



Technical Assistance Report

Project Number: 40086
January 2008

Republic of Uzbekistan: Preparing the Water Resources Management Sector Project (Financed by the Japan Special Fund)

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 30 December 2007)

Currency Unit	–	sum (SUM)
SUM1.00	=	\$0.00078
\$1.00	=	SUM1,290

ABBREVIATIONS

ADB	–	Asian Development Bank
BISA	–	basin irrigation system association
MAWR	–	Ministry of Agriculture and Water Resources
MFF	–	multitranches financing facility
MIS	–	management information system
O&M	–	operation and maintenance
R&U	–	rehabilitation and upgrading
SCADA	–	supervisory control and data acquisition
TA	–	technical assistance
TOR	–	terms of reference
USAID	–	United States Agency for International Development
WUA	–	water users association

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	General intervention
Sector	–	Agriculture and natural resources
Subsector	–	Irrigation and drainage
Themes	–	Sustainable economic growth, environmental sustainability, capacity development
Subthemes	–	Developing rural areas, natural resource conservation, institutional development

WEIGHTS AND MEASURES

mm	–	millimeters
m ³	–	cubic meters
m ³ /sec	–	cubic meters per second

GLOSSARY

<i>dekhan farms</i>	–	private household garden plots with full ownership by private citizens
<i>shirkat</i>	–	irrigated farm land that was originally developed and/or managed as state or collective farm under Soviet rule

NOTE

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

Vice President	L. Jin, Operations Group 1
Director General	J. Miranda, Central and West Asia Department (CWRD)
Director	K. Matsunami, Agriculture, Environment, and Natural Resources Division, CWRD
Team leader	T. Panella, Senior Water Resources Management Specialist, CWRD

I. INTRODUCTION

1. The Government of Uzbekistan requested the Asian Development Bank (ADB) for a technical assistance (TA) to prepare a project to improve water resources management and irrigation. Management approved concept clearance for this TA on 7 September 2007. A fact-finding mission visited Uzbekistan from 16 September to 3 October 2007 to prepare the TA in cooperation with the Government. The TA design and monitoring framework is in Appendix 1.¹

II. ISSUES

2. **Agricultural Economy.** Agriculture accounts for 29% of Uzbekistan's gross domestic product, a quarter of its export earnings, and a third of national employment. About 60% of the population and a majority of the poor live in rural areas, where livelihoods are either directly or indirectly dependent on agriculture. The sector employs 33% of the population (see Appendix 2 for the Initial Social and Poverty Assessment) and, as under the Soviet rule, it is dominated by cotton, of which Uzbekistan is the world's sixth largest producer. Self-sufficiency in wheat, a strategic priority after independence, was achieved in 1997. The Government continues to mandate wheat and cotton production quotas, provide production inputs, and purchase outputs using prices determined by the state. Nevertheless, the state and world prices for cotton have become much closer over the last few years, benefiting farmers. The current cropping pattern, however, places tremendous strain on land resources.

3. All of Uzbekistan's *shirkat* farms have been parceled out and leased long-term to private farmers, many of whom have limited agricultural experience. This is a fundamental production change—from large holdings, managed collectively, to much smaller plots, individually operated. These reforms represent significant progress in the sector but help is needed to improve the tenure status of farmers, thus spurring investment, and to provide extension services. The number of *dekhan* farms has increased significantly in the last five years to over 4.3 million plots in 2004, and they produce most of the fruits and vegetables, and nearly 20% of grains. These farms are extremely productive, provide valuable rural income, and contribute to the country's food security.

4. **Irrigation and Drainage Needs.** Improving water management and increasing the efficiency and productivity of water use are national objectives in Uzbekistan, where the climate is continental and arid conditions exist in more than 60% of the nation's territory. With rainfall limited to between 70 and 100 millimeters (mm) a year, agriculture is highly dependent on irrigation. Irrigated land provides about 90% of agricultural production. Under the Soviet Union, land under irrigation expanded from about 2.5 million hectares (ha) in the 1950s to 4.3 million ha in 1985—2.35 million ha in the Amu Darya River Basin, and 1.95 million ha in the Syr Darya River Basin. Irrigation consumes 85% of all water resources. Uzbekistan's vast irrigation infrastructure includes: (i) 30,000 kilometers (km) of main and inter-farm canals and 33,000 hydraulic structures; (ii) more than 1,500 pumping facilities, with almost 5,000 pumps that supply irrigation water to over 2 million ha; (iii) 175,000 km of on-farm canals and conveyance structures; (iv) 40,000 km of on-farm horizontal drains and 4,300 vertical drains; (v) 120,000 km of drainage ditches; and (vi) 15,000 km of large drainage collectors.

5. Although this infrastructure was well built during the time of the former Soviet Union, it has deteriorated since independence. The state's share in agricultural investment has declined sharply, from 27% in 1991 to 8% in 2001, and state investment in the water sector is only a fifth of what it once was. Deferred capital and operation and maintenance (O&M) expenditures now amount to about 40% of asset value. Some major irrigation structures could fail, and the system needs substantial rehabilitation and upgrading (R&U), including: (i) the reconstruction of 32% of the main and inter-farm canals, and repair of 24%; (ii) the rebuilding of 42% of the on-farm irrigation network, and repairs for 17%; (iii) the replacement and modernization of the mechanical equipment

¹ The technical assistance first appeared in *ADB Business Opportunities* on 16 October 2007.

of 18 of the 42 large intake structures, approximately 10 to 300 cubic meters per second (m^3/sec), and reconstruction of five; and (iv) R&U of inter-farm drainage systems, in addition to the on-farm systems, only 50% of which are operational. New modalities for sustainable O&M are also required to prevent further deterioration and to ensure that investment returns follow system R&U.

