

**ASIAN DEVELOPMENT BANK**

**TAR: UZB 30500**

**TECHNICAL ASSISTANCE**  
(Cofinanced by the Government of Italy)

**TO THE**

**REPUBLIC OF UZBEKISTAN**

**FOR**

**PREPARING THE**

**AMU ZHANG WATER RESOURCES MANAGEMENT PROJECT**

**August 2002**

**CURRENCY EQUIVALENTS**  
**(as of 6 August 2002)**

Currency Unit	–	sum (SUM)
SUM1.00	=	\$0.0013087
\$1.00	=	SUM764.11

**ABBREVIATIONS**

ADB	–	Asian Development Bank
GDP	–	gross domestic product
IMF	–	International Monetary Fund
NGO	–	nongovernment organization
O&M	–	operation and maintenance
TA	–	technical assistance
USAID	–	United States Agency for International Development
WUA	–	water users association

**NOTES**

- (i) The fiscal year of the Government ends on 31 December
- (ii) In this report, "\$" refers to US dollars.

## I. INTRODUCTION

1. The Government of Uzbekistan requested the Asian Development Bank (ADB) for technical assistance (TA) to prepare the Amu Zhang Water Resources Management Project. The TA, which is included in the country assistance plan for 2002, will help the Government prepare a project to rehabilitate the selected key irrigation facilities, thereby to protect the livelihoods of rural communities and provide them with opportunities for sustained and increased incomes and employment through improved delivery and use of irrigation water, as well as other related sector reform initiatives. ADB's TA Fact-Finding Mission in April-May 2002 reached an understanding with the Government on the purpose, output, implementation arrangements, costs, and financing arrangements for the TA.<sup>1</sup>

## II. ISSUES

2. The agriculture sector of Uzbekistan is facing a number of problems: productivity is falling, farms are incurring huge losses, and the resource base is being depleted. As a result, rural incomes are continuing to fall. These are generally attributed to the slow pace of reform process, government budget constraints, disorganization and dysfunction of institutions, and the overall economic downturn. The specific factors causing the sectoral problems are (i) producers lack incentives because of low prices and the rigid state order system for cotton and wheat procurement; and (ii) irrigation infrastructure is rapidly deteriorating due to lack of proper management and maintenance systems and shortage of funds necessary for operation and maintenance (O&M).

3. In agreement with the International Monetary Fund (IMF), the Government has recently committed to implement substantial reforms in agriculture, in particular, to reduce state control of the agricultural production system. The reforms are designed to provide incentives for farmers to improve production and productivity.<sup>2</sup> Moreover, the Government<sup>3</sup> has decided to take major steps to further the farm reform process in agriculture and water sectors by transforming loss-making cooperatives into private farms and promoting new forms of agricultural institutions and support services, including water users associations (WUAs). ADB supports the Government's reform initiatives through its Ak Altin Agriculture Development Project. Under this project, the Government agreed to pilot test more liberalized procurement arrangements for cotton and wheat, promote private farmers through improved access to machinery services, and provide much needed investments to rehabilitate interfarm and on-farm irrigation infrastructure on a sustainable basis. ADB is also preparing a project to improve grain productivity, which is intended to further deepen and expand the reform initiatives through, among other things, increased access to crucial inputs such as seed and machinery by private farmers.

4. While the need to reform the state procurement system and restructure farms is being addressed under these important initiatives, the Government has not been able to address another key issue relating to increasingly fragile security in the supply of crucial irrigation water. Because of low rainfall and a semi-arid climate, the country's crop farming heavily depends on irrigation. About 86% of the country's 4.3 million hectares (ha) of farm land is under irrigation and irrigation water supplies come almost entirely from the surface waters of the Amu Darya and Syr Darya rivers. The scope of irrigation systems that the country inherited from the Soviet

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<sup>1</sup>The TA first appeared in *ADB Business Opportunities* (Internet edition) on 29 May 2002.

<sup>2</sup>IMF. 2002. IMF Staff Report for the 2001 Article IV Consultation. Washington DC, 21 February.

<sup>3</sup>Cabinet of Ministers. 2002. Uzbekistan. Resolution No. 8, 5 January.

Union is impressive: 30,000 kilometers (km) of main and interfarm canals, 175,000 km of on-farm irrigation networks, and about 44,000 km of horizontal and vertical drains. However, most of these irrigation facilities were built in the 1960s and 1970s as part of the central planning system and are now coming to the end of their design life. Because of severe shortage of maintenance budget after the breakdown of the former Soviet Union, some irrigation schemes are facing imminent danger of collapse, which will result in enormous social, economic, and environmental consequences. The Government is seriously concerned about this and places the rehabilitation of key water infrastructure facilities as a top national priority. Rehabilitation efforts are required not only to protect the livelihood of a large number of rural people but also to maintain the basic resource and infrastructure bases, without which ongoing reform efforts have little chance to succeed.

