

Prepared for the  
Asian Development Bank

**ASIAN DEVELOPMENT BANK TA 4143 - TAJ**

and the  
Tajikistan Ministry of  
Water Resources and  
Land Reclamation

**Tajikistan**  
**Irrigation Rehabilitation Project**  
**Final Report**

**Volume 1 – MAIN REPORT AND APPENDICES**

ULG Northumbrian Ltd

*in association with*

Mott MacDonald Ltd

September 2004

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## CURRENCY EQUIVALENTS

(as of August 2004)

Currency Unit	–	Somoni (TJS)
TJS1.00	=	\$0.3351
\$1.00	=	TJS2.9839

## ABBREVIATIONS

ADB	–	Asian Development Bank
ARP	–	Agriculture Rehabilitation Project
CSP	–	Country Strategy and Program
EA	–	executing agency
IEE	–	initial environmental examination
EIRR	–	economic internal rate of return
FAO	–	Food and Agriculture organization
ICB	–	international competitive bidding
I&D	–	irrigation and drainage
GBAO	–	Gorno-Badakhshan Autonomous Oblast
GDP	–	gross domestic product
ha	–	hectare
IS	–	international shopping
LCB	–	local competitive bidding
M&E	–	monitoring and evaluation
MWRLR	–	Ministry of Water Resources and Land Reclamation
NGO	–	non-governmental organizations
O&M	–	operation and maintenance
PIU	–	project implementation unit
PMO	–	project management office
PRSP	–	Poverty Reduction Strategy Paper
SIDA	–	Swiss International Development Agency
TA	–	technical assistance
WUAs	–	Water Users' Association
WUASU	–	Water Users' Association Support Unit
USAID	–	United States Agency for International Development

## NOTES

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



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## LOAN AND PROJECT SUMMARY

<b>Borrower</b>	Republic of Tajikistan
<b>Classification</b>	Poverty Classification: Poverty intervention <sup>1</sup> Thematic: Economic growth
<b>Environment Assessment</b>	Category B. An initial environmental examination was undertaken and the summary is in Appendix 4.
<b>Project Description</b>	<p>The Project will rehabilitate the selected irrigation and drainage facilities and provide rural water supply systems in Sughd and Vahdat districts in the Region of Republican Subordination, Farkhor and Pianj districts in Khathlon Oblast, and Rushan district in Gorno Badakhshan Autonomous Oblast. Improved irrigation and drainage services will benefit a total of 44,200 hectares, benefiting 155,500 poor people whose livelihood crucially depend on irrigated agriculture. A population of 57,000 will also gain access to safe drinking water.</p> <p>The Project will also provide farm support services to increase crop yields and improve on-farm water management in core demonstration areas, as well as capacity building at the Ministry of Water Resources to promote participatory irrigation management through Water User Associations (WUAs).</p> <p>In addition, the Project will provide a significant opportunity for ADB to assist the Government in accelerating the implementation of key agriculture sector reform reforms that have been identified by the ADB's technical assistance for Farm Debt Resolution and Policy Reforms, particularly in the areas of farm debt, land reform, farm privatization, and water management. The Government has taken as step forward by agreeing among others, (i) to remove the national and local government's interference on farm decision-making, especially on cropping patterns, inputs sourcing and marketing; and (ii) to issue leasehold certificate rights to individual farmers within the Project area that can be used as collateral documents. Further, the Project will follow through the policy and institutional recommendations that were put forward in the ADB TA through a periodic monitoring and conduct of policy dialogues with the Government, ADB and the international donor community.</p>

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<sup>1</sup> "Following the Board approval of the R-Paper on Review of ADB's Poverty Reduction Strategy, staff instructions to replace the PI/CPI classification with the TI classification are under preparation in line with para. 83 of the R-Paper."

## Rationale

The agriculture sector plays a significant role in Tajikistan's economy, contributing 22% of gross domestic product, and employing 52% of total workforce. Due to the arid climate of the country, irrigation is crucial for agricultural production in 85% of the total cultivated area. Most of irrigation and drainage facilities were built in the 1950s and 1960s. Major rehabilitation of these facilities has been long overdue, but Tajikistan has not been able to provide the necessary capital investments nor sufficient O&M due to the civil war and the lack of financial resources. The decrepit state of the irrigation and drainage infrastructure facilities has resulted in the continual decline of crop yield and farm profitability, as well as excessive water losses, low irrigation efficiency, and rapidly spreading land degradation – including water logging and soil salinization.

Despite relative abundance of water resources in the country, only about 15% of the 4.6 million rural population is currently served by safe piped water. Morbidity due to unsafe drinking water is an acknowledged contributor to poverty in rural areas. The Project will address this poor status of water sector services by providing least-cost and priority-based rehabilitation of key irrigation and drainage facilities and provision of easy-to-maintain small water supply systems in the areas selected through a systematic screening process and stakeholder consultation.

Increased farm productivity made possible by improved and secured supply of irrigation and drainage services, and access to safe drinking water will contribute to poverty reduction. For the poor farm households to reap the full benefits of improved income in a sustainable manner, provision of physical facilities needs to be supported by the policy, institutional and legislative reforms that will address the other equally-persuasive structural constraints. The Project will help the Government to create such conditions by pursuing specific recommendations identified under the ADB's technical assistance for Farm Debt Resolution and Policy Reforms as most urgent in resolving pervasive farm debts, supporting continued farm privatization, and enabling the private farmers to make use of improved irrigation services for sustainable productivity and profitability gains.

## Objective

The objective of the Project is to increase the farm productivity and income of rural communities, and improve rural potable water supply schemes. The Project will also support policy reforms with regard to farm profitability, farm debt resolution, and cost recovery for O&M.

## Cost Estimates

The total cost of the Project is estimated to cost \$ 29.1 million equivalent, comprising \$13.2 million (45.4%) in foreign exchange cost and \$ 15.9 million (54.6%) in local currency cost. The cost estimates include the provision of \$ 4.3 million in taxes and duties and 5% of base costs for physical contingencies.

		\$ million equivalent			
		Foreign Exchange	Local Currency	Total	Percent
<b>Financing Plan</b>	ADB	13.23	9.5	22.71	78.0
	The Government	0.00	6.37	6.37	21.9
	Beneficiaries	0.00	0.03	0.03	0.1
	<b>Total</b>	<b>13.23</b>	<b>15.89</b>	<b>29.11</b>	<b>100.0</b>

<b>Loan Amount and Terms</b>	The proposed loan from the special fund resources of the Asian Development Bank (ADB) is for special drawing rights ..... (\$22.7 million equivalent) which will have a term of 32 years with a grace period of 8 years, interest rate of 1% during the grace period and 1.5% per annum thereafter.
<b>Allocation and Relending Terms</b>	The loan proceeds will be made available to the Executing Agency through budgetary appropriations.
<b>Period of Utilization</b>	Until 30 June 2011
<b>Estimated Project Completion Date</b>	31 December 2010
<b>Executing Agency</b>	Ministry of Water Resources and Land Reclamation (MWRLR)
<b>Implementation Arrangements</b>	<p>The Project will be implemented over six years, starting in July 2005. The Project management structure will utilize the experience gained during implementation of three ADB financed projects previously executed by MWRLR. A high-level Project steering committee established during project preparation will continue to function during project implementation to provide policy guidance and facilitate inter-ministerial coordination at the central level. The minister of MWRLR will be designated as Project Director with overall responsibility for project implementation. A Project Management Office (PMO) will be established within MWRLR to manage project activities and to liaise with ADB, and the coordinating bodies. Five Project Implementation Units (PIUs) will be responsible for project implementation in their areas, and will maintain liaison with the PMO, local administration, and beneficiary organizations. The PMO will be led by a full-time Project Manager and the PIUs by Deputy Project Managers. The Project Manager will be nominated by the Government, and endorsed by ADB. The Deputy Project Managers and key staff will be selected on merit by a Panel of Experts appointed by the Government and agreed by ADB. Staff selected by the Panel will be endorsed by ADB.</p>
<b>Procurement</b>	The Project will procure machinery, equipment, civil works, services, vehicles, office equipment, and materials. All procurement will be undertaken in accordance with ADB's <i>Guidelines for Procurement</i> .
<b>Consulting Services</b>	The Project will provide 78 person-months (pm) of international and 606 pm of domestic consultants in areas for which technical capacity is currently not available in MWRLR, including: (i) institutional capacity building; (ii) design, preparation/evaluation of bidding documents, and construction supervision; (iii); agriculture support services and (iv) project management, monitoring, and evaluation. The consultants will be engaged in accordance with ADB's <i>Guidelines on the Use of Consultants</i> , and arrangements acceptable to ADB for the engagement of the domestic consultants, using the quality- and cost-based selection method.

## **Project Benefits and Beneficiaries**

The Project will directly benefit an irrigation area of 44,200 ha and 246,000 people, who depend primarily on irrigated agriculture for their livelihood. The output of cotton in the project areas will increase from 44,500 tons to 52,700 tons and wheat production will rise from 32,800 tons to 37,800 tons.