6. Pumped irrigation poses special challenges. The pumps in Uzbekistan are all operating beyond their design life and have been inadequately maintained for two decades. Without intervention, many are likely to fail soon. Of the 76 very large pumping facilities with capacities of more than $100 \text{ m}^3/\text{sec}$, 60 require immediate rehabilitation.² In addition, 400 of the 1,000 smaller pumped systems, with capacities less than $10 \text{ m}^3/\text{sec}$, need immediate rehabilitation or replacement. They are operated by both the Ministry of Agriculture and Water Resources (MAWR) and water users associations (WUAs), and are used widely to extend command areas. Pumped irrigation accounts for 70% of MAWR's annual O&M budget and consumes 20% of Uzbekistan's electricity. Significant opportunities exist to increase the efficiency of smaller pumped extension systems through new pump technology, more demand-responsive operating regimes, and improved irrigation equipment. Sustainable O&M options must also be developed for pumps.

7. In addition to infrastructure R&U, the irrigation systems need improved water monitoring, measurement, and management. Substantial potential exists to improve water use efficiency by upgrading existing structures and controls through new operational procedures, automation, and supervisory control and data acquisition (SCADA) systems. MAWR has already seen positive benefits from these measures in the Fergana Valley and Samarkand under programs of the United States Agency for International Development (USAID) and the Swiss Development Corporation.

8. Current irrigation and water resources management practices result in low productivity. Average water withdrawal per ha is $14,000 \text{ m}^3$, compared with $9,000$ to $10,000 \text{ m}^3$ in countries with similar climates. Irrigation efficiency is only about 40%. The result is wasted water, overloaded drainage systems, and worsening land mineralization. MAWR estimates that more than 20,000 ha of land goes out of production each year due to salinity caused by poor water management and inadequate drainage. The salinity affects cotton yields, which decline 20–30% on slightly salinized land, and up to 80% on highly salinized land. Some degree of salinization and waterlogging affects 47% of all irrigated land.³ Productivity in irrigated agriculture dropped by 15% in the immediate post-Soviet era but has now recovered slightly. Yields are still low, however, with an average of 2.25 tons per ha for cotton and 4.2 tons per ha for wheat.

9. **Institutions.** MAWR was established in 1996 to oversee agriculture and water resources policy and manage overall development of the sectors. In 2003, 10 basin irrigation system associations (BISAs) were created under MAWR to manage main and inter-farm irrigation and drainage infrastructure based on the hydraulic boundaries of the irrigation systems. The BISAs are supposed to monitor and manage water resources, ensure effective water service delivery, and implement policy at the basin level. Although creation of the BISAs was a step forward in water management practice, and BISAs have a legacy of Soviet engineering expertise, they need exposure to advanced irrigation and water management methods to help them carry out their functions more effectively. WUAs have been created to replace the former *shirkat* irrigation management system at the on-farm level. The WUAs are important institutions for reform and improved service delivery, but they need (i) more training and resources during establishment and until they are sustainable, (ii) a strong legal foundation and mandate, and (iii) a review of their

² The pump cascades include Amu Bukhara, Karshi and Amu Zhang, and the latter is being rehabilitated through ADB. 2003. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to the Republic of Uzbekistan for the Amu Zhang Irrigation Rehabilitation Project*. Manila. The other two large cascades also need urgent rehabilitation. However, parts of both systems are located in Turkmenistan, and a previous attempt by the World Bank failed to secure an adequate agreement and access for the R&U of the Karshi pumping cascade.

³ ADB is addressing this situation through ADB. 2006. *Technical Assistance for Central Asian Countries Initiative for Land Management Multicountry Partnership Framework Support Project*. Manila, that includes Uzbekistan.

responsibilities and authority within a broader institutional analysis of irrigation management. USAID and the Swiss Development Corporation have provided some training and support for WUAs, and the Government is working on laws to support WUAs, but no consistent national approach or program has been developed for their assistance.

10. **Strategy Development.** Three programs are under way in Uzbekistan to help develop strategy and policies for water resources and irrigated agriculture, including two activities under the Ministry of Economy. ADB is supporting the TA, Implementation and Monitoring of Policy Reforms in the Agriculture Sector;⁴ and World Bank has just started the Water Sector Investment Planning Study. MAWR is preparing its own water conservation strategy.⁵ These efforts are vital for sustainable sector development, but additional coordinated ADB input is needed. It is also important that this work on strategy receive continuing support and investment to bring about its effective implementation. For successful ADB engagement in the sector, a long-term strategy, policy road map, and investment plan should be developed.

11. **External Support.** ADB is providing assistance to water resources and irrigated agriculture through several loans: (i) Ak Altin Agricultural Development Project; (ii) Grain Productivity Improvement Project; (iii) Amu Zhang Irrigation Rehabilitation Project;⁶ and (iv) Land Improvement Project.⁷ This assistance provides a mix of interventions, including R&U for very large inter-farm and small on-farm infrastructure, improved management and institutional strengthening, capacity development, and sector reforms. World Bank assistance is supporting infrastructure R&U as well as policy reforms. Given the overwhelming needs, a variety of approaches that blend different levels of infrastructure R&U and sector reforms is warranted. Addressing pumps extension systems and inter-farm structures diversifies ADB interventions and is strongly supported by the Government. Further ADB engagement, however, would benefit from a review of lessons learned from implementing previous projects.

III. THE PROPOSED TECHNICAL ASSISTANCE

A. Impact and Outcome

12. The impact of the TA will be improved water resources management. The outcome will be an ADB sector project design that includes preparation of (i) a sector strategy to guide a long-term ADB program for water resources and irrigated agriculture, and (ii) a sector investment project for ADB financing.

13. The TA will prepare a sector investment project for water resources management and irrigated agriculture that includes (i) a sector strategy, road map, and investment plan; (ii) criteria to select subprojects to be financed under the Project; (iii) feasibility-level technical preparation (excepting detailed designs), with economic, financial, social, and environmental assessments of representative core subprojects and their impacts, and analysis of the proposed Project as a whole; (iv) an initial list of prioritized investments based on the selection criteria and preparation of the core subprojects; (v) detailed implementation arrangements, including methodologies and modalities for subproject selection and preparation, project management, procurement, and financial management, *inter alia*; (vi) a project investment and financing plan with financial flows and requisite cost-recovery mechanisms; (vii) institutional and policy analyses consistent with ADB

⁴ ADB. 2006. *Technical Assistance to the Republic of Uzbekistan for Implementation and Monitoring of Policy Reforms in the Agriculture Sector*. Manila.