5. As a first concrete step toward addressing these issues in a systematic and planned manner, the Government, with the assistance of the World Bank, has prepared a comprehensive strategy<sup>4</sup> to rehabilitate and improve the basic irrigation infrastructure of the country. This strategy consists of a two-phased approach, involving a public investment program to rehabilitate and modernize main and interfarm (i.e., secondary) irrigation systems as a first phase, and gradually shifting to improvement of the remaining interfarm and on-farm irrigation systems driven by private investment as a second phase. Three of the projects afforded the highest priority under the first phase all involve large pumping cascades, whose infrastructure has been assessed by the World Bank and Uzbek experts as in danger of collapse in the near future:<sup>5</sup> (i) Karshi pumping cascade (with a command area of 400,000 ha), for which an investment proposal is being considered by the World Bank; (ii) Amu Bukhara pumping cascade (286,000 ha), for which the Government and the United States Trade and Development Agency have recently agreed to carry out a comprehensive feasibility study; and (iii) Amu Zhang pumping cascade (110,000 ha), for which the Government requested ADB TA.

6. To protect the livelihoods of rural people and create an enabling environment for reform process, rehabilitation and improvement of key irrigation schemes is regarded as an important short-to-medium-term strategy for Uzbekistan by both the Government and major international funding agencies. However, this should be addressed in close contextual linkage with the ongoing agriculture sector reforms such as farm privatization, reorganization of agricultural input supply and output marketing systems, and introduction of water delivery fee systems to ensure sustainable and efficient use of water resources. The rehabilitation of key irrigation systems is important to enable the Government to continue the ongoing sector reforms, and offers a strategic opportunity to implement and deepen the reform initiatives.

7. The selection of Amu Zhang irrigation scheme is in line with ADB's Country Operational Strategy for Uzbekistan and the country strategy and program update. Both documents emphasize the importance of policy and investment interventions in the agriculture and rural development sectors to increase economic efficiency, income, and employment generation. The Amu Zhang irrigation scheme is in Surkhandarya Province and involves three pumping stations along a main canal that extracts water from the Amu Darya River. The Amu Zhang irrigation scheme was built in 1973 and is nearing the end of its useful life. The pumping stations are currently operating at around 70% of their original capacity; high sediment levels in the pumped water frequently damage pumping equipment and deposit a large amount of sediment in the

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<sup>4</sup> Ministry of Agriculture and Water Resources and the World Bank. 2001. Irrigation and Drainage Sector Strategy Study.

<sup>5</sup> Report of Findings, Comprehensive Review of the Bukhara and Karshi Pumping Cascades, US Bureau of Reclamation. Report prepared for the World Bank, January 22, 1999. The studies of Amu Zhang rehabilitation requirements conducted in 2000 by the State Design and Research Institute of Water Management and Land Reclamation.

main canals. Due to deteriorated conditions of the main canal and high level of seepage, only about 50% of the pumped water reach farmers' fields. Domestic and international experts conclude that because of age, and wear and tear on pumping stations parts, the whole scheme may collapse soon unless a major overhaul is done in the near future.

8. Some 760,000 people live in the seven districts serviced by Amu Zhang irrigation scheme; 88% of them live in the rural areas.<sup>6</sup> The population within the project area depends primarily on irrigated agriculture for livelihoods, since the industry and service sectors are less developed than in other parts of Uzbekistan. In 2001, the monthly average official wage in the province was around SUM14,000 (\$10),<sup>7</sup> which is about 85% of the national average wage rate. In agriculture, the monthly average wage did not exceed \$8.

### III. THE TECHNICAL ASSISTANCE

#### A. Purpose and Output

9. The main purpose of the TA is to assist the Government to formulate and carry out a feasibility study for an investment project aimed at protecting and improving the livelihoods of rural communities within the Amu Zhang irrigation scheme. The specific purposes of the TA are to:

- (i) identify priority areas for (a) cost-effective rehabilitation and improvement of key irrigation infrastructure of the Amu Zhang irrigation scheme; (b) facilitation of ongoing farm privatization and institutional reforms in the project area through improved access to agricultural inputs and investment by private farmers, development of WUAs, and introduction of improved water management interventions that address the specific needs of newly established private farmers; and (c) specific policy/regulatory and institutional initiatives that are needed to ensure sustained water management at national and inter-state levels;
- (ii) develop an investment package for possible ADB financing, taking into consideration policy and institutional requirements and enabling conditions at the national and local levels that are critical to the sustainability of the project; and
- (iii) reach a consensus and commitment among all concerned stakeholders—the central and regional agencies, farming communities, and involved aid agencies—to implement and bear responsibility for the proposed project.

10. The specific outputs of the TA will include (i) a comprehensive investment proposal that allows cost-effective rehabilitation of key irrigation facilities in the Amu Zhang irrigation scheme, and other supportive/complementary measures to ensure (a) sustained and efficient use of water resources, (b) higher farm profitability, and (c) strengthened institutional capacity at the subbasin and central Government levels; (ii) a component to implement and deepen the ongoing agriculture sector reforms in the project area; and (iii) specific policy recommendations and action plans needed to ensure sustained water management at the national and interstate levels. The preliminary project framework is in Appendix 1. The summary of poverty and social analysis conducted in the project area during the TA Fact-Finding Mission is in Appendix 2.