Benefits also accrue from the reduction in pumping costs and savings of O&M costs in the I&D systems. The greater efficiency of new pumps and the conversion of the upper areas of the Asht cascade to gravity supply will reduce the energy cost of pumping by an estimated \$1,312,000 per year. Rehabilitation of headworks and sediment basins will reduce O&M costs by \$191,000 per year.

Rehabilitation of rural potable water supply systems will improve the health standards of 57,000 people, particularly women and children. Organization and training of beneficiary organizations and transfer of management of rehabilitated systems to them will facilitate sustainability of the benefits. In order to assist the extremely poor households, the Project will also use a food-for-work scheme for implementing simple civil works requiring unskilled workers.

## **Risks and Assumptions**

It is recognized that between the improved I&D performance and increased farm incomes exist a number of assumptions and risks. In particular, accumulated farm debts are a significant risk, particularly with regard to the financial sustainability of heavily indebted farms. Addressing the multi-faceted issues related to the farm debt problem requires a complex set of actions, including land reform, farm privatization, rural financing and cotton marketing. ADB has been assisting the Government in analyzing these problems under TA 4052-TAJ: Farm Debt Resolution and Policy Reforms, which resulted in the recommendation of a comprehensive agenda for policy and institutional reforms for the sector. As assurance for the Project, the Government agreed to implement in the project area a set of key policy changes that will be strategic in setting the motion for the reforms essential for the agriculture sector's development.

Admittedly, however, successful resolution of mounting debts requires a far more comprehensive and cohesive program and strategy supported by the strong political commitment of the Government, as well as donors' coordination. This process has started with the aforesaid ADB TA on farm debt. The Project will sustain and accelerate this momentum for reforms in the agriculture sector. Building on the key recommendations identified by the ADB TA, the Government in partner with ADB and the international donor community, will jointly monitor and conduct policy dialogues on a periodic basis, the progress of the farm debt resolution and other closely associated reform measures within the project area and elsewhere in Tajikistan.

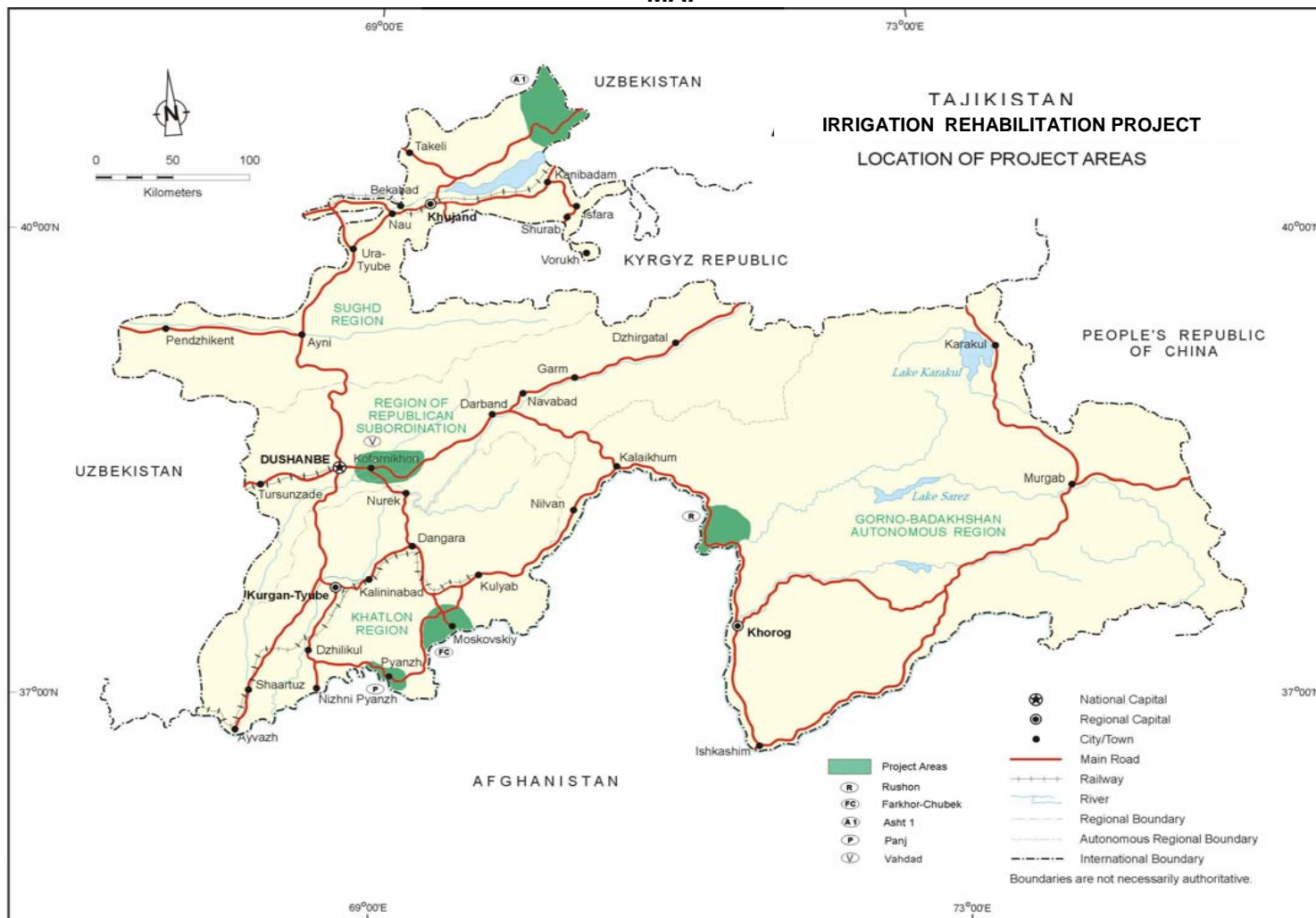
Sustainability of the Project benefits will be at risk, if adequate O&M is not provided. The advisory technical assistance attached to the Project will help the Government address this risk by helping the Government to gradually develop a sustainable O&M cost recovery mechanism through capacity building at both MWRLR and at the water user level.

**Technical Assistance**

The Project provides an associated technical assistance for "Support to Monitoring of Policy Reforms, and Improving Farm and Water Management" to: (i) monitor progress in implementing policy reforms that would create a conducive environment for project implementation; (ii) promote competitive providers of farm inputs, technical advice, credit and marketing of products in the selected project areas, and (iii) assist the Government in establishing WUAs support unit within MWRLR.



# MAP





## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the Republic of Tajikistan for the Irrigation Rehabilitation Project. The report also describes proposed technical assistance (TA) for Support to Monitoring of Policy Reforms, and Improving Farm and Water Management, and if the Board approves the proposed loan, I, acting under the authority delegated to me by the Board, will approve the TA.

## II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

2. At the request of the Government of Tajikistan, the Asian Development Bank (ADB) approved a TA<sup>2</sup> to prepare the Irrigation Rehabilitation Project. The preparatory TA was carried out from January to August 2004 and designed to complement the ADB financed Agriculture Rehabilitation Project (ARP).<sup>3</sup> This document is based on the consultants' reports, the findings of the missions and discussions with government agencies, potential beneficiaries and non-governmental organizations (NGOs). The Project framework is shown in Appendix 1.

### A. Performance Indicators and Analysis

3. The agriculture sector plays a significant role in Tajikistan's economy, contributing 22% of gross domestic product (GDP). The sector generates 30% of export revenues, 35% of tax revenues, and employs 52% of the total work force. This is despite the fact that only 9% of total land area is arable. Cereals and cotton are the most important crops in Tajikistan accounting in 2003 for 46% and 32% respectively of the sown area.

4. Due to its arid climate, irrigation is crucial for agriculture production and irrigated areas comprise 85% of total agricultural production areas. Most irrigation and drainage (I&D) schemes were constructed in the 1950s and 1960s. Many have reached the end of their useful lives, and require major rehabilitation. The infrastructure has further deteriorated due to the civil war, lack of capital investment, and inadequate operation and maintenance (O&M)<sup>4</sup> funds. This is worsened by the fact that the end water users have virtually no participation in O&M.

5. The poor condition of I&D facilities results in excessive water losses, low irrigation efficiencies, waterlogging, soil salinization, and declining crop yields. It is estimated that due to the poor condition of I&D infrastructure, 16% of formerly irrigated land has been out of production since 1991.<sup>5</sup> Therefore, rehabilitation of these systems is a key intervention to boost agriculture sector productivity and farm profitability.

6. While irrigated agriculture in Tajikistan has been shown to be economically feasible,<sup>6</sup> inadequate irrigation supplies due to deteriorating I&D facilities, insufficient inputs and financing, and lack of agricultural support services have led to a decline in agricultural productivity. Cotton production has fallen from 800,000 tons in 1990 to 450,000 tons in 2002. Currently, cotton yields average 1.7 t/ha compared to 2.8 t/ha before independence. Cereal yields are also low at an average of 1.3 t/ha. The reduced productivity resulted in declining profitability of farms.