⁵ The United Nations Development Programme has prepared *Water—Critical Resource for Uzbekistan's Future*, which provides a comprehensive overview of the water sector in Uzbekistan, and it has indicated that it will be preparing an integrated water resources management plan for the country.

⁶ ADB. 2003. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Republic of Uzbekistan for the Amu Zhang Irrigation Rehabilitation Project*. Manila.

⁷ ADB. 2006. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Republic of Uzbekistan for the Land Improvement Project*. Manila.

sector lending, and with recommendations to enhance project impact; (viii) due diligence for financial management, governance, procurement, and safeguards, including associated outputs, according to ADB guidelines for resettlement and environment; (ix) terms of reference for implementation consultants; (x) workshops, consultations, training, and seminars; (xi) a project design and monitoring framework; and (xii) a monitoring and evaluation framework.

B. Methodology and Key Activities

14. The TA will have two phases that overlap. Phase I will review, synthesize, and elaborate existing sector work to provide analysis of water resource and irrigation issues, and develop a long-term national strategy that includes an investment plan, a policy road map, and capacity development plan to guide ADB engagement. This TA work will be conducted in close cooperation with the Government and development partners to contribute to ongoing sector work, and to ensure a consistent and complementary approach. Phase I will define the geographic location for the TA and develop criteria for selecting core subprojects. Consultations and at least one workshop will be conducted to ensure consensus. Phase II will prepare a sector investment project based on core subprojects, and on other requirements for ADB sector lending, and provide implementation recommendations based on lessons from previous projects.⁸ Phase II will prepare the following core subprojects.⁹

15. **Improved Water Management for the Inter-Farm System.** The TA will prepare recommendations to improve monitoring, measurement, and management of water resources in the main and inter-farm systems, including (i) the improvement of structures, (ii) the use of management information systems (MIS), (iii) an increase in automation, and (iv) application of SCADA technology on appropriate structures in appropriate systems. One objective is to match water supply and demand more efficiently, thus saving water and reducing water deficits. The TA will prepare core subprojects that provide R&U of priority water control structures, and that involve construction of new structures to manage water more effectively. The structures will include those at risk of failure, or whose water management function has been compromised. New structures would provide cost-effective benefits for improved water management, including facilities to augment supplies in areas that lack water. The TA will evaluate current institutional arrangements, O&M procedures, and the capacity for irrigation and water management under the BISAs and related agencies. It will recommend improved management procedures, sustainable O&M options, strengthened institutional arrangements, and required changes and capacity enhancements to take advantage of MIS, SCADA and improved management systems.

16. **Improved Water Management for Pumped Extension Systems.** The TA will prepare recommendations for replacement and R&U of pumped irrigation facilities for smaller extension systems—those with capacities of about 1 to 10 m³/sec. It will not include the large cascade pumps. It will examine all system options, including improving intakes, pumps, pipelines, electronics and controls. The TA will emphasize new pump technologies and controls that yield water and energy savings. Options to match water supply with demand more closely for improved efficiency will be explored, since pump systems offer more operational flexibility than large gravity systems. The TA will develop policy recommendations and a strategy to address replacement and R&U of existing pumped systems, improved management options, and sustainable O&M. An important goal is to develop options, and methodologies that the Government can use throughout the sector in its own activities or in cooperation with other development partners.

17. **Improved Water Management for Conveyance, Application, and Drainage of Improved Supplies.** To optimize project benefits, the TA will examine the facilities for conveyance,

⁸ The TA is designed so that its outputs will also satisfy the requirements for ADB's multitranchise financing facility (MFF), which may be used. The lending modality will be determined in consultation with the Government during the TA.

⁹ The TA will support final loan processing, and to the Government for project readiness, including feasibility study, project management training, consultant recruitment, and preparation of the project administration memorandum.

irrigation application, and drainage, now in place downstream of the inter-farm structures and pipe extension systems that are to be improved. It will prepare options and recommendations for better on-farm water distribution and drainage with emphasis on low costs options.¹⁰ New irrigation technologies that result in greater productivity and water savings, especially with pumped extension systems, will be evaluated and recommendations prepared. To support more efficient management of the downstream facilities, the TA will provide options to increase the management capacity and effectiveness of the WUAs, including training, improved water monitoring and measurement, and MIS. The TA will produce a menu of hardware and software interventions that can be implemented downstream to optimize subproject benefits. It will also review experience and make recommendations regarding the Project's agricultural extension needs. The degree to which these activities will be adopted and financed under the Project will be determined during the TA.

C. Cost and Financing

18. The TA will be financed on a grant basis by the Japan Special Fund, funded by the Government of Japan. The total cost of the TA is estimated at \$1.44 million. The Government will contribute a local currency cost equivalent of \$240,000. Details of the cost estimates and financing are in Appendix 3. The Government has been advised that approval of the TA does not commit ADB to financing any ensuing project.

D. Implementation Arrangements

19. MAWR will be the Executing Agency for the TA. A TA steering committee chaired by the deputy minister of MAWR, with representation from the ministries of economy, environment, finance, and from local authorities and other concerned stakeholders will be formed to review TA progress and outputs, and meet as required. To ensure timely and effective TA implementation, MAWR will establish a TA project management unit with adequate counterpart staff in Tashkent and in the field under a qualified project director. MAWR will provide the following TA support: (i) adequate office space in Tashkent and in the field for the TA team; (ii) adequate access to telephone, heating, electricity, and water; (iii) logistical support; (iv) access to data and feasibility studies; and (v) facilitation of workshops.

20. The TA will be implemented over 20 months from the fielding of consultants, which is anticipated in March 2008. Phase I and phase II, with the completion of the draft final report, are expected to be completed over 7 months. Over the subsequent 13 months, the TA will support consultants for (i) loan processing missions, and (ii) project readiness activities on behalf of the Government. ADB will recruit a team of consultants through a firm using a simplified technical proposal and quality-and-cost-based selection procedures— weighting: 80% quality and 20% cost—to provide 31.5 international and 85.0 national person-months of consulting services in water resources management and irrigation engineering, economics, agriculture, environment, social analysis, resettlement, and institutional analysis. The TORs for the consultants are in Appendix 4. Up to 10 individual consultants of various disciplines may be recruited, as needed, throughout the TA. The consultants will be engaged by ADB in accordance with its *Guidelines on the Use of Consultants* (2007, as amended from time to time), and any procurement under this TA will be in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time).