#### B. Methodology and Key Activities

11. The TA will take account of (i) the studies of Amu Zhang rehabilitation requirements conducted in 2000 by the State Design and Research Institute of Water Management and Land

<sup>6</sup> The proportion of rural population in Surkhandarya Province is 80.5% compared to the national average of 64%.

<sup>7</sup> The average exchange rate of the curb market is SUM1400 per \$1.

Reclamation; (ii) the experience gained by the World Bank during the preparation of feasibility study for the rehabilitation of the Karshi Pumping Cascade; and (iii) the plans of the United States Agency for International Development (USAID) to invest in monitoring and control systems, and improvements in command area operations in the project area.

12. The TA will promote broad consultations with stakeholders at national, regional, and local levels and will examine the potentials for involving beneficiaries of the project investment in a number of areas including (i) self-help operations in command area development, in reconstruction and rehabilitation works, (ii) management of on-farm and interfarm distribution canals through development of WUAs, (iii) representation in the operation of the main water supply system, and (iv) realistic and affordable contributions to system costs. The TA will recommend measures for establishing organizational arrangements to ensure the sustained operation and maintenance of the rehabilitated infrastructure.

13. To achieve the objectives, the following key activities are envisioned:

- (i) preparation of Amu Darya River basin profile, including present water usages and the potential project impact on the river basin's water balance and environment;
- (ii) identification of design options for efficient and cost-effective water delivery and preparation of a prioritized and staged investment program to minimize the risk that the water supply infrastructure will fail, remedy problems of excessive sedimentation and seepage, and raise conveyance efficiencies to acceptable levels in the three major scheme pumping facilities in the Amu Zhang irrigation scheme (Amu Zhang I, Amu Zhang II, and Babatag);
- (iii) examination of ways to improve the efficiency of water use on private farms, by investing in more efficient conveyance and on-farm application systems, better management of the schemes by users, and development of WUAs;
- (iv) analysis of changes needed to the current institutional and management arrangements for the rehabilitated water supply system to reflect the subbasin management approach that will result in a more efficient and cost-effective delivery of irrigation water to users;
- (v) identification of other key constraints and opportunities for viable farm operations including access to farm inputs, marketing of agricultural products, and crop diversification, and preparation of proposals to address them; and
- (vi) exploration of alternative policy and institutional reforms and capacity-building options that can be promoted both at national and project levels (these could include the issues such as development of sustainable O&M systems, strengthening of legal and institutional frameworks for establishment of WUAs, and enhancement of water resources management capacity).

14. The TA will be coordinated closely with multilateral and bilateral agencies such as the World Bank and USAID to avoid duplication and maximize developmental impact.

### **C. Cost and Financing**

15. The total cost of the TA is estimated at \$1.187 million equivalent, comprising \$568,000 in foreign exchange costs and \$619,000 equivalent in local currency costs. The Government of Italy will provide \$400,000 on a grant basis and ADB will provide \$430,000 equivalent from the ADB-funded TA program. The Government will provide \$357,000 equivalent to cover the local currency costs of office accommodation, data compilation, logistical support, and costs of counterpart staff. Detailed cost estimates are provided in Appendix 3. The Government of

Uzbekistan has been informed that approval of the TA does not commit ADB to finance any ensuing project.

#### **D. Implementation Arrangements**

16. The Ministry of Agriculture and Water Resources (MAWR) will be the Executing Agency for the TA. A steering committee will be established to supervise the TA. The steering committee will be chaired by a senior official appointed by the Government and will include representatives from MAWR and other concerned ministries and agencies. Under the guidance of the steering committee, a TA working group will be established, and chaired by the First Deputy Minister of Agriculture and Water Resources responsible for the water sector. The working group will comprise technical staff from the ministries of agriculture and water resources, environment, relevant research and design institutes, and the provincial government. The technical staff of the working group will work full-time with the TA team, and will review and comment on the TA consultants' reports. The working group will report to the steering committee and ADB on issues concerning the TA.

17. The TA will be implemented over a 7-month period starting in November 2002 and ending in May 2003. It will finance (i) 18 person-months of services by international consultants with expertise in water resources management, irrigation and drainage engineering, electrical/mechanical engineering, agricultural economics, institutional development; and (ii) 73 person-months of services by domestic consultants, with expertise in irrigation/drainage engineering, electrical/mechanical engineering, civil engineering, sediment transportation, on-farm water resources management, land leveling, agricultural economics, rural sociology, agronomy, and environmental assessment. The consultants will be engaged by ADB in accordance with its *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for the engagement of domestic consultants. The consultants will be recruited through an international consulting firm, and the selection of the firm will follow ADB's quality-based selection method. The choice of method is due to the complexity associated with rehabilitating a multistage pumping cascade built during the Soviet area, which will require innovative solutions for modifying the scheme or proposing entirely new designs. Shortlisted firms will be invited to submit a simplified technical proposal to ADB. The outline terms of reference of the Consultants are given in Appendix 4. Any procurement under the TA will be conducted in accordance with ADB's *Guidelines for Procurement*.

