu Darya basin</p>	<p>Analysis of existing system and recommendation for improvement completed by April 2009</p> <p>Equipment for improved data exchange by May 2009</p> <p>Methodology and assessment of benefits and trade-offs completed by June 2009</p>	<p>Review missions</p> <p>RETA reports</p> <p>National hydromet reports</p> <p>Review missions</p> <p>RETA reports</p>	<p>Assumptions</p> <p>National hydromet agencies are willing to regularly share necessary data with other stakeholders.</p> <p>The RETA participants are ready to discuss regional economic benefits and trade-offs from different development scenarios.</p>

Design Summary	Performance Targets/ Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p>3. Additional studies scoped to support regional cooperation for water resources</p> <p>4. Improvement and institutionalization of mechanisms to enhance regional cooperation and policy dialogue on water management in the Syr Darya and Amu Darya basins</p>	<p>Additional studies scoped by July 2009</p> <p>Institutional analysis and recommendations for improvements in regional cooperation for water resources developed by May 2009</p> <p>Long-term plan, budget, and implementation arrangements for institutionalization of regional dialogue for water resources management finalized by December 2009</p> <p>Draft Syr Darya agreement finalized for government consideration by the end of the RETA</p> <p>Draft Amu Darya agreement finalized for government consideration by the end of the RETA</p>	<p>Review missions</p> <p>RETA reports</p> <p>Review missions</p> <p>RETA reports</p>	<p>RETA participants are willing to engage in constructive dialogue and able to overcome political obstacles to pursue agreements on regional water cooperation.</p>
<p>5. CTJRC fully operational and self-financed</p>	<p>Agreement between Kazakhstan and the Kyrgyz Republic on the use of interstate water facilities in the Chu and Talas basins revised by October 2009</p> <p>Computerized water assessment and allocation modules fully introduced for the Chu and Talas basins by September 2009</p> <p>Separate IWRM plans for each basin developed by January 2010</p> <p>Allocations for implementation of priorities in IWRM plans included in state budgets from 2010</p>	<p>Review missions</p> <p>RETA reports</p> <p>CTJRC reports</p> <p>Ministries of finance confirm by early 2010 the allocation of necessary funding from state budgets</p>	<p>Government agencies review and approve proposed revisions in a timely manner.</p> <p>Agreements are reached among different stakeholders within the countries and at interstate level.</p> <p>Parliaments of two countries review and approve proposed financing of the CTJRC in a timely manner.</p>

Activities with Milestones	Inputs
<ul style="list-style-type: none"> 1.1 Analysis of hydromet system and recommendations for improvement 1.2 Scoping and installation of equipment for better data exchange for hydromet 1.3 Scoping of additional technical studies for water resources management 1.4 Development of methodology to assess the benefits from regional cooperation on water resources management 1.5 Assessment of regional benefits under various water resources management and development scenarios for Amu Darya 1.6 Scoping additional studies to further regional cooperation or national interest on water resources management 1.7 Ongoing program of work for the national working groups 	<p>ADB: \$0.998 million in grant RETA financing, review missions, and participation in critical steering committee meetings</p>
<ul style="list-style-type: none"> 2.1 Institutional analysis of current regional water cooperation and management in Syr and Amu Darya 2.2 Development of options and recommendations to improve regional cooperation in water resources management 2.3 Finalization for government consideration of the draft agreement on water and energy resources in the Syr Darya 2.4 Development and approval of the draft Agreement for the Amu Darya 2.5 Evaluation of options to institutionalize regional dialogue and actions for water resources management, including CAREC assessment 2.6 Development of a long-term plan, budget, and implementation arrangements for regional dialogue on water resources management 2.7 Ongoing meetings of the steering committee 	<p>Government: \$180,000 in counterpart financing; approved members of the steering committee and national working groups</p>
<ul style="list-style-type: none"> 3.1 Development and discussion of amendments to the 2000 agreement on the Chu and Talas basins 3.2 Endorsement of amendments to 2000 agreement 3.3 Testing and adjustment of computerized water assessment and allocation module for the Talas basin 3.4 Testing and adjustment of computerized water assessment and allocation module for the Chu basin 3.5 Full introduction of computerized water assessment and allocation modules for the Chu and Talas basins 3.6 Development of draft IWRM plans for the Chu and Talas basins 3.7 Stakeholder consultations 3.8 Endorsement of IWRM plans for the Chu and Talas basins by all stakeholders 3.9 Preparation of the information materials and video 3.10 Public awareness workshops 3.11 Dissemination of knowledge on implementation of IWRM plans in the Chu and Talas basins 	

ADB = Asian Development Bank, CARs = Central Asian republics, CAREC = Central Asia Regional Economic Cooperation, CTJRC = Chu–Talas Joint Rivers Commission, ICWC = Interstate Commission for Water Coordination in Central Asia, IWRM = integrated water resources management.