IV. THE PRESIDENT'S RECOMMENDATION

21. The President recommends that the Board approve the provision of technical assistance not exceeding the equivalent of \$1,200,000 on a grant basis to the Government of Uzbekistan for preparing the Water Resources Management Sector Project.

¹⁰ Uzbek farmers are responsible for financing 100% of on-farm improvements. Comprehensive R&U programs such as Ak Altin are expensive and beyond the ability of farmers to pay, which is a constraint and Government concern.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p>Impact</p> <p>Improved water management in Uzbekistan</p>	<p>Water use productivity improved by 10%</p> <p>Water consumption reduced</p>	<p>Monitoring by the Ministry of Agriculture and Water Resources (MAWR), the basin irrigation system association (BISA), and water users associations (WUAs)</p> <p>Agricultural statistics from MAWR</p> <p>Project reporting</p>	<p>Assumption</p> <ul style="list-style-type: none"> • Water resources continue to be a high priority for the Government. <p>Risk</p> <ul style="list-style-type: none"> • Transboundary water issues frustrate water management efforts.
<p>Outcome</p> <p>A strategy for Asian Development Bank (ADB) engagement of the water resources and irrigation sectors, including investment, and preparation of a sector project/loan</p>	<p>Preparation of an ADB strategy, road map, and investment plan for water resources and irrigated agriculture, and a memorandum of understanding for a sector project/loan signed by the Government</p>	<p>ADB technical assistance (TA) review and loan processing missions</p> <p>TA consultant and project management unit (PMU) reporting</p> <p>Uzbekistan resident mission reporting</p>	<p>Assumptions</p> <ul style="list-style-type: none"> • The Government is a willing and capable partner in strategy development. • The Government supports the project concept. <p>Risk</p> <ul style="list-style-type: none"> • The Government is not able to reach internal consensus on strategy.
<p>Outputs</p> <ol style="list-style-type: none"> 1. A strategy document, sector road map, and investment plan for ADB sector engagement 2. Preparation of 2 core subprojects for inter-farm infrastructure, and 1 core subproject for improved on-farm system management 3. Preparation of 2 core subprojects for pumped extension systems 4. Options and recommendations for (i) improved on-farm infrastructure and management, (ii) improved agricultural support services, and (iii) improved irrigation techniques 5. Required due diligence 	<p>Preparation of water-resources and irrigated-agriculture sector analysis and intervention selection criteria</p> <p>Preparation of feasibility studies and supporting documentation that are acceptable to ADB and to the local agencies</p>	<p>Documents prepared by TA consultants and PMU</p> <p>ADB TA review and loan processing missions</p> <p>TA consultant and PMU reporting</p> <p>Uzbekistan resident mission reporting</p>	<p>Assumptions</p> <ul style="list-style-type: none"> • Suitable core subprojects can be found and prepared. • PMU staff is competent to support TA consultants, and achieve Government ownership. <p>Risk</p> <ul style="list-style-type: none"> • Political interference with regard to project design and selection criteria.

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p>work for safeguards and other concerns, and requisite analysis and documentation to support an ADB investment project</p> <p>6. Final project documents and loan project agreements</p> <p>7. Project readiness actions, including feasibility study, training for PMU staff, requests for proposal, and supporting documentation for implementation, consultant recruitment, and draft project administration memorandum, <i>inter alia</i>.</p>			
<p>Activities with Milestones</p> <p>1.1 Development of ADB strategy, road map, and investment program, with draft document, by end of month two. Sector work to be reconfirmed through the TA</p> <p>1.2 Development of subproject selection criteria, and selection of core subprojects by end of month two. Criteria to be reconfirmed throughout the TA</p> <p>1.3 Workshop to confirm strategy and findings</p> <p>2.1 Preparation of feasibility studies and due diligence work for core subprojects for improved water management of the inter-farm system—with a draft complete by end of month six of TA</p> <p>2.2. Local feasibility studies approved by the Government at loan appraisal</p> <p>3.1. Preparation of feasibility studies and due diligence work for core subprojects for improved water management of pumped extension systems, with draft complete by end of month six of TA.</p> <p>3.2. Local feasibility studies approved by Government at loan appraisal.</p> <p>4.1 Preparation of options and recommendations for water management for conveyance, application, and drainage of improved water supply, including options and recommendation for (i) improved infrastructure and management of on-farm irrigation systems, (ii) improved agricultural support services, and (iii) and improved irrigation techniques. Draft to be complete by end of month six.</p> <p>4.2 Confirmation of the aforementioned interventions in 4.1 that will be included in the final investment project – to be confirmed at loan fact finding.</p> <p>5.1 Preparation of due diligence requirements for safeguards and other project aspects. Draft complete by the time of loan fact finding.</p> <p>5.2 Draft Report and Recommendation of the President and other requisite project and loan documents completed by loan appraisal.</p> <p>6.1 Project readiness activities including PMU staff training – ongoing from loan appraisal until arrival of the project implementation consultants.</p> <p>6.2 Preparation of requests for proposal and final recruitment of implementation consultants – within 10 months of ADB loan approval.</p> <p>6.3 Preparation of Project Administration Memorandum – with 6 months of ADB loan approval.</p>			<p>Inputs</p> <ul style="list-style-type: none"> • ADB will provide \$1.2 million in TA financing supporting 31.5 international and 85 national person-months of consulting, workshops, technical studies, and surveys • The Government will provide a project director, PMU, and support facilities for the TA, along with staff time for consultation on strategy development and project design • Beneficiaries will provide time and input for consultation on all aspects of project design and due diligence

ADB = Asian Development Bank, BISA = basin irrigation system association, MAWR = Ministry of Agriculture and Water Resources, PMU = project management unit, TA = technical assistance, WUA = water users association.