#### **IV. THE PRESIDENT'S DECISION**

18. The President, acting under the authority delegated by the Board, has approved (i) ADB administering a portion of technical assistance not exceeding the equivalent of \$400,000 to be financed on a grant basis by the Government of Italy; and (ii) ADB providing the balance not exceeding the equivalent of \$430,000, to the Government of Uzbekistan for preparing the Amu Zhang Water Resources Management Project, and hereby reports this action to the Board. The ADB-financed portion of the technical assistance, initially financed as a grant, will be subject to the reimbursement arrangements set forth in *Technical Assistance Operations*<sup>8</sup> and *Streamlining of Technical Assistance Operations*.<sup>9</sup> If the technical assistance results in an ADB loan, ADB may charge against the loan, and recover from it, the portion of the initial grant that exceeds \$250,000 equivalent.

<sup>8</sup> ADB. 1977. *Technical Assistance Operations*. R51-77, 20 May. Manila.

<sup>9</sup> ADB. 1988. *Streamlining of Technical Assistance Operations*. R44-88, 21 March. Manila.

PRELIMINARY PROJECT FRAMEWORK<sup>1</sup>

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p><b>Goal</b> Maintain and improve agricultural production and productivity in the Amu Zhang area on a sustained basis.</p>	<p>Production increases from __ to__.</p> <p>Crop yield increases from __ /ha to __ /ha.</p> <p>Farmer incomes increase from __ to__.</p>	<p>Project monitoring and evaluation data</p> <p>Project completion report</p> <p>Reports Ministry of Agriculture and Water Resources</p> <p>Regional statistics</p>	<p>Macroeconomic and agriculture policies support irrigated agriculture.</p> <p>Agriculture remains a viable economic activity.</p>
<p><b>Purpose</b> Increase the reliability, efficiency and sustainability of water supply of Amu Zhang irrigation scheme.</p> <p>Facilitate and accelerate the on-going agriculture sector reforms in the project area.</p>	<p>1. Reliability: The amount of actual water delivered meets the timely crop water requirements.</p> <p>2. Efficiency:</p> <ul style="list-style-type: none"> <li>• Reduction of water losses from __% to __%.</li> <li>• Operational costs of the irrigation scheme reduced from Soum__ to Soum__ .</li> <li>• Participation of water users associations in operation and maintenance of the system.</li> </ul> <p>3. Sustainability: Comprehensive operation and maintenance system is proposed and implemented.</p> <p>4. Policy reforms:</p> <ul style="list-style-type: none"> <li>• Privatization of</li> </ul>	<p>Project monitoring and evaluation data</p> <p>Project Completion report</p> <p>Progress reports</p> <p>Regional statistics</p> <p>Environmental monitoring</p> <p>Selective surveys on private farms.</p>	<p>Government continues with its policies on farm privatization and water use efficiency.</p> <p>Government supports the development of water users associations.</p> <p>Beneficiaries participate in project implementation.</p> <p>Farmers are willing and receptive to introduce water-saving measures.</p>

<b>Design Summary</b>	<b>Performance Indicators/Targets</b>	<b>Monitoring Mechanisms</b>	<b>Assumptions and Risks</b>
	agriculture production and marketing. <ul style="list-style-type: none"> <li>• Introduction of irrigation service fee</li> <li>• Beneficiaries' participation in operation and maintenance.</li> </ul>	Monitorable indicators to be developed during project preparation.	

<sup>1</sup> It refers to the ensuing investment project, not the TA itself.

## SUMMARY OF INITIAL POVERTY AND SOCIAL ANALYSIS

### A. Linkages to the Country Poverty Analysis

<b>Sector identified as a national priority in country poverty analysis? Yes</b>	<b>Sector identified as a national priority in country poverty partnership agreement (PPA)?</b> No PPA as of to date
<p><b>Contribution of the sector/subsector to reduce poverty in Uzbekistan:</b></p> <p>Agriculture, in particular, irrigated agriculture, is the most important source of living for the rural population. Agriculture sector accounts for 35% of the gross domestic product (GDP), 45% of employment, and 60% of export revenues. About 56% of the country's 24.8 million people live in rural areas. The irrigated farming estimated at 4.3 million hectares of land is the main source of income of the rural population.</p> <p>Recent estimates of international organizations show that 30% of total population live below the poverty line, and more than two thirds of these reside in rural areas. Given the prominent role of agriculture in the national economy, and particularly in the project province, the proposed project will have a significant impact on reducing poverty.</p>	

### B. Poverty Analysis

#### Proposed Classification: Poverty Intervention

The results of the initial poverty and social assessment of the project area show:

#### (i) Demographic Data

The area supplied with water from the system of canals of Amu Zhang comprises 7 administrative districts (Angar, Djarkurgan, Kizirik, Kumkurgan, Muzrabad, Sherabad, and Termez). The area is 8,420 square kilometers or 42% of the territory of Surkhandarya Province. Most of the people in the project area live in rural areas (88%). Their ethnic composition is fairly homogeneous—Uzbeks make up 92% of the total. However, in some areas, ethnic minorities constitute a considerable percentage of total population. For instance, in Muzrabad District, 14% of the population are Tadjiks, and in Termez District 12.2% of the population are Turkmens.