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Total Cost
A. Multi-Donor Trust Fund under the Water Financing Partnership Facility Funding^a	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	391.0
ii. National Consultants	130.0
b. International and Local Travel	37.0
c. Per Diem	9.0
2. Equipment ^b	50.0
3. Training, Seminars, and Meetings	105.0
4. Surveys, Data, and Technical Studies ^c	95.0
5. Public Awareness ^d	14.0
6. Support to National Working Groups	60.0
7. Miscellaneous Administration and Support Costs ^e	47.0
8. Contingencies	60.0
Subtotal (A)	998.0
B. Government Financing	
1. Office Accommodation	50.0
2. Counterpart Travel Support	40.0
3. Counterpart Staff	50.0
4. Counterpart Data Collection and Survey	40.0
Subtotal (B)	180.0
Total	1,178.0

^a Contributors: the governments of Australia, Austria, and Norway. Administered by ADB.

^b Equipment to be purchased includes basic office equipment such as computers, printers, fax and scanner, and a photocopy machine. It will also include equipment for upgrades to the hydromet network for the Amu Darya for data exchange and communications. Any procurement under the regional technical assistance will be in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time). Office equipment to support the technical secretariat will be turned over to the Government of the host country of the technical secretariat. Equipment to support the hydromet network and improved data exchange will be installed in countries based on technical needs as identified through the RETA.

^c These activities are associated with the Chu–Talas component and include (i) an assessment of water quality, (ii) baseline environmental data, (iii) inventory of water control structures, (iv) assessment of climate change impacts, (v) preparation of integrated water resources management plans, and (vi) computer modeling.

^d These activities are associated with the Chu–Talas component and include website development and management and production of video.

^e These include report preparation and translation, communications, and office running costs.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES

A. Improved Knowledge Base for the Amu Darya (Component 1) and Strengthened Institutional Framework for Water Resources Management (Component 2)

1. Consultants under components 1 and 2 of the regional technical assistance (RETA) will be a part of the technical secretariat supporting the steering committee and working in conjunction with the national working groups (NWGs).

2. **Transboundary Water Resources Management Specialist and Team Leader** (international, 8 person-months). The transboundary water resources management specialist and team leader will be responsible for overall technical content of the RETA and will work closely with the head of the technical secretariat to execute the following tasks:

- (i) Working with the steering committee, NWGs, and technical secretariat, identify relevant issues and scope in detail the analysis needed to (a) execute the RETA, (b) develop a transboundary agreement for the Amu Darya, and (c) finalize the draft agreement on the use of water and energy resources in the Syr Darya basin. This will include specifying in detail the work of the water resources management and hydromet specialist and the regional cooperation economist, as well as identification, scoping, and development of terms of reference for specialized studies by the NWGs or using unallocated RETA consulting resources.
- (ii) Working with the steering committee, NWGs, and technical secretariat, develop a plan with milestones for executing all RETA activities and for drafting an agreement for transboundary regional cooperation for water resources of the Amu Darya.
- (iii) Conduct an institutional analysis of the Basin Water Management Organization (BVO) Amu Darya and other institutions related to transboundary water resources management, and provide options and recommendation based on best practice to strengthen regional cooperation for transboundary management of the Amu Darya that includes Afghanistan. This would include technical, policy, legal, economic, and capacity considerations. This may include improving existing institutions or possibly creating new institutions. This analysis and options document should integrate ongoing work conducted under the RETA and may also require use of unallocated resources for specialized studies to support the analysis.
- (iv) Develop case studies for the steering committee of other institutions, organizations and their related agreements that are responsible for transboundary water resources management to demonstrate best practice for improvement to the institutional framework and development of transboundary agreements for the Amu Darya.
- (v) Working with the steering committee, the NWGs, and the technical secretariat, draft the principles and subsequent agreement for transboundary regional cooperation on the water resources management of the Amu Darya consistent with the findings from the institutional analysis, analysis of the benefits from regional cooperation for water resources management of the Amu Darya, and other relevant analyses identified by the steering committee.
- (vi) Working with the steering committee, finalize the draft agreement on the use of water and energy resources in the Syr Darya basin that was started under RETA approved in 2003.