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<sup>2</sup> ADB. 2003. *TA to Tajikistan for Water Resources Rehabilitation and Development Project*. Manila

<sup>3</sup> ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Tajikistan for the Agriculture Rehabilitation Project*. Manila

<sup>4</sup> According to the Ministry of Water Resources and Land Reclamation (MWRLR), irrigation in Tajikistan received \$72 million for O&M in 1990, while in 2003 the sector received \$6.5 million.

<sup>5</sup> UNDP. 2003. *Tapping the Potential: Improving Water Management in Tajikistan, National Human Development Report 2003*. Turkey: UNDP.

<sup>6</sup> World Bank. 2003. *Irrigation in Central Asia: Social, Economic and Environmental Considerations*. Washington D.C.

7. Falling on-farm incomes, coupled with the lack of adequate off-farm income-generating opportunities have been the major factors for the widespread income poverty in the country. The updated Living Standard Survey sponsored by the World Bank (2004) reported that using a poverty line based on consumption expenditures equivalent to TJS 20 per person day, the country's poverty incidence was 70% in 2003. Although the poverty incidence declined from the 2000 poverty incidence rate of 83%, it is still the highest in Central Asia. Poverty in the country is more prevalent in the rural areas where more than three fourths of the country's population resides.<sup>7</sup> Half of the country's workforce is dependent on agriculture for income, majority of whom rely on miniscule plots of land (about 0.1 ha per household) for their subsistence income and food. Income poverty is severe in the countryside because of limited income earning and job opportunities, and the declining productivity of the land. Lack of access to reliable irrigation water and farm inputs, imperfect markets, and insecure land tenure rights have contributed to the poor performance of the agriculture sector. Rural poverty is also non-income based. A key element of non-income poverty is the lack of drinking water, as only 40% of the country's population used piped water. The Government has recognized the relationship between the agriculture/water sector and poverty in its Poverty Reduction Strategy<sup>8</sup> and the improvement of agricultural/water sector performance is a priority of its pro-poor growth strategy.

8. Since independence, the Government has likewise introduced a range of reforms intended to transform agriculture into a competitive market-oriented sector. The state procurement system for agricultural commodities was dismantled. Price controls and foreign trade barriers have been liberalized. Ongoing land reform allows private farms to operate based on life-long heritable, but not tradable, leases. Irrigation service fees have been introduced, to recover O&M costs. The implementation of these reforms has not always been satisfactory, particularly because of the lack of adequate capacity and resources of the public institutions to implement the reforms, and interventions by local administrations in farm management and marketing of produce.

## **B. Analysis of Key Problems and Opportunities**

9. **Water Management.** The rehabilitation of I&D systems and improved water management are crucial for improving the performance of irrigated agriculture. Since 1991, the majority of pumping stations, and the main irrigation and drainage works have not been properly funded, operated or maintained. As a consequence, there has been a rapid deterioration of pumping stations, increased losses in the main canals, and low field-level water use efficiency.

10. The rehabilitation of irrigation systems has to be addressed jointly with the issue of cost recovery and O&M. Irrigation service fees, based on a single national tariff equivalent to \$2 per 1,000 cubic meters (m<sup>3</sup>) of water delivered to the farm gate, were introduced in 1996 and collection rates have steadily risen from about 15% in 1996 to 59% in 2003. However, the single water rate throughout the country is masking the real water delivery cost, which depends on the type of irrigation systems. Gravity systems account for 63% of the irrigated area, but receive only 36% of O&M revenue. Changing the structure of irrigation water fees to reflect differences in system costs (e.g. the high costs of pumping water) would help to

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<sup>7</sup> The poor in the rural areas comprise agriculture workers, families with many children, the elderly, sick and invalid, and women. Women are particularly vulnerable to poverty as an estimated 18% of households in the country are headed by women, and these households have often less access to land, and other resources in the rural areas.

<sup>8</sup> Government of the Republic of Tajikistan. 2002. *Poverty Reduction Strategy Program (PRSP) for the Republic of Tajikistan*. Manila. The PRSP was approved by the Parliament in June 2002. The Poverty Partnership Agreement between the Government and ADB (December 2002) puts emphasis on improving the country's productivity and diversification of economic structures through agriculture and water resource development/rehabilitation.

achieve higher efficiencies in water utilization<sup>9</sup> and agricultural production, and facilitate farm debt resolution. The Government is committed to gradually increase irrigation service fees and to provide funds to make up the shortfall during the transition period, when charges are being increased to finance the full amount of O&M costs.

11. The role of water sector institutions is closely-related to performance of the I&D systems and their O&M. MWRLR plays a key role in the administration of water resources. In particular, it is responsible for the construction, operation and maintenance of I&D infrastructure, river regulation works, and partial holder of the State Water Cadaster. A number of other agencies<sup>10</sup> hold some water management responsibilities, in particular monitoring and water management for energy generation. In the future, the mandate and functions of the MWRLR need to shift from a provider of water to a national policy making institution with responsibilities for regulation of water supply, irrigation and drainage. The O&M of the secondary canal level and the on-farm infrastructure can be divested as the main responsibility of the Water Users Associations (WUAs). The existing associations operate on the basis of legislation in the Water Code, the Civil Code and the Law on Public Associations. The ADB funded TA 4052-TAJ: Farm Debt Resolution and Policy Reforms has made specific recommendations concerning changes to the legal framework to strengthen the water institutions.<sup>11</sup>

12. **Rural Potable Water Supply.** With the economic difficulties in the 1990s, the provision of social services declined. Only about 15% of the 4.6 million people, who live in rural areas, are currently served by safe piped water. In rural areas, 61% of families have to travel more than 100 m to collect water. During the winter months, reduced availability of power supplies typically restrict water supply to 2 hours per day and many rural people pay \$3-\$5 per m<sup>3</sup> to have water delivered by truck to their village. Morbidity due to unsafe drinking water is an acknowledged contributor to poverty in rural areas. There are 669 publicly owned water supply schemes in Tajikistan, but due to lack of funding and damage sustained during the civil war most of these are in a state of disrepair and many rural communities now obtain water from rivers, springs, and irrigation canals. Opportunities to improve water supplies are hampered by a number of institutional barriers, including constraints to the establishment of water committees, taxation rules, and the fact that existing systems cannot be released from government ownership. A detailed analysis of the agriculture and water sector is in Appendix 2

13. **Agriculture Support Services.** Most farms suffer from inadequate supplies of inputs (including credit) at competitive prices, the absence of technical extension services, and inefficient farm machinery services. The situation is exacerbated by cotton debt built up in recent years, because local investors frequently have a monopoly on the supply of inputs, which are often provided late and at inflated prices. Improving access to inputs coupled with the promotion of improved production techniques would increase farm productivity by helping farmers to (i) improve crop yields, (ii) intensify their crop rotations; and (iii) diversify their cropping to achieve higher revenues (paras. 36. and 37.).

14. **Cotton Farm Debts.** Since 1997, the farming sector has accumulated debts estimated at \$180 million as of 1 January 2004 of which approximately \$70 million has been graded as bad debt. The accumulation of debt is closely linked to the cotton production and processing regime which is financed, primarily, by external financiers (international cotton

<sup>9</sup> The higher efficiency would also result in saving of irrigation water, introduction of high value crops, and positive environmental impacts.

<sup>10</sup> [The roles of water and water-related institutions and legislation in force is](#) discussed in [Supplementary Appendix L](#).

<sup>11</sup> The ongoing TA 4052-TAJ provided substantial body of knowledge, including specific actions to be taken. Under the Project the key measures will be implemented in the Project areas.

traders) who use local credit wholesalers/processors<sup>12</sup> to make sub-loans to cotton growing farms, using the crop as collateral. This regime is characterized by: (i) unofficial farm level cotton production quotas; (ii) the allocation of production credits to cotton farms who bear the risk in the form of raw cotton; (iii) cotton production contracts between farms and creditors which involve the provision of inputs in kind at inflated prices; (iv) monopolistic control of indebted farms by their creditor which includes the processing and marketing of the raw cotton; and (v) active involvement of local administrations in farm decision making. The ADB has played a major role in highlighting this debt problem and in seeking a solution in consultation with the government and other major donors. In October 2002 the ADB sponsored the first Roundtable on farm debt and subsequently implemented TA 4052-TAJ: Farm Debt Resolution and Policy Reforms. This TA has conducted two further roundtable discussions over the past year and has presented its draft recommendations to resolve the farm debt problem. The Government is now considering its position and is expected to submit its preferred option for farm debt resolution by the end of September 2004, following a final round of discussions.

15. **Land Reform and Farm Privatization.** Land is the property of the state and farmers are given heritable but not tradable land use rights. In 2002, some 500 state farms have been transformed into (*dehkan*)<sup>13</sup> farms. Due to structural and political impediments, most of the arable land is managed by collective (dekhan) farms, joint stock companies, or cooperative farms, most of which operate like the old kolkhozes.<sup>14</sup> At present, the lack of information on legal rights and procedures, and the lack of clear guidelines for the land reform process, lead to exploitation of farmers by local authorities and vested interests. The current cotton farm debt burden, and inability to transfer and mortgage land use rights restricts the farm restructuring and financing of commercial agriculture. Beginning in 2004, the Food and Agriculture Organization (FAO) is coordinating the development of a common strategy for the restructuring of state farms among national institutions, NGOs, and bilateral and multilateral organizations.