#### (ii) Economy

Agriculture is the foundation of the economy of Surkhandarya Province, accounting for 60% of the province's GDP (irrigated crops account for 52% of the agricultural production). The industry and service sectors are less developed in Surkhandarya Province than elsewhere in Uzbekistan. In 2001, the province officially produced largely foodstuffs, which were valued at \$60 million. The provincial economy is also heavily based on production and export of raw materials, particularly, cotton fiber.

#### (iii) Living standards

There are no official data on poverty incidence in Uzbekistan since there is no officially recognized poverty line. However, according to a World Bank study,<sup>1</sup> the poverty incidence in Uzbekistan is estimated at 31%.

The official household income<sup>2</sup> is estimated to represent 30–50% of the actual income of the population. Of the total income, wages account for less than 30%, proceeds of private farming

<sup>1</sup> World Bank. 1999. Uzbekistan: Review of Social and Structural Reforms. 25 August.

<sup>2</sup> Note that official data on household incomes are inaccurate and should be treated with caution.

account for around 30%, and social transfers account for 15–20%. Incomes from household plots constitute the largest percentage (up to 50%) of the total income of low-income families.

In 2001, the monthly average official wage in the province was around SUM14,000 (\$10) and in agriculture, the monthly average wage did not exceed \$8. The low wage-scale situation was aggravated by delays in payment that lasted for months and involved a high proportion of in-kind payments in lieu of wages.

#### **(iv) Employment and Labor Market**

The total population of working age in the project area is estimated at 350,700 (about 42.4% of the total population of working age of the Surkhandarya Province), of whom around 200,000 people are currently employed (including partial employment). In the project area, more than 45% of the total population of working age are employed in agriculture. The official unemployment figure is very low: in 2001, a mere 5,600 people (or 0.7% of labor resources in the province) were officially registered as unemployed. In the project area, the worst unemployment situation was observed in Angar, Djarkurgan, and Kumkurgan districts. A high incidence of underemployment particularly in agriculture aggravates the situation even further.

#### **(v) Social Infrastructure**

In Surkhandarya Province, there are 812 secondary schools, 3 gymnasias, 21 lycées (of which, 2 are academic lycées), 47 professional colleges, and 1 state university.

Due to the ongoing restructuring process in the health sector, the number of hospitals in the project area was reduced dramatically and the hospitals were reorganized into rural medical stations. On average, there are 48 hospital beds per 10,000 people (18 beds per 10,000 people in Termez District, and 27 each in Djarkurgan, Kumkurgan, and Muzrabad districts). There are on the average, about 109 outpatient medical posts per 10,000 people in the province. Their number does not exceed 90 per 10,000 people in other areas of the Amu Zhang area and in the case of Djarkurgan, the ratio is much lower at 54 medical posts per 10,000 people. Medical staffing does not exceed 80% of the requirement; the shortage of physicians is particularly a major problem. The province has a high rate of diseases associated with the lack of clean drinking water.

Statistical data show that 57.4% of the total population in the province are supplied with natural gas; in Kumkurgan District, it is 37%, and in Kizirik District, 51%.

#### **(vi) Water Supply**

In recent years, agriculture has continued to suffer from serious water shortages. Severe droughts during the last 2 years further aggravated the situation. Interviews with agricultural specialists and managers conducted during the initial assessment, confirmed that reduced water supply was one of the main causes of continued declines in agricultural output, which in turn affected the living standards and the quality of life of the rural population in the project area.

Incomes of rural households are falling due to three main reasons: (i) reductions of earnings from labor operations in cooperatives, (ii) less funds allocated by cooperatives for social protection of their workers, and (iii) low incomes of private farms. As employment opportunities in other sectors (industry, construction, and service sectors) are limited, reduced agricultural incomes have adverse effects in the living standards of most of the rural population. In addition, men often leave for big cities in search of employment, and women and children who remain are heavily burdened with agricultural work.

Initial findings show that while 72.1% of the population (60% in Kumkurgan District, 56% in Kizirik District) in the project area get their water from the centralized water supply system, in

reality only 9.1% of the population have access to potable drinking water; 6.2% use artesian wells; and 12.7% receive water from open sources (rivers, canals). This results in a high incidence of waterborne diseases. Insufficient water resources for industry also sets back production and the quality of goods, and increases environmental pollution.

#### **(vii) Gender Aspect**

Gender disparities in terms of access to employment and appropriate wage compensations are becoming more evident in every sector of the Uzbek economy, including agriculture. In Uzbekistan the employment levels of women have traditionally been high. For instance, in Surkhandarya Province, women accounted for 49.8% of the total labor force. However, during the transition period, the actual employment rate for women decreased significantly.