- (vii) In cooperation with the steering committee, the technical secretariat, the NWGs, and ADB, assess the needs and define the parameters of the capacity development program for the steering committee and the NWGs.
- (viii) Conduct seminars at select steering committee meetings as a part of the capacity development program for the RETA.
- (ix) Direct the production and be responsible for preparation of all briefing materials in support of the steering committee meetings. Finalize minutes, reports, and other outputs from the steering committee.
- (x) Be responsible for the quality control of all RETA outputs.
- (xi) In cooperation with the steering committee and with ADB approval, assist with identification of consultants for unallocated inputs.

3. **Head of the Technical Secretariat** (national, 18 person-months). The head of the technical secretariat will work closely with the team leader and all other RETA participants and will be responsible for the following tasks:

- (i) Attend and help facilitate all steering committee meetings and be responsible for preparation (along with team leader) and presentation of all workshop materials and production of all minutes, reports, and other outputs from the steering committee meetings.
- (ii) Serve as the RETA focal point and be responsible for all communication among the steering committee, NWGs, technical secretariat, ADB, and other relevant RETA stakeholders.
- (iii) Serve as the focal point and manage the day-to-day program of work for the NWGs, as well as review all outputs from the NWGs.
- (iv) Work with and provide support to the team leader in the execution of all activities associated with his or her terms of reference.
- (v) Serve as the focal point for all dialogue and negotiations with regard to the development of the agreement for regional cooperation on water resources for the Amu Darya and Syr Darya.
- (vi) Be the technical secretariat focal point for coordination with the NWGs and work with steering committee.
- (vii) Provide day-to-day communication as needed with the steering committee, NWGs, the technical secretariat, and ADB.

4. **Secretariat Project Manager** (national, 18 person-months). The secretariat project manager will be responsible for the following tasks:

- (i) organizing logistics to support implementation of the RETA, including (a) steering committee meetings, (b) any needed meetings of the NWGs, and (c) other activities as needed;
- (ii) leading administrative and procurement matters for the technical secretariat; and
- (iii) overseeing the financial management of the RETA funds.

5. **Water Resources Management Specialist–Hydrologist and Hydrometeorologist Specialist** (international, 3 person-months). This specialist will be responsible for the following tasks:

- (i) Working with the NWGs, review the existing water resources management information available to BVO Amu Darya and the riparian countries, and identify data and information gaps and additional needs to improve transboundary water

resources management. Develop technical options and recommendations to provide the needed data.

- (ii) Working with the NWGs, review the existing hydromet network and monitoring capacity and prepare recommendations to strengthening it. As a part of this, identify key pieces of infrastructure to improve the hydromet network.
- (iii) Assess the capacity of the BVO with regard to hydromet data analysis and make recommendations to strengthen it.
- (iv) Review existing modalities and mechanisms for data sharing among the riparian countries, the BVO Amu Darya, and other relevant stakeholders and make recommendations and identify equipment to improve data sharing.
- (v) Scope additional hydrological, morphological, or other water-related technical studies as required to be supported through the RETA or outside of the RETA to strengthen transboundary water resources management.
- (vi) Prepare background, seminar, and capacity development materials for the steering committee and NWGs with regard to the technical issues identified.

6. **Regional Cooperation Economist** (international, 4 person-months). The regional cooperation economist will be responsible for the following tasks:

- (i) Review existing models (including the one developed by the Interstate Commission for Water Coordination), literature, and other existing materials that address the benefits and trade-offs for regional cooperation with water resources in Central Asia. Synthesize and critique the materials with regard to developing an agreement for regional cooperation on water resources on the Amu Darya.
- (ii) Recommend a framework and methodology(s) for identifying and estimating economic benefits from regional cooperation on water resources among the various riparian countries for the Amu Darya.
- (iii) Based on the developed methodology and steering committee guidance, provide estimates of the various benefits, costs, and their distribution from regional cooperation from water resources in Central Asia under different management and development scenarios for the Central Asian republics and Afghanistan.
- (iv) Working with the steering committee and the team leader, find ways to reflect and make consistent the findings from the regional cooperation economic analysis with the proposed institutions and policies for improved transboundary water resources and the draft agreement to be developed on regional cooperation for transboundary water resources management of the Amu Darya.
- (v) Prepare background, seminar, and capacity development materials for the steering committee and NWGs regarding the economics of regional cooperation with regard to water resources.