INITIAL POVERTY AND SOCIAL ANALYSIS

Country/Project Title:	Uzbekistan / Water Resource Management Sector Project		
Lending/Financing Modality:	Sector Loan	Department/ Division:	Central and West Asia Department / Agriculture, Environment, and Natural Resources Division

I. POVERTY ISSUES

A. Linkages to the National Poverty Reduction Strategy and Country Partnership Strategy

In 2007, 25.8% of the people in Uzbekistan were living below the poverty line.¹ About one third of the poor, or 2.3 million people, were classified as extremely poor. About 70% of the poor live in rural areas. In 2001, the poverty rate in rural areas of Uzbekistan was 30.5%, versus 22.5% in urban areas. It declined in 2002 to 27.8%, but rose slightly in 2003 to 29%. The overall poverty rate dropped to 26.1% in 2004, and 25.8% in 2007.

The highest concentrations of poor households are in the northern region and in the south, where the poverty rate is almost four times higher than that of Tashkent, which boasts the lowest percentage of poor in the country.² The distribution of poverty reflects the different regional levels of development. The gap between the most and the least developed regions increased from 2.1 to 4.2 times in the 1991–2003 period. Poverty in Uzbekistan also has demographic features. Families with many children and with low labor-force participation rates are often poor.³ In 2005, the percentage of the adult population—women from 16 to 54 years old, and men from 16 to 59—employed in the administrative districts was 55% in Andijan oblast, 53.3% in Namangan oblast, and 53.6% in Fergana oblast. The risk of poverty remains high in small towns where people have more limited access to land resources than in rural areas.

Poverty in Uzbekistan is linked to a lack of water in sufficient quantity and quality for normal domestic and irrigation uses. Insufficient access to water for productive uses prevents poor people from fulfilling their basic income needs. The country's irrigation systems are in bad condition, and some regions face water scarcity. In many areas, potable water is used for irrigating homestead plots, in addition to drinking, and sanitary and hygienic purposes. Rural people often use small water reservoirs to support agricultural needs during the growing season but this causes waterlogging, because of the rise of groundwater, and damages the land's fertility. According to a survey conducted in the Fergana Valley, all the fruit trees dried up in areas with shallow ground water and intensive waterlogging of the land. Only 25% of the land in the valley is not subject to erosion, and only one third of drainage wells are in operation.

B. Targeting Classification

1. Select the targeting classification of the project:

General Intervention Individual or Household (TI-H); Geographic (TI-G); Non-Income MDGs (TI-M1, M2, etc.)

2. The proposed project will be a targeted intervention based on the sector approach to subproject selection in that the benefits will accrue to those persons in the subprojects areas.

C. Poverty Analysis

1. The TA will support a general poverty analysis of the rural sector, focusing on the project area once it is determined. In addition, the TA will support a detailed social and poverty analysis of all persons in the core subproject areas. This will comprise a review of secondary sources, as well as primary data collection, including development of the study methodology and instruments, recruitment of a field team, and management of the field studies in the core subproject areas. A national social assessment specialist will be engaged for 4 months to carry out this work, and funds are available to hire field staff for survey work. The social assessment specialist will coordinate with the economists to conduct the poverty impact assessment and the detailed stakeholder analysis in all core subproject areas. There will be an international economist for 6 months and national economist for 7 months. Based on the experience from the TA, the social assessment specialist will develop terms of reference for detailed social assessment methodology, procedures, and a component to be included in the Project for analysis of subprojects.

¹ World Bank. 2003. *Living Standards Assessment*. Washington, DC. According to these documents, energy consumption per capita per day below 2,100 kcal was taken as a poverty line (and below 1,500 kcal as extreme poverty line). This methodology is approved by the Government and the further monitoring living standards will be based on this methodology.

² Poverty rate data are unavailable at the level of some oblasts.

³ World Bank. 2001. *Household Budget Survey*. Washington, DC.

II. SOCIAL DEVELOPMENT ISSUES

A. Initial Social Analysis

Increasing crop productivity, improving the irrigation network, and reclaiming land all contribute to the development of the agricultural sector. Many private farms, *dekhan* farms and private entrepreneurs that engaged in viticulture and horticulture have recently lost profits because land productivity has been reduced by salinity and waterlogging of the soil and the high salinity of irrigated water. The limited natural grazing lands and lack of productive fodder hinder intensive development of cattle breeding. The productivity of land in the southern regions is gradually decreasing due to rising groundwater, which affects the irrigation systems and causes a decline in crop yields. Orchards are drying up, and local people are losing their main source of livelihood; 36% of an average rural household's income comes from its garden.

In some places, irrigation water from rivers and canals is being used for drinking and other domestic purposes. Although people traditionally boil water before drinking, many rural families have limited access to gas and electricity and must try to cook and to sterilize the water using cheaper fuels like dry dung, or dried plants. Under these circumstances women and children run a high risk from water born diseases, with the most common being diarrhea, dysentery, gastrointestinal and kidney diseases, and hepatitis. Women and girls also have more limited access to hygiene and sanitary facilities than men and boys, who can use rivers and canals.

B. Consultation and Participation

The primary stakeholders for the TA and ensuing project will be: (i) farmers in subproject areas; (ii) other residents in the subproject area, who will benefit indirectly from improved productivity through demand for labor or additional expendable income; (iii) MAWR and local BISA staff; (iv) WUAs; (v) ministries of economy and finance; (vi) local governments, and *mahallas*, self-governance bodies; and (vii) development partners. Consultation will include workshops, semi-structure interviews, surveys, and focus groups in the field. This will be done by the PMU, TA consultants, and recruited nongovernment organizations and/or other organizations as required.