At present, women are mainly employed in Government services, agriculture, and service sectors, which have relatively low wages. The wage rates for women are equivalent to 82% of those for men, and their pensions are also lower than those of men.

In agriculture, women tend to do manual jobs that do not require technical skills. Due to a shift to contractual forms of labor management, women are often offered low-paid seasonal work. The unemployment rate among women is significantly higher than those for men.

### **C. Participation Process**

#### **(i) Stakeholders**

The project could affect a large number of stakeholders. The social assessment under the TA study will analyze participation of the following main stakeholders:

- private farms, cooperatives, and individual farm households;
- water users associations;
- industrial enterprises;
- self-governance bodies (*makhallya*);
- associations of private farms;
- urban (*vodokanal* and rural drinking water supply management);
- Irrigation Canal Amu Zhang-1, Amu Zhang-II, and Babatag Operational Management Office;
- agriculture and water departments (*raiselvodkhoz*) of the project districts;
- agriculture and water department of Surkhandarya Province (*oblselvodkhoz*);
- Ministry of Agriculture and Water Resources;
- Republican Water Supply Council (the National Irrigation and Drainage Committee);
- Republican Water Inspection (*Uzvodnadzor*);
- Uzbek Agency (*Uzkommunkhizmat*);
- environmental NGOs and NGOs established to create conditions for sustainable development;
- sanitary and epidemiologic stations;
- provincial committee of environment protection; and
- other organizations.

During the social assessment, broad consultations will take place with key stakeholders using qualitative and quantitative approaches. The analysis of potential water users will give special

emphasis to women, low-income people, downstream water users, and other vulnerable groups.

### **(ii) Participation Strategy**

Sustainability of the project will depend on how actively the community members, water users of all types, and various other stakeholders will participate in the process. Therefore, stakeholders will be involved in all stages of the project preparation.

The needs assessment will be carried out using participatory approaches and will identify all stakeholders and beneficiaries, as well as prepare the recommendations for further actions. The participation scheme will include (i) exchange and dissemination of information; (ii) consultations with persons and institutions concerned, including beneficiaries and population groups negatively affected by the project; (iii) cooperation between concerned people and institutions; and (iv) delegation of powers.

The social assessment will include monitoring and project evaluation indicators into participation scheme for stakeholders. Participation of the various stakeholders will be ensured through traditional methods of social assessment (participation of stakeholders in interviews, focus-group discussions, etc.) and by information sharing and training workshops for stakeholders.

### **(iii) Important Social Issues**

The proposed project will be crucially important in addressing poverty reduction, employment, and public health problems in Surkhandarya Province. The social assessment will analyze the project's impact on these aspects, taking into account the socioeconomic and demographic factors of the beneficiaries such as gender, employment, living standards, and access to resources. In addition, the social assessment will identify and analyze the impacts of project implementation on poor and vulnerable groups and project risks in the context of social capital and potential sources of conflicts.

It is essential to assess the ability of water users and water management institutions to properly maintain the scheme, especially the costs of strategies aimed at overcoming water shortage and the ability of agricultural and industrial users and people to pay for water resources.

In summary, TA study will:

- (i) develop a comprehensive profile of the target groups and associated organizations likely to be affected by the project;
- (ii) evaluate the demand for the project and the willingness to contribute to it by the affected communities;
- (iii) study the impact of possible introduction of water fees and increased operation and maintenance recovery policy in the project area and on poor and vulnerable groups, and devise specific measures to avoid/minimize adverse impacts on them and assess the issues related to drinking water in the project area;
- (iv) conduct comprehensive socioeconomic and poverty impact analyses; and
- (v) identify any areas of social concern including gender issues.

**COST ESTIMATES AND FINANCING PLAN**  
(\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
<b>A. Asian Development Bank Financing<sup>a</sup></b>			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants	414.0	0.0	414.0
ii. Domestic Consultants	0.0	110.0	110.0
b. International and Local Travel	40.0	22.0	62.0
c. Reports and Communications	10.0	0.0	10.0
2. Equipment and Supplies <sup>b</sup>	10.0	0.0	10.0
3. Workshops	0.0	20.0	20.0
4. Interpreters and Translators	0.0	20.0	20.0
5. Surveys <sup>c</sup>	0.0	40.0	40.0
6. Administration and Support Costs	0.0	11.0	11.0
7. Representative for Contract Negotiations	9.0	0.0	9.0
8. Contingencies	85.0	39.0	124.0
<b>Subtotal (A)</b>	<b>568.0</b>	<b>262.0</b>	<b>830.0</b>
<b>B. Government Financing</b>			
1. Office Accommodation and Field Transport	0.0	53.0	53.0
2. Data Compilation and Field Investigations	0.0	78.0	78.0
3. Counterpart Staff and Support	0.0	66.0	66.0
4. Travel and Per Diem Costs of Counterparts	0.0	53.0	53.0
5. Logistical Support in Province	0.0	54.0	54.0
6. Contingency	0.0	53.0	53.0
<b>Subtotal (B)</b>	<b>0.0</b>	<b>357.0</b>	<b>357.0</b>
<b>Total</b>	<b>568.0</b>	<b>619.0</b>	<b>1187.0</b>

<sup>a</sup> The Government of Italy will provide a \$400,000 equivalent grant, and the Asian Development Bank (ADB) will provide a \$430,000 equivalent from the Technical Assistance Special Fund.