16. **External Agriculture and Water Sector Assistance.** Most external assistance to Tajikistan since 1994 has been related to emergencies, structural adjustment, and investments in I&D infrastructure rehabilitation. ADB has financed two projects in the water sector - the Emergency Restoration of the Yavan Water Conveyance Project, and the Agriculture Rehabilitation Project (ARP). ARP finances rehabilitation of selected I&D facilities, support establishment of farm machinery units, seed multiplication and pest control programs, and construction of rural water supply systems. The World Bank through its Farm Privatization Support Project and Rural Infrastructure Rehabilitation Project has promoted land certificate distribution, agricultural extension, formation of rural credit institutions, irrigation rehabilitation, and WUAs establishment and development. The United States Agency for International Development (USAID), through its Natural Resources Management Project has financed rehabilitation of irrigation pumps; and its Water Users Association Support Program has supported establishment and development of WUAs. The European Union has provided small grants for development of local economies and small businesses. FAO has established a monitoring mechanism for the land reform process and supported veterinary services in rural areas. The Swiss International Development Agency (SIDA) is providing assistance to cadastral mapping and land registration system. In 2001/2002, the Government of Japan provided \$20 million for procurement of agricultural machinery and inputs. NGOs such as CARE, the Aga Khan Foundation, ACTED, and OXFAM are involved in rural development and community support. Major external assistance related to the sector is in Appendix 3.

<sup>12</sup> Known locally as "investors". These are cotton traders/exporters who provide seasonal credit, mostly in kind, to farmers using cotton as collateral. Generally, the local governments nominate one investor per district.

<sup>13</sup> Dekhan farms are collectively owned farms typically based on nuclear or extended families.

<sup>14</sup> Usually, the farm Chairman holds a land certificate for the farm, and individual farmers are not fully independent.

17. **Government Plans, ADB Country Strategy.** The objectives of the Government's Poverty Reduction Strategy Paper<sup>15</sup> include (i) access of the poor to land and water; (ii) creation of a favorable framework for private activities in the sector; and (iii) reform of the existing government management system. The Government's policy identifies the following actions: (i) continued reforms in land and water sectors to increase privatization and cost recovery;<sup>16</sup> (ii) development of a rural finance system; (iii) institutions restructuring; and (iv) rationalizing its functions to fit a market-oriented economy. The ADB's current Country Strategy and Program (CSP)<sup>17</sup> recognizes that agriculture still faces many challenges and needs to be supported. The CSP states that ADB will continue its support for (i) rehabilitation of I&D facilities, (ii) improvements in potable water supply; (iii) establishment of community-based organizations (WUAs and farmers' associations); (iv) improvements in agricultural support services, and links to financial services; and (v) addressing farm debt. ADB's interventions will be pursued through a regional or area-based approach, rather than a broader nationwide or multiple-area approach.

18. **Lessons Learned.** ADB has financed two projects in the water sector. The first is the already completed Emergency Restoration of the Yavan Water Conveyance Project, and the implementation of the second – the Agriculture Rehabilitation Project (ARP) started in 2003. These projects are executed by MWRLR and provide useful experience with respect to MWRLR's institutional capacity, and O&M and project implementation practices, including: (i) a need for institutional support, training and incentives to improve Government institutions performance; (ii) goal-oriented O&M of water resources, as opposed to "operation" of I&D systems is required; and (iii) effective project implementation requires selection of qualified staff and strong support by the Government.<sup>18</sup> The lessons learned from these projects and from past ADB operations point out the importance of beneficiary participation, to ensure that the project design reflects their local knowledge and capacity. Therefore, all phases of project preparation (e.g. irrigation scheme selection, identification of project components and water supply systems) included extensive consultation with key stakeholders, and were conducted in participatory manner. Sustainability of O&M of irrigation schemes is another key factor considered during project design: (i) schemes with relatively low O&M costs have been selected; (ii) energy-efficient equipment proposed; (iii) differential irrigation service fees introduced; and (iv) involvement of beneficiaries in O&M, through WUAs ensured. The proposed Project, based on ADB experience in water projects in Central Asia will introduce a WUAs unit in MWRLR to streamline and steer the process and legal framework of WUAs formation; promotes development of WUAs, and their increased involvement in planning, management and O&M of "on-farm" facilities. The Project also recognizes the critical link between infrastructure improvements and enabling policy environment, such as competitive marketing of agriculture inputs and outputs, enhanced agriculture financing, and market-oriented farm management. Project design is not only based on findings and recommendations of TA 4052-TAJ, but also reflects the feedback from the two multi-stakeholders roundtable discussions conducted with ADB assistance in 2002 and 2004.

### III. THE PROPOSED PROJECT

#### A. Project Rationale

19. Most of Tajikistan's I&D facilities had long reached the end of their useful life. Major facilities were destroyed during the civil war, and remaining facilities have further deteriorated due to neglected O&M in the post-war period. The worsening condition of I&D

<sup>15</sup> The PRSP was approved by the Majlisi Oli (Parliament) of the Republic of Tajikistan in June 2002.

<sup>16</sup> Cost recovery for provision of irrigation services is a policy target to eliminate state subsidy of this sector for O&M.

<sup>17</sup> ADB. 2003. *Country Strategy and Program, 2004-2008, Tajikistan*. Manila.

<sup>18</sup> Areas that need improvement include: timely establishment of project management offices (PMO) and recruitment of qualified PMO staff. In addition, support by consultants is required for civil works contract management, monitoring of project impacts, including environmental impact monitoring, and assessment of project benefits.

infrastructure results in declining crop yield and farm profitability, as well as excessive water losses, low irrigation efficiency, and rapidly spreading land degradation – including water logging and soil salinization. If I&D facilities are allowed to further deteriorate, the country's irrigated area is estimated to be reduced by 20% within ten years, resulting in a massive disruption in primary livelihood of large and poor farming population, who are unlikely to have alternative employment opportunities. In addition, despite relative abundance of water resources in the country, only about 15% of the country's rural population is currently served by safe piped water. Morbidity due to unsafe drinking water is an acknowledged contributor to poverty in rural areas. The Government, thus, places the high priority in restoring and improving the performance of key water sector infrastructure facilities – I&D and rural water supply – towards achieving its goal of alleviating the rural poverty.

20. For the poor farm households to gain full benefits of improved income in a sustainable manner, provision of physical facilities needs to be supported by the policy, institutional and legislative reforms against other persisting sector constraints. As part of the assurances for the Project, the Government thus agreed to accelerate key agriculture sector reform initiatives, which have been identified through ADB's TA for Farm Debt Resolution and Policy Reforms as most urgent in resolving pervasive farm debts, supporting continued farm privatization, and enabling the private farmers to make use of improved irrigation services for sustainable productivity and profitability gains. Specific institutional and behavioral changes agreed by the Government include removal of interference by the national and local government on farm decision, such as cropping patterns, inputs sourcing and marketing, and accelerated provision and distribution of tradable leasehold rights to individual farmers within the Project area.

21. Other crucial aspects of the problem relate to privatization of the agriculture sector and the land reform process, which are fraught with constraints and political interference that prevent farm restructuring and operations based on commercial principles. One illustration is the worsening farm debt burden and difficulties encountered in attempting to propose comprehensive resolution strategy. These constraints have been analyzed and solutions proposed by TA 4052-TAJ: Farm Debt Resolution and Policy Reforms (para 15).

22. The Project will support low-income farmers in the Project areas, by improving livelihood and income through the provision of improved irrigation and potable water supplies, and the promotion of sustainable and profitable agriculture practices. By supporting private farms, the Project aims to demonstrate the benefits of adopting appropriate farm management structures in a more market-based environment. The Project will complement and build on ADB's Agriculture Rehabilitation Project, and deepen the policy dialogue with the Government that commenced during the preparation of ARP and was continued with the implementation of TA 4052-TAJ. The Project will also contribute to the alleviation of the farm debt problem by implementing and monitoring the key initiatives proposed by TA 4052-TAJ. The Project also offers an opportunity for ADB to promote beneficiary-led on-farm O&M, and achieve a sustainable and more efficient use of land and water resources.

## **B. Project Area, Goal and Objectives**

23. The nine districts proposed by the Government for inclusion in the Project were ranked through a systematic screening and stakeholder consultation process. The screening criteria included: need for irrigation infrastructure rehabilitation, social and institutional factors, financial and economic indicators, high potential to increase project benefits, and environmental impacts. Subsequently, irrigation schemes in five districts, in all four provinces of Tajikistan, covering 47,500 ha were selected. In the northern province of Sughd, work will be carried out in the Asht-1 irrigation scheme. In the central Region of Republican Subordination, irrigation systems in Varhat district will be targeted. In the southern province of Khatlon, work will be done in both Farkhor and Panj districts. In the remote eastern Gorno-Badakhshan Autonomous Oblast (GBAO), the irrigation infrastructure in Rushon will

be repaired. An estimated 262,000 beneficiaries live in the project areas, of whom 153,000 are poor. During stakeholder meetings in the project sites, about 75% of all households who participated in the qualitative surveys considered themselves as poor. Three general themes emerged as causes of poverty in the project sites: lack of reliable irrigation and drinking water supplies, limited opportunities to become independent farmers, and lack of jobs.