1. What level of participation is envisaged for project design?

- Information sharing Consultation Collaborative decision making Empowerment

2. Will a C&P plan be prepared? Yes No

C. Gender and Development

The nation-wide reform process in the agriculture sector of Uzbekistan has reorganized large, loss-making cooperative enterprises into smaller private farms. That, in turn, reduced public sector employment. While men and women constitute almost equal parts of the labor surplus that occurred after *shirkats* were reorganized, women face greater difficulty finding new employment. In the agricultural sector, men perform largely skilled and mechanized work while women do mostly low-skilled manual work. With the transition to contract-based labor, they have been pushed out of full time employment and have only seasonal work opportunities. Meanwhile, the burden of unpaid housework on women at home and in household plots has increased. The result is a decline in the social status of women. Even those women officially employed in agriculture perform labor-intensive, low-paid types of work, such as picking cotton, dairying and breeding silkworms. The load put on women by unpaid work is particularly heavy in rural areas, where families are notably bigger than in towns and cities. This gap in family sizes gap is in fact, expanding. Rural women are responsible for farming household plots and care of household livestock. The available data suggests that women represent only 4.8% of private farmers, with the highest rate in the Khorezm region (13.1%) and the lowest (1.3%) in Surkhandarya. Only 6% of farm and water management positions are occupied by women. This implies that women are being excluded from key employment opportunities in the restructuring process, as well as from positions of authority that could help empower them in local communities.

The main gender issues in water management sector include: different opportunities for women and men in access to, and control over, water resources, costs, and benefits of production; lack of qualifications and knowledge among women in water resources management issues; and insufficient involvement by women in decision making, particularly within water users associations. The number of women farmers is too low and their leadership potential is not used. These women become involved effectively participate in water management institutions at the scheme level and the basin level.

1. Does the proposed project/program have the potential to promote gender equality and/or women's empowerment by improving women's access to and use of opportunities, services, resources, assets, and participation in decision making? Yes No

The TA will more fully evaluate the role of women in water resources management and irrigated agriculture to identify possible intervention points through the ensuing project. Possible project interventions could come through developing means to enhance women's roles in water users associations and other water management organizations. Programs could be

developed to meet the training needs for female irrigators. Employment opportunities through the project interventions could be targeted or enhanced for women. A gender action plan will be developed under the TA.

2. Could the proposed project have an adverse impact on women and/or girls or to widen gender inequality?
 Yes No

This will be confirmed during the TA and if the possibility for adverse impacts on women and/or girls is identified, the prevention and any required mitigation measures will be developed.

III. SOCIAL SAFEGUARD ISSUES AND OTHER SOCIAL RISKS

Issue	Nature of Social Issue	Significant/Limited/ No Impact/Not Known ¹²	Plan or Other Action Required
Involuntary Resettlement	Since the proposed ensuing project will consist of irrigation and water resource infrastructure, resettlement impacts are anticipated to be temporary and limited to the construction period	Limited	<input type="checkbox"/> Full Plan <input checked="" type="checkbox"/> Short Plan <input checked="" type="checkbox"/> Resettlement Framework <input type="checkbox"/> No Action <input type="checkbox"/> Uncertain
Indigenous Peoples	There are no indigenous peoples issues	No impact	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input type="checkbox"/> Indigenous Peoples Framework <input type="checkbox"/> No Action <input type="checkbox"/> Uncertain
Labor <input type="checkbox"/> Employment Opportunities <input type="checkbox"/> Labor Retrenchment <input type="checkbox"/> Core Labor Standards	The project will not have any negative impact on water sector employees	No impact	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input type="checkbox"/> No Action <input type="checkbox"/> Uncertain
Affordability	The TA will include ability to pay studies for capital investment and O&M for farmers so that adequate due diligence on affordability will be carried out prior to final project design	Not known	<input type="checkbox"/> Action <input type="checkbox"/> No Action <input type="checkbox"/> Uncertain
Other Risks and/or Vulnerabilities <input type="checkbox"/> HIV/AIDS <input type="checkbox"/> Human Trafficking <input type="checkbox"/> Others (conflict, political instability, etc.), please specify	No risk or vulnerabilities are envisaged in the Project	No impact	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input type="checkbox"/> No Action <input type="checkbox"/> Uncertain

IV. PPTA/DUE DILIGENCE RESOURCE REQUIREMENT

1. Do the TOR for the PPTA (or other due diligence) include poverty, social and gender analysis and the relevant specialist/s?
 Yes No
2. Are resources (consultants, survey budget, and workshop) allocated for conducting poverty, social and/or gender analysis, and C&P during the PPTA/due diligence? Yes No

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Total Cost
A. Asian Development Bank Financing^a	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	670.00
ii. National Consultants	160.00
b. International and Local Travel	64.00
c. Reports and Communications	12.00
2. Equipment ^b	10.00
3. Training, Seminars, and Conferences	40.00
4. Technical Work, Designs, and Surveys ^c	100.00
5. Miscellaneous Administration and Support Costs	
a. Office Administration	8.00
b. Vehicle Rental and Running Costs	30.00
c. Translation	30.00
6. Representative for Contract Negotiations	8.00
7. Contingencies	68.00
Subtotal (A)	1,200.00
B. Government Financing^d	
1. Office Accommodation and Transport	50.00
2. Remuneration and Per Diem of Counterpart Staff	100.00
3. Logistical Support	20.00
4. Data Collection and Management	30.00
5. Technical Support	30.00
6. Workshop Facilitation	10.00
Subtotal (B)	240.00
Total	1,440.00

^a Financed by the Japan Special Fund, funded by the Government of Japan.

^b Equipment includes two computers, two black and white printers, and one color printer.

^c It is anticipated that technical studies and designs will be executed by a design institute affiliated with the Ministry of Agriculture and Water Resources.

^d In-kind counterpart funding from the Ministry of Agriculture and Water Resources.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. **Water Resources Development Specialist, and Team Leader** (international, 7 person-months; national, 8 person-months). The team leader will: (i) liaise with government agencies and development partners regarding project requirements for developing a water sector strategy, a policy road map, the pump strategy to be prepared under the technical assistance (TA); (ii) prepare the water sector strategy, the policy road map and investment, under specific terms of reference (TOR) to be developed and approved by the Government at TA inception (iii) develop, in association with government agencies, the investment criteria to be used in priority core and pipeline subprojects; (iv) identify the core and pipeline subprojects to be included in the Project; (v) prepare, with the agricultural and resource economist, preliminary estimates of investment cost limits for each subproject, to meet economic criteria; (vi) coordinate the inputs of all other international and national consultants; (vii) review the workings of current institutional relationships within the basin irrigation system association systems, and recommend ways to improve effectiveness; (viii) ensure compliance of project outputs with Asian Development Bank (ADB) guidelines; (ix) manage the entire TA team, and integrate all TA outputs into an ADB strategy and investment project; (x) oversee preparation of approved local feasibility studies for the core subprojects, in keeping with national standards, and acceptable to the Ministry of Agriculture and Water Resources (MAWR) and ADB; (xi) review all aspects of implementation in previous ADB projects, and others, to identify constraints, bottlenecks, and concerns, and work with the Government to address them; (xii) evaluate synergy between TA sector analysis and the Central Asian Countries Initiative for Land Management (CACILM) program for possible integration and collaboration; and (xiii) ensure timely delivery of TA outputs, as defined in the ADB TA paper, and of other outputs, in accordance with contract requirements.