<sup>b</sup> Purchase of computer systems and printers, accessories, and facsimile and photocopy machines.

<sup>c</sup> Field survey costs for collection of socioeconomic and environmental data.

Source: Asian Development Bank estimates.

## OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

### A. Purpose and Focus

1. The technical assistance (TA) and the ensuing project are aimed at
  - (i) protecting and improving the livelihood of rural communities within the Amu Zhang irrigation scheme by identifying investment interventions needed to ensure the security of the irrigation supply from the Amu Darya River;
  - (ii) improving the efficiency of water and energy use in the Amu Zhang irrigation scheme by identifying investments in new technologies and modern water management practices, including the management and planning based on subbasin concepts and the development of recommendations for introducing integrated water resource management in Surkhandarya Province;
  - (iii) facilitating and accelerating the ongoing farm privatization and institutional reform process in the project area by improving the access to critical agricultural inputs and investments by private farmers, developing water users associations (WUAs) and introducing improved water management interventions that address the specific needs of newly established private farmer and promoting national-level reform agendas such as development of sustainable operation and management (O&M) systems, strengthening of legal and institutional frameworks for establishment of WUAs, and enhancement of water resources management and research capacity; and
  - (iv) improving the environment in the project area and in the Amu Darya River by identifying interventions that will significantly reduce water use and drainage accessions to surface and groundwater resources.
  
2. The project will support three components: (i) rehabilitation and improvement of the Amu Zhang irrigation scheme, including intakes, pump stations, and main canals; and monitoring and analyses of system and environmental conditions within the project area; (ii) farm restructuring and institutional development by establishing new WUAs, improving access to key agricultural inputs and on-farm investments by private farmers, encouraging water resources management practices based on subbasin concepts rather than on administrative units, promoting sustainable O&M systems, and strengthening the legal and institutional basis for WUAs; and (iii) project management.
  
3. The project's investment and capacity building initiatives will be carefully integrated, taking into account the absorptive capacities and preparedness of local institutions, community organizations, and available personnel. In designing the project, the consultants must identify and address the policy, institutional, and human resource issues that will be critical to the feasibility and successful implementation of the project.

### B. Consulting Requirements

4. Consulting services (person-months in parenthesis) are required as follows:
  - (i) **international consultancy** (18): water resources management (6), irrigation and drainage engineering (3), electrical and mechanical engineering (3), agricultural economics (3), institutional development (2), and unallocated (1); and
  - (ii) **domestic consultancy** (73): irrigation/drainage engineering (8), electrical and mechanical engineering (18), civil engineering (18), sediment transportation (3), on-farm water resources management (3), land leveling (3), agricultural

economics (6), rural sociology (6), agronomy (2), environmental assessment (2), and unallocated (4).

### **C. Participatory Approach and Consensus Building**

5. The consultants will promote consultations with stakeholders from the national to the local levels, and capitalize on community self-help potential. The capacity of local government agencies and community organizations to implement and manage development projects will be assessed. Beneficiary participation and contribution are required to ensure ownership and partnership. Participatory planning and implementation will involve the effective use of local community organizations. Stakeholder meetings will be held in Surkhandarya Province, involving participants from national and local agencies, and representatives of the beneficiaries, to obtain a consensus and a commitment from all concerned project stakeholders to implement and bear responsibility for the project.

### **D. Reporting Requirements and Tripartite Meetings**

6. The consultants will produce the following reports at key stages of the TA:

- (i) an inception report at the end of 8 weeks to present sector and policy analysis, the analysis of present water usages of Amu Darya River basin, project design features including the project framework, description of project components, initial cost estimates, project justifications, and risks confronting the project;
- (ii) a progress report for the midterm review mission at the end of 16 weeks;
- (iii) a draft final report approximately at the end of 22 weeks to present the sector context and strategy, and complete design features of the project (this report will include a description of project components, cost estimates, financing plan, implementation arrangements, O&M arrangements, environmental assessment, socioeconomic profiles of the project areas, project justifications, potential impact of the project on river basin including its water balance, risks, and mitigation measures, and the necessary policy measures and recommendations); and
- (iv) a final report, to be submitted at the end of the assignment, in week 24 (in addition, the consultants will prepare a summary report consistent with the format and content of the report and recommendation of the president of the Asian Development Bank).

### **E. Detailed Tasks**

#### **1. Project Framework**

7. The consultants will prepare a project framework, describing the goal of the project, its purpose or specific objectives, expected project outputs, and project inputs, in quantitative measurable terms to the extent possible. The consultants will conceptualize the framework at the outset of project preparation, and use the framework as a project design tool. The project framework will be refined and finalized when the project design is complete.