24. The Project goal is to improve living standards of the rural population in the project area. The Project purpose is to increase the crop production and income of rural communities, and improve selected rural potable water supply systems.

### **C. Components and Outputs**

25. The Project will have the following components: (i) prioritized rehabilitation of irrigation and drainage infrastructure and support to improve water management; (ii) improvement of selected potable water supply systems; (iii) agricultural support to private farmers; and (iv) project management, monitoring and evaluation. The Project will also initiate policy reforms with regard to farm profitability, farm debt resolution, and cost recovery for O&M.

26. The key outputs would be: (i) reliable irrigation water supplies to increase both yields and cropping intensity; (ii) more efficient water management resulting in water and energy savings; (iii) provision of potable water in selected rural areas; (iv) increased yields through improved farm and water management; (v) formation of WUAs in core demonstration areas; and (vi) improved environmental impact due to better land and water management. A brief description of the components is given below.

#### **1. Rehabilitation of Infrastructure and Support to Improve Water Management**

27. In Sughd District (Asht-1 irrigation system) the Project interventions will comprise: (i) improvement of the intake and provision of sediment removal facilities<sup>19</sup> to reduce sediments carried into the system; (ii) prioritized rehabilitation of the lowest pumping station (ANS-1), including replacement of pipeline sections, and construction of a protective shelterbelt; (iii) selective rehabilitation of pumping stations ANS-2 and ANS-3B; (iv) gravity irrigation supply to the upper levels of the system; and (v) renovation of canal linings and structures at critical locations, and restoration of drain capacities.

28. In Vahdat District (Rohati and Dashtibed irrigation systems) the works include: (i) rehabilitation of the headworks and a major siphon of the Rohati Canal; (ii) rehabilitation of the headworks of the Dashtibed canal, and provision of a weir across the Kofarnihon River; and (iii) repairs to selected structures on both systems.

29. In Farkhor District the Project will focus on improving sediment and water control, and prioritized rehabilitation of the Urtaboz pumping system including: (i) improvement of the Chubek headworks, construction of a new sediment removal facility, and provision of sediment removal equipment; (ii) repair of canal linings and control structures, and restoration of hydraulic performance of key canals/drains; and (iii) priority rehabilitation of the Urtaboz pumping stations.

30. In Panj District the rehabilitation work comprises: (i) improvement of intake; (ii) rehabilitation of sediment removal facilities/provision of sediment removal equipment; (ii) repair of key control structures; (iii) improvement of hydraulic efficiency of canal/drain sections; and (iv) priority rehabilitation of the Fayzabadqala pumping stations.

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<sup>19</sup> The high sediment content of river water damages pumps and increases the amount of silt deposited in canals.

31. In Rushon District the works cover repairs to small systems: (i) rehabilitation of intake works and removal of large rocks from canals; (ii) selective repair of control structures, and canal linings; and (iii) restoration of main drains capacity.

32. **Improved Water Resources Management:** The Project will finance: (i) institutional capacity building of the local water management agencies; (ii) improvement of water management procedures; and (iii) and will upgrade water control infrastructure and measuring points to allow improved operation of irrigation systems. The project will also facilitate an increased role for the water users in the management process. WUAs will be established in the five Project I&D systems to ensure sustainable O&M of the rehabilitated I&D systems, strengthen rural water sector institutions, and involve farmers in irrigation planning. The goal is to have WUAs operating successfully in the project sites.<sup>20</sup> The key indicators include strong administration and management, effective O&M, and institutionalization of WUAs into MWRLR planning and budgeting. The formation of effective WUAs will initially focus on the core demonstration areas, to showcase improved water management techniques.

33. A key element in the Project's WUA strengthening activities is the establishment of a WUA Support Unit (WUASU) at MWRLR, which will be supported by the technical assistance (ADB grant) accompanying the loan (paras. 58 and 59). The purpose of this unit will be the institutionalization of WUA support, and their integration in MWRLR's planning activities. WUASU will support establishment of WUAs by-laws, preparation of standard documents and training materials, and technical support for improving water management at "on-farm" level.

## 2. Improvement of Rural Potable Water Supply Systems

34. The Project will support reconstruction of five rural potable water supply systems within the Project areas and will provide drinking water to 57,000 beneficiaries. Selection of villages to benefit under the project was made in consultation with local communities and MWRLR. Criteria used in selection of target villages included (i) absence of a safe water source at present; (ii) potential for poverty reduction through provision of an improved water source, and (iii) the priority accorded by local community representatives and MWRLR.

35. The main works include: (i) construction of intakes, a reservoir, distribution pipework and standpipes in Asht; (ii) construction of wells, repairs to reservoirs and distribution network, in Vahdat district; (iii) provision of pumps, reservoirs, distribution pipework, and diesel generators in Farkhor; (iv) construction of new wells, reservoirs, booster pumping stations, pipelines and standpipes, and provision of generators in Panj, and (v) construction of a spring intake, storage reservoir, distribution pipework and standpipes in Rushon. After construction, community based Water Committees will operate the systems. The Project, working with the local administration, will facilitate the formation of Water Committees for each scheme at an early stage of the project, so that the Committees can have an input into the detailed design. Assistance will be provided by the communities in scheme construction, usually in digging pipeline trenches. Training will be given to the Water Committees to prepare them to carry out their responsibilities.

## 3. Agricultural Support to Private Farmers

36. There are severe deficiencies in the supply of quality seeds and in pest management in the Project area. The ADB financed ARP already includes sub-programs for seed

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<sup>20</sup> The full and effective establishment of WUAs in the Project sites was discussed with Government and assurances were given that priority for the utilization of other external donor assistance for this purpose would be channeled to those areas where I&D infrastructure will be rehabilitated under the Project.

improvement and pest management, implemented by the Agricultural Academy of Sciences. These programs will be extended in the core demonstration areas.

37. **Core Demonstration Areas:** Together with water management activities, implemented through WUAs, crop husbandry trials will focus on promoting increased crop productivity, crop diversification, crop rotations and intensification. These programs will demonstrate improved water and land management especially to private farmers and land shareholders. Demonstration plots with a total area of 500 ha will be implemented in each of the five project areas. Relevant training will also be provided to district agriculture staff each year. The seed improvement sub-component under the ARP supports research institutes to increase output of improved cotton and wheat seeds, and provide training for farmers. By extending the ARP program in the project areas, the experience and lessons learned will be utilized, and costs minimized. Upgrading the quality of seed and introducing the concept of integrated pest management could potentially increase yields by more than 30%. An integrated pest management program will be implemented in each district, to introduce farmers to the technique and provide practical training. Implementation of the program would reduce crop damage and have a positive impact on crop yields and environment. The program will be prepared and implemented by the Agricultural Academy of Sciences supported by local and international research institutes.

#### 4. Project Management, Monitoring, and Evaluation

38. The Project will establish and provide support to a PMO in MWRLR, Dushanbe and five project implementation units (PIUs), the one for Vahdat operating out of the PMO in Dushanbe and the others based in their sub-project area. PIUs will be responsible for project implementation in their areas, and for maintaining liaison with the PMO, local administration, and beneficiary organizations. Additional support will be provided by consultants, who will train and advise PMO staff. The organizational arrangements of the PMO and PIUs are discussed in implementation arrangements (para. 44.).

39. A monitoring and evaluation (M&E) unit will be established within the PMO to implement the environmental monitoring system recommended in the Summary Initial Environmental Examination (Appendix 4) and to monitor the environmental, poverty, gender and other social impacts of the Project. Specifically, the M&E unit will be responsible for (i) collecting, collating, and analyzing baseline data relating to the economic, poverty, social, and environmental conditions disaggregated by gender, income, and farm types within the project area; (ii) benefit monitoring during project implementation, and (iii) evaluating the project's economic, poverty, gender, social, and environmental impacts within the selected systems. The unit will particularly monitor (i) income opportunities and other resources provided under the Project to extremely poor communities and women, (ii) reduction in vulnerability of households to waterborne diseases, and (iii) participation of women in community activities. The M&E unit will have two staff members, who will work with the responsible agencies. For environmental monitoring, they will collect and analyze data relating to the quality of irrigation and drainage water, soil chemistry, and groundwater depth and quality. Environmental monitoring will provide a comparison of the before and after project situations and a limited comparison between project and non-project areas. The project performance, monitoring, and evaluation will be done in accordance with ADB's guidelines on its project performance management system.

40. To monitor the project's social impact, during the first year of project implementation the M&E unit will compile a benchmark database on basic economic and social conditions to provide a socioeconomic profile of the beneficiary communities. Key indicators will be tracked during project implementation and a comparison made between the benchmark and project completion situations. The database will be analyzed to provide an assessment of the Project's impact on different social groups, including women and the low-income households.