7. **Unallocated Resources** (international, 2 person-months). In addition to the allocated consulting resources for components 1 and 2, a number of unspecified person-months have been included. These will be used to support the steering committee and technical secretariat for specialized studies and services required to achieve the RETA outcomes. These could include legal services, more specialized water resources management activities, and/or support for the regional economic analysis.

B. Component 3: Support to Chu–Talas Joint Rivers Commission

8. Six national consultants will be engaged to assist in implementing project activities in the following areas: (i) law; (ii) water resources management; and (iii) operation and maintenance (O&M).

9. **Legal Expert** (two national consultants from Kazakhstan and the Kyrgyz Republic, 18 person-months each). The consultants will have at least a university degree in water law and policy, preferably a master's degree or above; and at least 10 years of experience in dealing with legal aspects of water planning, allocation, and management in Central Asia. The consultant will accomplish the following tasks:

- (i) Review existing legal and regulatory documents of Kazakhstan and the Kyrgyz Republic, including water codes, water strategies, and integrated water resources management (IWRM) plan for Kazakhstan.
- (ii) Develop revisions and amendments to the 2000 agreement between Kazakhstan and the Kyrgyz Republic on the use of interstate water facilities in the Chu and Talas basins.
- (iii) Prepare detailed work plans for assessment of the needs of different stakeholders, carrying out focus group discussions and stakeholder consultations on IWRM principles.
- (iv) Prepare draft memoranda on introduction of IWRM planning to be signed by all stakeholders.
- (v) Assist water management authorities of Kazakhstan and the Kyrgyz Republic in drafting IWRM plans for the Chu and Talas basins and their start-up implementation.
- (vi) Assist in developing publications and brochures, and broadcasting TV programs, on implementation of IWRM plans in the Chu and Talas basins.
- (vii) Assist in updating of the CTJRC's website.
- (viii) Prepare project quarterly progress reports.

10. **Water Resources Management Expert** (two national consultants from Kazakhstan and the Kyrgyz Republic, 18 person-months each). The consultant will have at least a university degree in water management and planning, preferably a master's degree or higher; and at least 10 years experience in construction of water facilities and water resources management and monitoring in Central Asia. The consultant will accomplish the following tasks:

- (i) Prepare detailed work plans for field surveys and data collection to assess water quality and quantity, soil conditions, and sources of water pollution.
- (ii) Assist in preparing detailed work plans for assessment of needs of different stakeholders, carrying out focus group discussions and stakeholder consultations on IWRM principles.
- (iii) Assist in preparing draft memoranda on introduction of IWRM planning to be signed by all stakeholders.
- (iv) Assist in introducing computerized water assessment and allocation modules for the Chu and Talas basins, and in developing a mechanism for operational use of these modules for efficient decision making.
- (v) Analyze the potential impact of climate change on the formation and availability of water resources in the Chu and Talas basins.

- (vi) Assist water management authorities of Kazakhstan and the Kyrgyz Republic in drafting IWRM plans for the Chu and Talas basins and their start-up implementation.
- (vii) Assist in carrying out an assessment of funding needs for the implementation of IWRM plans in the Chu and Talas basins from state budgets.
- (viii) Prepare a project final report describing activities and progress in introducing IWRM plans in the Chu and Talas basins.

11. **Operation and Maintenance Expert** (two national consultants from Kazakhstan and the Kyrgyz Republic, 18 person-months each). The consultant will have at least a university degree in water management and planning, preferably a master's degree or above; and at least 10 years international experience in formulating IWRM plans in transition economies or developing countries. Working experience in the Central Asia republics will be an advantage. The consultant will accomplish the following tasks:

- (i) Assist in carrying out the inventory of all hydrotechnical structures to define their operational capability, needs in modern water measurement devices, and scope of necessary rehabilitation works.
- (ii) Assist in identifying new control structures to be jointly operated by the two countries and developing mechanisms for financing their O&M costs.
- (iii) Assist in finalizing a mechanism for joint financing of costs for O&M and rehabilitation of interstate water facilities in the Chu and Talas basins.
- (iv) Assist in preparing detailed work plans for field surveys and data collection to assess water quality, as well as quantity, soil conditions, and sources of water pollution.
- (v) Assist in preparing detailed work plans for assessment of needs of different stakeholders, and carrying out focus group discussions and stakeholder consultations on IWRM principles.
- (vi) Assist in preparing draft memoranda on introduction of IWRM planning to be signed by all stakeholders.
- (vii) Assist water management authorities of Kazakhstan and the Kyrgyz Republic in drafting IWRM plans for the Chu and Talas basins and their start-up implementation.
- (viii) Provide inputs to project quarterly progress reports.