2. **Agricultural and Resource Economist** (international, 6 person-months; national, 7 person-months). The agricultural and resource economist will: (i) contribute economic sector analysis, in association with team leader, to support development of the water sector strategy, road map, and investment plan to be prepared under phase 1 of the TA; (ii) develop with- and without-project farm budget and economic and financial analyses for each core subproject; (iii) develop criteria and methodologies for the economic evaluation of potential irrigation subprojects, which will be used for both the core subprojects and all remaining subprojects during project implementation; (iv) undertake detailed project costing, in cooperation with the TA team, using Costab software; (v) prepare a project financing plan using Costab; (vi) undertake due diligence for a financial management assessment of MAWR's practices, or those of any other executing agency, according to ADB guidelines, and make recommendations to strengthen financial management; (vii) develop a manual of procedures for economic and financial assessments for the Project; (viii) prepare a financial and economic analysis of the Project as a whole, in accordance with ADB practice for sector projects; (ix) work with TA technical staff to assess farmers' and water users associations' (WUAs) ability to pay for capital cost recovery, and operations and maintenance (O&M) costs, for on-farm works; (x) prepare a detailed sensitivity analysis by describing major project risks, potential impacts on project feasibility, and safeguards to be incorporated in the project design; (xi) conduct a poverty-impact assessment for various farm sizes and farming practices, based on distribution analyses, and poverty analysis, and ADB guidelines; (xii) establish a practical cost-financing plan to be used for on-lending and disbursement arrangements; (xiii) assess the financial sustainability of the proposed facilities and measures; and (xiv) prepare all reports related to the Project, in association with team leader.

3. **Irrigation and Drainage Engineer** (international, 5 person-months; national, 12 person-months). The irrigation and drainage engineer will contribute economic sector analysis and work with the team leader to help develop the water sector strategy, the road map and the investment

plan to be prepared under phase 1 of the TA. In association with the team leader and the agricultural and resource economist, the consultant will also identify the prioritized core and pipeline subprojects to be included in the Project. For each subproject, the engineer will (i) estimate water requirements for irrigation and leaching, and associated delivery schedules; (ii) design and estimate the associated investment needs for the supply system to the WUA supply points; (iii) design and estimate the investment needs for on-farm water distribution and drainage control systems; (iv) develop measurement and data-acquisition systems to improve on-farm water management operations and potential supervisory control and data acquisition (SCADA) interventions; (v) assist the hydraulic structures engineer and pumping systems specialist with design criteria for rehabilitation investments; (vi) prepare guidelines for the development of an O&M manual for infrastructure downstream of rehabilitated structures and pumping subprojects; and (vii) ensure that feasibility studies for core subprojects are completed according to national standards.

4. **Pumping Systems Specialist** (international, 3 person-months; national, 10 person-months). The pumping systems specialist will: (i) review the core subproject pumping facilities to estimate the likely loss of function over time, in the absence of Project interventions; (ii) review a sample of potential pipeline projects to assess likely rehabilitation needs for the core subprojects; (iii) liaise with the SCADA specialist and irrigation and drainage engineer on potential for improved operational management; (iv) estimate investment costs for the full restoration of functions of the rehabilitated facility, and ensure its mechanical and structural integrity; (v) design alternative rehabilitation investments, if necessary, within the investment cost limits defined by the team leader; (vi) assess and accommodate sediment issues in designs; (vii) estimate energy savings gained under the rehabilitation investments; (viii) prepare guidelines for the development of an O&M manual for the rehabilitated pumping facilities, (ix) ensure that feasibility studies for core subprojects are completed with the TA, according to national standards; (x) take the lead on development of a policy recommendations and a strategy to address replacement and R&U of existing pumped systems, their better management, and sustainable O&M that considers costs, benefits and possible subsidy. The strategy should result in an improved approach, options, and methodology for the Government to address pump issues throughout the sector.

5. **SCADA Specialist** (international, 2 person-months; national, 4 person-months). The SCADA specialist will: (i) review the performance of existing SCADA installations and discuss potential applications and benefits with government agencies; (ii) identify core and pipeline subprojects with SCADA potentials, in association with the team leader, the irrigation and drainage engineer, the pumping systems specialist, and the agricultural and resource economist; (iii) design and estimate capital and recurrent costs for SCADA core subprojects; (iv) prepare guidelines for specifications suitable for a formal request for proposal during implementation; (v) assess risks to the security and integrity of structure operation under project SCADA interventions, and recommend risk-mitigation measures; and (vi) identify the requirements for O&M manuals for SCADA investments.

6. **Hydraulic Structures Engineer** (international, 2 person-months; national, 10 person-months). The hydraulic structures specialist will: (i) establish the criteria to be used in the design of rehabilitated water control structures in cooperation with the irrigation and drainage engineer and the SCADA specialist; (ii) oversee the feasibility studies and designs to be prepared by a local design institute for the rehabilitation of priority water control structures in core subprojects, and monitor associated capital and recurrent costs; (iii) accommodate the investment cost limits to be defined by the team leader and the agricultural and resource economist; (iv) prepare guidelines for the development of an O&M manual for the rehabilitated water control structures; (v) oversee design institute work; (vi) review design criteria and local regulations for structures; (vii) review and provide requirements for final design; (viii) work with the SCADA specialist to assess needs and

provide options for structures and their modifications to facilitate SCADA implementation; (ix) work with the irrigation and drainage engineer to provide options for structures for the irrigation system; (x) provide detail costing for structures and review unit rates for project preparation; (xi) provide O&M requirements for structures; and (xii) work with the economist to provide cost effective structural options.