## D. Special Features

41. To maximize employment and income-generating opportunities in the project sites, government and project officials, and contractors, agree to hire the poor and vulnerable groups from local villages for civil works to the maximum extent possible. Poor communities will be helped by their involvement in food-for-work program pertaining to simple rehabilitation works. The local communities or other similar local groups will be tapped to identify the target households. Such works will be managed by PIUs through force account procedures.

## E. Cost Estimates

42. The total cost of the Project is estimated to cost \$ 29.0 million equivalent, comprising \$13.3 million (45.8%) in foreign exchange cost and \$ 15.7 million (54.2%) in local currency cost. The cost estimates include the provision of \$ 4.3 million in taxes and duties and 5% of base costs for physical contingencies. A summary of cost estimates is shown in Table 1 and details are shown in Appendix 5.

**Table 1: Cost Estimates**  
(\$ thousand)

	Local Currency Cost	Foreign Exchange	Total Cost
<b>A Base Costs</b>			
1 Rehabilitation of I&D Infrastructure	11,971.8	9,479.9	21,451.7
2 Improvement of Potable Water Supply Systems	1,311.5	1,141.1	2,452.6
3 Agricultural Support to Private Farmers	771.5	95.6	867.1
4 Project Management	1,471.0	1,823.7	3,294.7
<b>Subtotal (A)</b>	<b>15,525.8</b>	<b>12,540.2</b>	<b>28,066.0</b>
<b>B Contingencies</b>			
Physical Contingencies <sup>a</sup>	634.3	381.0	1,015.3
Price Contingencies <sup>b</sup>	-44.7	-330.9	-752.6
<b>Subtotal (B)</b>	<b>15,738.4</b>	<b>12,590.3</b>	<b>28,328.8</b>
<b>C. Interest Charges <sup>c</sup></b>			
<b>Total</b>	<b>15,738.4</b>	<b>13,275.9</b>	<b>29,014.3</b>
<b>Percent</b>	<b>54.2</b>	<b>45.8</b>	<b>100.0</b>

<sup>a</sup> At 5% for most materials, equipment and civil works.

<sup>b</sup> At -1.7% for foreign costs in 2005, -0.8% in 2006, 0% in 2007 and then at -0.9% per year, based on projections for the MUV index for inflation in US dollar terms; and at 5% per year for local currency costs.

<sup>c</sup> Interest during implementation of 1% per annum for ADF funds.

## F. Financing Plan

43. ADB will provide funding of \$ 22.7 million, representing 78.3% of total project costs, in the form of a loan from the Asian Development Fund (ADF). ADB will finance 100% of the foreign exchange cost of the Project and 82.4% of the local currency cost, excluding taxes and duties. The Borrower will be the Republic of Tajikistan. The Borrower and the Beneficiaries will provide \$6.3 million and \$ 0.03 million equivalent, amounting to 21.6% and 0.1% of project costs, respectively. The financing of local currency costs by ADB is justified on the basis of the social benefits accruing from the Project. The loan from the ADF will have a term of 32 years with a grace period of 8 years. Interest on the ADF loan is 1% during the grace period and 1.5% per annum thereafter. The summary of the project financing plan is shown in Table 2; while the summary cost estimates are in shown Appendix 5.

**Table 2: Financing Plan**  
(\$ thousand)

	Foreign	Local	Total	Percent
Asian Development Bank	13,275.9	9,430.2	22,706.0	78.3
The Government	-	6,279.5	6,279.5	21.6
Beneficiaries	-	28.8	28.8	0.1
<b>Total</b>	<b>13,275.9</b>	<b>15,738.4</b>	<b>29,014.3</b>	<b>100.0</b>

## G. Implementation Arrangements

### 1. Project Management, Monitoring and Evaluation

44. The Project management structure will take into account the experience gained during implementation of ADB's projects executed by MWRLR,<sup>21,22</sup> which will implement the Project and will also be the Project Executing Agency (EA). A high-level steering committee established during project preparation will continue to provide policy guidance and facilitate inter-ministerial coordination. The minister of MWRLR will be the Project Director with overall responsibility for project implementation. A PMO will be established within MWRLR to manage project activities and to liaise with ADB, and other coordinating bodies. Five PIUs will be established, the one for Vahdat operating out of the PMO in Dushanbe and the others based in their sub-project area. PIUs will be responsible for project implementation in their areas, and for maintaining liaison with the PMO, local administration, and beneficiary organizations. The PMO will be led by a full-time Project Manager and the PIUs by Deputy Project Managers. The Project Manager will be nominated by the Government, and endorsed by ADB. The Deputy Project Managers and other key staff will be selected on merit by a panel of experts appointed by the Government and agreed by ADB. Staff selected by the Panel will need endorsement by ADB.

### 2. Implementation Period

45. The Project will be implemented over six years, starting in July 2005. Project activities during the first year will concentrate on selecting and fielding consultants, procuring equipment, developing operational systems for the PMO and the PIUs, and training their staff. Field surveys, investigations, and preparation of designs and bidding documents will take place in the first year. Subsequently, the civil works will be implemented in separate packages. WUAs will be established and their training initiated also in the first year, with most activities continuing during the second and third years. The project implementation schedule is shown in Appendix 6.

### 3. Procurement

46. Machinery, equipment, civil works, and services for rehabilitating irrigation, drainage, and potable water supply systems; vehicles, and office equipment, materials required for project implementation and monitoring will be procured following ADB's Guidelines for Procurement. To the extent possible, the Project will procure similar items in groups to optimize volume discounts. Equipment and materials procurement contracts estimated to \$500,000 or more will be awarded on the basis of international competitive bidding. Contracts costing less than \$500,000 will be awarded on the basis of international shopping procedures acceptable to ADB. Small supply contracts costing less than \$100,000 will be procured through direct purchase.

<sup>21</sup> ADB. 2001. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Tajikistan for the Emergency Restoration of the Yavan Water Conveyance System Project*. Manila.

<sup>22</sup> ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Tajikistan for the Agricultural Rehabilitation Project*. Manila.

47. Each civil works contract estimated to cost the equivalent of \$1.0 million or more will be awarded on the basis of international competitive bidding among prequalified contractors as described in ADB's Guidelines for Procurement. Civil works packages costing less than \$1.0 million will be carried out on the basis of local competitive bidding procedures acceptable to ADB. For works whose size, nature, and location make them unsuitable for competitive bidding, and if MWRLR has the facilities and capacity to implement these works expeditiously and at a reasonable cost, ADB may agree to force account procedures. The works to be implemented through force account will be determined during implementation. The upper limit for a force account works package will be \$50,000. A list of equipment and materials to be procured and the indicative list of major contract packages is in Appendix 7.

48. To procure goods and services with the loan proceeds, the Borrower will need to demonstrate that the local procurement procedures adopted are transparent and efficient, and conform to ADB's anticorruption policy. The EA will certify to ADB that the goods and services financed by the loan are procured from ADB member countries. In addition, where the value of goods financed by the loan exceeds \$1,000,000, a preshipment inspection certificate from a reputable agency, acceptable to ADB, will be required. The award of all project contracts will be subject to approval by ADB. All investment activities will be implemented under the full coverage of the United Nations security services to ensure safety during implementation.

#### **4. Advance Procurement Action and Retroactive Financing**

49. To expedite project implementation, ADB, upon Government's request, approved advance action on the procurement of consulting services, and establishment of PMO and PIUs, including appointment of key staff and procurement of office facilities and equipment. Also at the Government's request, ADB has approved retroactive financing of PMO and PIU staff, facilities, and equipment to facilitate timely establishment of these management offices and accelerate project implementation. The retroactive financing will be provided to finance eligible expenditures approved only on or after appraisal date, and will be subject to a ceiling of \$100,000 equivalent covering the expenses incurred in the period from 01 October 2004 to the effectiveness of the Loan Agreement. The Government has been informed that (i) advance action for the procurement of items other than those covered under the retroactive financing will cover actions up to, but not including, contract signing; and (ii) approval of advance action and retroactive financing does not commit ADB to finance the Project.

#### **5. Consulting Services**

50. The Project will provide a total of 684 person-months of consulting services, comprising 78 person-months of international and 606 person-months of domestic consultants to advise and assist PMO in implementing the Project in areas for which enough technical capacity is currently not available in Government agencies. The consultants will assist the MWRLR in (i) institutional capacity building; (ii) design, preparation of bidding documents, bid evaluation, and construction supervision; (iii) agriculture support services; and (iv) project management, monitoring, and evaluation. These services will be provided by international consulting firm(s) in association with domestic consulting firm(s) to be engaged by MWRLR in accordance with ADB's Guidelines on the Use of Consultants<sup>23</sup> and other arrangements acceptable to ADB for the engagement of the domestic consultants.