#### **2. Rehabilitation and Improvement of the Amu Zhang Irrigation Scheme**

8. The consultants will

- (i) prepare a profile of the Amu Darya River basin, including present water usages and the potential project impact on the river basin's water balance and environment;
- (ii) carry out a detailed technical audit of the condition and operational features of all components of the Amu Zhang I and II and Babatag pumping stations, and

identify a prioritized and staged investment program to eliminate the risk of major failure of the water supply infrastructure and provide an acceptable level of security of water supply to the command area;

- (iii) conduct surveys and investigations needed to determine how to rehabilitate the main canal supply system to address problems of excessive sedimentation and seepage, and to raise conveyance capacity and efficiency to acceptable levels;
- (iv) develop appropriate measurement and monitoring systems to assess the status of the system and its environment; and
- (v) identify the changes needed to the current organizational and management arrangements that will provide a more efficient and cost-effective delivery of irrigation water to users (this will involve working closely with officials to develop new management and maintenance arrangements and procedures that suit the operational features of the rehabilitated irrigation scheme).

### **3. Farm Restructuring and Institutional Development**

9. Having regard to all previous investigations and reports, the consultants will

- (i) undertake a thorough review of agriculture and water sectors to identify the key policy and institutional issues relating to farm privatization, pricing, state procurement systems, trade of agricultural input and outputs, sustainable O&M systems, legal and institutional frameworks for establishing WUAs, and their implications for the proposed investment project;
- (ii) investigate the restructured cooperatives and newly created private farms within the project area, to select private farms with total area of about 10% of the command area as candidates for improvements on a pilot basis under the project;
- (iii) audit the irrigation infrastructure and water management needs in the pilot areas and identify in consultation with water users and affordable investments appropriate to the needs of private farmers, as required to improve water management and efficiency and reduce drainage problems;
- (iv) for the selected pilot areas, identify the key constraints that impact private farm profitability, including access to technical and management advice, farm inputs and post-harvest services, with particular focus on seed, fertilizer, and machinery needs; and
- (v) identify alternative policy and institutional reforms and capacity-building options that can be promoted both at national and project levels (e.g. issues such as development of sustainable O&M system, strengthening of legal and institutional frameworks for establishment of WUAs and enhancement of research and management capacities of key national and regional institutions).

### **4. Project Management**

10. Prepare a project component, including detailed implementation arrangements and cost estimates, to support the private farm sector to improve water management and reach a level of profitability required to meet costs and thereby ensure that investments are sustainable.

## 5. Social Analysis

11. The TA will undertake a social assessment of the beneficiary communities, in accordance with ADB's *Handbook for Incorporating Social Dimensions into Projects*. The assessment will (i) develop a comprehensive profile of the target groups and associated organizations affected by the project, (ii) evaluate the demand for the project and the willingness to contribute to it of the affected communities, (iii) conduct socioeconomic and poverty impact analyses, and (iv) identify any areas of social concern including gender issues. The social analysis will assess absorptive and institutional capacity, and identify local organizations, including self-help groups and nongovernment organizations, that could be involved in the design, implementation, and monitoring of the project. The social analysis will also identify the critical issues related to potable water supply and sanitation in the project area and prepare proposals for addressing these issues within the project context.

## 6. Environmental Assessment

12. The project will be subject to an initial environmental examination, which will be prepared in accordance with ADB's *Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects*, and the *Environmental Assessment Requirements and Environmental Review Procedures of the Asian Development Bank*. The consultants will prepare a summary initial environmental examination. Attention will be paid to environmental impacts and conflicts in the uses of water resources, agronomic practices, agrochemical use, and the possible expansion of agricultural and associated activities. If warranted, the consultants will recommend the need for a more detailed environmental impact assessment and will prepare the necessary terms of reference.

## 7. Project Costs, Financing Plan, and Implementation Arrangements

13. The consultants will prepare

- (i) cost estimates for the project (using COSTAB), based on ADB's Project Administration Instructions 1.03, with categorization of project components, expenditures, procurement, disbursement, and the ADB loan account;
- (ii) a financing plan, showing the shares of ADB, the Government, beneficiaries, and others for the relevant expenditures;
- (iii) project implementation schedules and arrangements, showing parallel and sequential activities and major milestones;
- (iv) procurement plans and packages, including for civil works, equipment, and services in accordance with ADB guidelines;
- (v) a plan for monitoring and evaluating project implementation and benefits, using quantifiable indicators, and in accordance with ADB guidelines;
- (vi) an assessment of the financial accounting and financial management systems of the project implementing agencies, and recommendations for the accounting and management of project expenditures, contract management, and flow of funds from the Government and ADB; and
- (vii) draft terms of reference for international and domestic consultants to support the implementation of the project.

## 8. Project Financial and Economic Analyses

14. The consultants will undertake rigorous financial and economic analyses of the whole project. The analyses will include cost benefit analyses, financial sustainability assessment,

least cost and affordability for service delivery, distribution effects of benefits, poverty impact assessment, and risk analysis. The economic analyses will follow ADB's *Guidelines for the Economic Analysis of Projects*.