7. Water User Association (WUA) and On-Farm Water Management Specialist (international, 3 person-months; national, 8 person-months). This specialist will

- (i) develop an assessment framework, in consultation with ADB and the Government, to review the effectiveness of WUAs in Uzbekistan, and of past assistance to WUAs, with particular attention to:
 - (a) the methodology for fee setting, and collection efficiency;
 - (b) capacity for business planning and financial management, O&M, water management, and other functions;
 - (c) the range of functions undertaken, beyond irrigation management and O&M—i.e. agricultural extension;
 - (d) training programs, curriculums, and other capacity development activities associated with WUAs;
 - (e) equipment and other resources provided; and
 - (f) equity of water delivery among farmers;
- (ii) work with the TA team to assess the variability of the infrastructure under the responsibility of WUAs, and determine the types and range of resources and capacity needed for sustainable O&M;
- (iii) work with the economist to assess the capacity of WUAs to pay for investments and O&M;
- (iv) review the experience with WUAs in Central Asia and distill lessons appropriate for Uzbekistan from other members of the Commonwealth of Independent States;
- (v) review and assess the legal foundations for WUAs, and the current efforts to revise the water law to incorporate WUAs, and make recommendations to strengthen the law;
- (vi) assess ways to improve the relationships and coordination among the farmers, WUAs, and BISAs, to improve information and data exchange and make irrigation service delivery more responsive;
- (vii) assess the need for manuals for WUA development, and draft the required TOR;
- (viii) make recommendations to strengthen and incorporate WUA development into the ensuing investment component; and
- (ix) explore modalities for WUA participation in subproject selection and preparation.

8. Agronomist and Agriculturalist (national, 6 person-months). The agronomist and agriculturalist will: (i) support the economist in development of the farm budget analysis, and in assessing the with- and without-project impacts; (ii) identify and analyze key technical, institutional, social, and economic constraints limiting productivity, and make recommendations to overcome them; (iii) assess farmers' needs for farm services and agricultural extension; (iv) review and assess the capacity and effectiveness of the various agricultural support extension services provided in Uzbekistan—Rural Business Assistance Centers, WUAs, farmer associations, etc.—and make recommendations to improve them; (v) work with the technical team to assess the impact of on-farm infrastructure improvements on crop productivity, and make recommendations; (vi) work with the technical team to assess the viability and impacts of alternative irrigation technologies; and (vii) work with the team to develop options for on-farm improvements and agricultural support services to be delivered under the Project.

9. Environmental Specialist (international, 1.5 person-months; national, 4 person-months). The environmental specialist will: (i) assess the Government's current environmental legislation

and frameworks, compare them with ADB's, identify gaps, differences, or conflicts, and recommend changes to content and/or mechanisms to promote compatibility; (ii) prepare initial environmental examination and summary initial environmental examination reports for each core subproject, in accordance with the environmental assessment guidelines of ADB and the Government, and include in the former the environmental management and monitoring plan to mitigate negative impacts, with corresponding costs; (iii) assess the environmental capabilities of both the Executing Agency (MAWR) and other agencies involved in approving the environmental assessment, and , closely assess the capacity of MAWR and BISAs to carryout environmental management plans for project implementation, quantifying training requirements for capacity building; (iv) formulate a set of environmental criteria for both selecting and approving subprojects; (v) ensure that the analysis includes on-farm salinization and erosion problems—wind and water—as well as off-farm issues of saline drainage water and the quantity and quality of return water flows to rivers; (vi) identify any other environmental issues related to the sector and/or subprojects that require loan covenants and conditions to ensure appropriate management of land and water resources, and (vii) evaluate synergy between TA sector analysis and the Central Asian Countries Initiative for Land Management (CACILM) program for possible collaboration in the Project.

10. **Social Assessment Specialist** (national, 4 person-months). The social assessment specialist will: (i) review secondary sources on the socioeconomic status of all persons in the subproject area—i.e., not only the beneficiaries; (ii) develop the study methodology and instruments, recruit a field team, and manage the field studies in the subproject areas, including a detailed social and poverty analysis, and a detailed institutional analysis of the core subprojects that will provide baseline data for project impacts; (iii) coordinate with the project economist to conduct the poverty impact assessment, and develop a detailed stakeholder analysis; (iv) develop TORs, based on the TA experience, for detailed social-assessment methodology, procedures, and components to be included in the Project for social analysis of subprojects, and development of monitoring and evaluation assessments; and (v) confirm that there are no indigenous people in the project area.

11. **Gender Specialist** (national, 2 person-months). The gender specialist will: (i) develop a profile of women farmers in irrigation systems, including their participation in agricultural activities and decision making, and their social and economic status; (ii) analyze the roles of women members in WUAs, as well as their level of, and constraints on, their participation; (iii) identify strategies to ensure that women participate fully in all roles in WUAs, and that the WUAs enhance the benefits and status of women farmers and women farm laborers; (iv) identify ways to ensure that women get equal benefits from activities proposed under the Project, and that the Project enhances and protects the interests of women farmers and laborers.

12. **Resettlement Specialist** (international, 2 months; national, 4 person-months). The resettlement specialist will (i) assess and compare current Government's resettlement legislation, policies, and frameworks with those of ADB, identify gaps, differences, or conflicting areas, and recommend modifications to content and/or mechanisms to promote compatibility; (ii) assess all potential resettlement impacts from possible subprojects under the TA and Project, within the purview of ADB's resettlement policy, and confirm the ADB categorization of the proposed project as category B; (iii) prepare a resettlement framework that is consistent with ADB guidelines for sector projects; (iv) produce sample resettlement plans needed for preparing core subprojects; and (v) assess the capacity at MAWR and other relevant agencies, and prepare a capacity development program for resettlement to be implemented under the Project.

13. **Unallocated** (6 person-months). There are 6 months of unallocated time for national consultants to be used in consultation with the Government and ADB.