#### **6. Disbursement Arrangements**

51. An imprest account will be established at a bank acceptable to ADB, to facilitate the timely release of loan funds for payments in local currency. Imprest account ceiling should be six months estimated expenditures or 10% of the loan amount whichever is lower. During the first year of implementation, the ceiling of the imprest account will be set at \$500,000.

<sup>23</sup> ADB's quality- and cost-based selection method will be used.

The imprest account will be established in accordance with ADB's Loan Disbursement Handbook. ADB's statement of expenditure procedures will be used to reimburse expenditures and liquidate the imprest account for payments not exceeding \$100,000 equivalent per payment.

## **7. Accounting, Auditing, and Reporting**

52. MWRLR will keep separate accounts and financial statements for the Project, which will be audited annually by independent auditors acceptable to ADB. Loan proceeds will be used for engaging auditors acceptable to ADB. Certified copies of the audited financial statements will be submitted to ADB within nine months after the end of the fiscal year to which they relate. A separate opinion on the use of imprest account and statement of expenditures (SOE) procedures will be included in the audit report.

53. MWRLR, through the PMO, will submit quarterly and annual reports to ADB. The reports will indicate progress made and problems encountered during the period under review, steps taken to remedy the problems, the proposed program of activities, and expected progress during the remaining implementation period. MWRLR will also provide such other reports and information relating to the Project as ADB may reasonably request, including the Project's environmental impacts, dialogue with beneficiaries, and any social issues relating to the Project. Within 3 months after physical completion of the Project, MWRLR will submit to ADB a project completion report detailing information on project implementation, use of the loan proceeds, and the extent to which the objectives of the Project have been accomplished. The Government was informed of ADB's policy on submission of audited accounts, which cover failure in submitting audited accounts and financial statements within the due date. A formal warning will be issued for accounts more than 6 months overdue and disbursements will be suspended for accounts that are more than 12 months overdue.

## **8. Project Performance Monitoring, and Evaluation**

54. The project performance will be monitored at two levels. To monitor the progress of physical works, the Project provides for a comprehensive system of performance monitoring and evaluation (para. 40). A monitoring and evaluation (M&E) unit will be established to monitor project performance, including environmental, poverty, gender, and social impacts as specified in the SIEE and the poverty and social assessment, and the progress and performance of various reform measures introduced under the Project, according to the specific monitoring indicators described in the project framework (Appendix 1). Furthermore, the TA accompanying the loan will monitor progress on implementation of policy reforms agreed by the Government in the project areas, and their impact on farm productivity/profitability, cost and availability of inputs, financial gains, farmers' incentives, etc.

55. At the policy level, particularly in relation to farm debt resolution and other associated sector reform issues, such as land reform, farm privatization and irrigation cost recovery, the Government agreed to establish a national level, participatory consultation mechanism to review and discuss the progress in addressing the identified policy/institutional issues, debate the relevant lessons and the actions required, all on a regular basis, in support of sustainable growth and poverty alleviation in the rural sector. Details of such mechanism have been discussed and elaborated during further appraisal. The Government also agreed that the establishment of such monitoring mechanism, in a form and substance acceptable to ADB, would be a condition for loan negotiations. An open and participatory monitoring process will be supported by the associated technical assistance (para. 57.).

## **9. Project Review**

56. The Project will be reviewed regularly by ADB missions. During the third year of its implementation, the Government and ADB will carry out a midterm review to assess the achievement of project objectives and implementation milestones. Project objectives will be measured against the performance criteria listed in Appendix 1. The parameters for assessing the implementation milestones will include (i) implementation status, (ii) design and construction standards, (iii) physical progress and disbursements in relation to the implementation schedule, (iv) performance of the consultants and contractors, (v) status of compliance with loan covenants, and (vi) status of achievement of the Project's development objectives. The midterm review will also assess the need for changes in the project scope.

## **IV. TECHNICAL ASSISTANCE**

57. A grant of \$500,000 equivalent financed by the Japan Special Fund sponsored by the Government of Japan will provide the services of 12 person-months (pm) of international and 37 pm of domestic consultants. The objectives of the TA are to (i) monitor progress in implementing policy reforms that would create a conducive environment for project implementation; (ii) promote competitive providers of farm inputs, technical advice, credit and marketing of produce in the project area; and (iii) assist the Government in establishing a water user associations (WUAs) support unit within MWRLR.

58. The TA will provide comprehensive monitoring and reporting on progress being made by the Government towards its commitments to acceleration land reform, farm privatization and farm debt resolution. Monitoring will be based on feed back from community organizations, local governments, and Government information. The TA for the alternative business providers will focus on (i) analyzing the strengths and limitations of existing business providers beyond the services offered by the traditional investors; and (ii) providing capacity building for selected provider(s) to expand their services to private farmers in the project area. The TA assistance for the WUAs' support unit will focus on (i) defining the unit's mandate, organizational structure, functions, staffing pattern, and legal status; and (ii) providing institutional strengthening to ensure the Support Unit could properly operate in a sustainable manner. The TA will be implemented over 24 months, starting at the end on 2005. The implementation will be divided into two phases -- preparation and capacity building. Details of the TA are shown in Appendix 8.

## **V. PROJECT BENEFITS, IMPACTS, AND RISKS**

### **A. Expected Impacts**

#### **1. Financial and Economic Analyses**

59. Economic and financial analyses were carried out to assess the economic viability of the Project and financial viability of the participating farms. The main quantifiable benefits of the investment come from: (i) preventing the loss of production which may occur due to further deterioration and possible failure of I&D facilities without the Project; and (ii) modest increases in yields and cropping intensity resulting from more reliable irrigation water supply, from improved seed quality, reduced pests and diseases and improved cropping technologies.

60. Without the Project, declining water supply from deteriorating infrastructure and increasingly inefficient pumps will have a negative impact on crop yields and the area cultivated. In the pump irrigation areas the average yield for cotton will decline from the present level of 1.3 t/ha to around 1.1 t/ha and wheat yields will decline from 2.5 t/ha to 2.2 t/ha. In the gravity-supplied areas, yield declines will be less significant. With the Project, the average cotton yield will increase to about 1.9 t/ha in the pump irrigation areas. In the

gravity areas cotton yields will increase from 1.7 t/ha to 2.0 t/ha. Wheat yields will increase from 2.9 t/ha to 3.5 t/ha. With the Project the overall cropping intensity will increase modestly from 100% at present to about 105%. The output of cotton will increase from 38,700 tons to 47,700 tons and wheat production will rise from 26,800 tons to 32,400 tons by eighth year after implementation. These are conservative assumptions compared with the best practice in the area.<sup>24</sup> Significant increases are also expected in the production of fruit, vegetables and fodder.

61. Benefits also accrue from the reduction in pumping costs for water in the pump irrigation area and savings of O&M costs for the maintenance of the system. The greater efficiency of new pumps and the conversion of the upper areas of the Asht cascade to gravity supply will reduce the energy cost of pumping by an estimated \$1,312,500 per year (in economic prices). Rehabilitation of headworks, canal structures and sediment basins will reduce O&M costs by an estimated \$191,200 per year. Proper O&M for the pumping stations will require an increase in expenditures from the current level of about \$ 44,000 per year with the Project.

62. The rehabilitation of rural water supply schemes has been assessed separately using the timesavings method recently developed by ADB's Economics Research Department. The schemes will improve the access of selected villages to safe water supply and will have health and hygiene benefits as well as save time spent collecting water. The results of this analysis are consistent with all five schemes having an Economic Internal Rate of Return (EIRR) greater than 12%.

63. The EIRR of the Project is 20.7% and the economic Net Present Value (NPV) at the discount rate of 12% is \$9.9 million. The EIRR of the individual district subprojects vary from 13.5% in Rushon to 26.1% in Farkhor. Sensitivity analysis indicates that the EIRR is robust, well above 12%, despite adverse effects of price and yield declines, benefit delays, and investment cost increases. The farm budget analyses for large/small farms and household plots in each district indicate that farm incomes at all levels will increase with the Project. Detailed economic and financial analysis is shown in Appendix 9.

64. It is estimated that due to the current low cost of electricity (\$0.002kWh), the Project will benefit by an amount of approximately \$280,000 per year (para 10.). This subsidy will be offset by the tax revenue Government stands to receive under the Project, which will earn about four times the amount of subsidy (above \$1.1 million per year). However, if the true electricity cost were applied to pump irrigation areas, there would still be a shortfall in the offsetting tax revenue earned from these areas, indicating that a cross-subsidy exists with the tax revenue earned on gravity irrigation areas subsidizing the cost of electricity on pump irrigation areas.

## **2. Impact on Environment**

65. An initial environmental examination (IEE) was conducted during Project preparation. The IEE confirms that the Project will result in significant positive environmental impacts. The Project does not involve construction of new canals will not expand irrigated areas, nor pumping capacity. The rehabilitation of I&D systems and improved water efficiency will reduce further land degradation from salinity build-up and soil erosion. Coupled with the improvement of rural water supply, the Project addresses two of six major environmental problems in Tajikistan.<sup>25</sup>

<sup>24</sup> The assumed yields for cotton in the future with Project are attainable given that the current best practice in the districts achieves up to 3.2 t/ha for cotton and is generally 50% or more above the current district average yields.

<sup>25</sup> ADB. 2003. *Draft Tajikistan Country Environmental Analysis*. Manila.

66. None of the project components are located within protected areas. The ecosystem in the project areas have been extensively modified and as a result both terrestrial and aquatic biodiversity is considered to have been much reduced since the beginning of accelerated agricultural and industrial development in the 1950s.<sup>26</sup> Measures have been proposed to mitigate minor potential negative impacts identified in the IEE. Of the identified potential adverse impacts, the most crucial is related to upstream fish movement of the proposed weir on the Kofarnihon River, and the integration of measures to avoid fish entrainment in intakes and pumps to be rehabilitated. Further study will be undertaken during project implementation. Mitigation measures, and environmental management and monitoring have been integrated into project design and costs. The IEE report has been reviewed by the State Committee for Nature Protection and Forestry. Comments on the draft IEE were received on 19 July 2004 and a revised version has been submitted for Government approval. The Government has agreed to communicate to ADB its approval of the revised IEE before 30 September 2004.

### **3. Impact on Living Standards**

#### **a. Poverty Reduction**

67. The Project will contribute to reduction in income-based poverty by improving farm household incomes through increased farm productivity and increasing the employment opportunities. To address this type of poverty, the Project will improve the reliability of irrigation water supplies to 47,514 ha of irrigated land in the five project sites and ensure better, cheaper, and more timely access to agriculture inputs. These will benefit 153,000 poor people; generate an increase of 41% in dekhon farm incomes, and 33% in household plots incomes; and create opportunities for growth in rural services and industry. Increased agricultural outputs (cotton by 23%; wheat by 21%) will lead to increased rural incomes, particularly among the poor who rely on small household gardens for their main source of food and some cash income. Together with the food-for work program that will target the extremely poor in the project areas, improved agriculture activities will spur the demand for labor estimated at 750,000 labor-days. Thus, as illustrated by the distribution analysis, the Project's economic benefits will accrue relatively more to the poor household beneficiaries than the other beneficiary groups. Sustained income benefits for the poor households will also translate to a decrease, in the medium term, in the incidence in poverty in the project areas by 5%. The benefits accrue at these levels immediately after providing a reliable source of water for irrigation even without institutional reforms being in place. Once each such reforms are implemented, the benefits, especially those for the poor, will be even greater.

68. Non-income-based poverty in rural Tajikistan is also closely related to the lack of clean drinking water. The Project will address this issue by rehabilitating rural water supply systems, and 5,150 poor households will benefit from new potable water supplies. The summary poverty reduction and social strategy is in Appendix 10.

#### **b. Gender and Development**

69. An estimated 18% of total households in Tajikistan are headed by females. In rural areas, that percentage increases dramatically. In many households in rural Tajikistan, women have the dual roles of both caregiver and breadwinner, as so many men migrated to Russia to find employment, women often make up the vast majority of the population in small rural villages. As many of the men do not send remittances to their families from

<sup>26</sup> This is due to large-scale projects for hydroelectricity, mining, agricultural expansion, irrigation and logging. The protracted civil war and economic problems after independence reduced industrial pollution but exacerbated other problems, in particular uncontrolled deforestation for fuelwood, agricultural expansion, hunting and fires.

Russia, the women often have to earn income, and care for the children at the same time.<sup>27</sup> Women are traditionally working in the social and agricultural sectors, where wages are five to eight times lower than salaries in industrial and construction sectors. The United Nations Development Program estimates that 56% of the women in Tajikistan are unemployed.

70. The Project will improve women's access to food and income-generating activities, decrease their vulnerability to waterborne diseases, and encourage them to participate in all project activities. The Project will ensure that female-headed farms in project areas are WUA members and that women are fully represented in project design, planning, and implementation meetings. Women will make up at least 30% of the local water supply committees and they will be provided training in rural water supply management. Women will participate in all activities in the core demonstration areas and will be trained in new agricultural practices. A gender action plan is shown in Appendix 11.

71. The Project will not have any adverse impact on ethnic minorities and will not activate ADB's policy on indigenous peoples.

#### **c. Improved Rural Institutions**

72. The Project will explicitly tie or link the physical improvement in irrigation and rural water supply systems with institutional development. Rural institutions to be established and developed include: (i) WUAs formed in the irrigation system focusing on improved irrigation management, and operations and maintenance, (ii) participatory Water Supply Committees responsible for long-term O&M of the rehabilitated rural water supply systems, (iii) women's groups supported by NGOs, focusing not only on activities specific to women, but also broadening the opportunities for women to participate in all project activities, and (iv) informal associations of independent dehkan farmers formed to make use of economies of scale.

#### **d. Land Acquisition and Resettlement**

73. There will be very limited new construction under the Project. However, a new settling basin is proposed to be constructed on government land near the main canal intake in Khatlon Region. The size of the potential settling basin will be from 10 to 15 ha. Nine households without title or permission to use the land are presently cultivating approximately 6.5 ha of government land at the potential settling basin site. The household members are not living at the site, they are only cultivating land at the site. No structures, therefore, would have to be moved or replaced. The size of the future settling basin requires less than half of the land potentially available for construction and therefore there is scope of selecting a more advantageous location and not extending to areas illegally and irregularly cultivated by persons residing in villages outside the degraded land area. Nevertheless, a Short Resettlement Plan (SRP) has been developed to adequately address and compensate these households, ensuring that their livelihoods will not be negatively affected by the construction of the settling basin.

74. In Asht District, the construction of a drinking water reservoir will require a village road to be moved slightly using empty government land. Additionally, it is possible that a small edge of a household fence, which encloses a large vegetable garden, may also have to be moved slightly (less than one meter, along a distance of less than 5.0 m and thus involving an area of less than 5.0 m<sup>2</sup>). As the potential drinking water reservoir is fed by springs, the location of the reservoir is critical and it may be that other design options are not feasible. The actual degree of constraint will not be possible to determine until the topographical survey is carried out at the start of the design process. It is presumed that the

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<sup>27</sup> Rural customs in Tajikistan also dictate that a woman may not remarry for an extended period of time, even if her husband has "disappeared" into Russia years before.

fenced land is legally occupied and some minor compensation would therefore need to be negotiated if the garden is to be encroached. It is quite possible that for such a small area the compensation could be in-kind, such as provision of a new fence and gate, rather than financial and only an SRP is required. Specific assurances have been obtained from the Government that should any resettlement becomes unavoidable (para. 81.), the Government will ensure that land acquisition is carried out in accordance with all applicable laws and regulations of the Borrower, and with the ADB's *Policy on Involuntary Resettlement*. The Government has also endorsed the SRP and has agreed for its publication at the ADB website.

#### **e. Governance and Anticorruption**

75. During project processing, ADB's anticorruption policy was explained to the Government. Attention was drawn to the section on fraud and corruption in ADB's Guidelines for Procurement, particularly on the need for bidders, suppliers, and contractors to observe the highest standards of ethics in procurement and execution of ADB-financed contracts, and the sanctions if fraud and corruption are discovered. A monitoring system will be established under the associated TA to, among others, strengthen the financial management of the Project and prevent fraud and corruption in the award and execution of contracts.

#### **B. Risks and Safeguards**

76. It is recognized that between the improved public sector water services – particularly improved I&D performance and increased farm incomes exist a number of assumptions and risks. In particular, accumulated farm debts are a significant risk, particularly with regard to the financial sustainability of heavily indebted farms. Addressing the farm debt issues require a complex set of actions against multi-faceted problems, including land reform, farm privatization, rural financing and cotton marketing. ADB has been assisting the Government in analyzing these problems under TA4052 (Farm Debt Resolution and Policy Reforms), which resulted in a set of specific recommendations for institutional and behavioral changes in the sector. As assurance for the Project, the Government agreed to implement in the project area a set of key recommendations that are considered to be most crucial initiating further policy, institutional reforms in the agriculture sector. These include removal of excessive official and unofficial taxation to agriculture, interference by the national and local government on farm decision, such as cropping patterns, inputs sourcing and marketing, and accelerated provision and distribution of tradable leasehold rights to individual farmers within the Project area.

77. Admittedly, however, successful resolution of mounting debts requires a far more comprehensive and cohesive program and strategy supported by the strong political commitment of the Government, and effective donors coordination. This process has started with the aforesaid ADB TA on farm debt, and is still emerging. The Project will provide the opportunity to accelerate this process, as the Government agreed to jointly monitor and conduct dialogue on the progress of farm debt resolution and other closely associated reform measures within the project area and elsewhere in Tajikistan with ADB and other donors on a regular basis (para. 54.).

78. Sustainability of the Project benefits will be at risk, if adequate O&M is not provided. The advisory technical assistance attached to the Project will help the Government to gradually develop a sustainable O&M cost recovery mechanism through capacity building at both MWRLR and at the water user level. This process will involve: capacity building and establishment of WUAs support unit within MWRLR; development, training and operationalization of WUAs in the project areas; and introduction of policy changes (e.g. differential irrigation service fees for gravity and pumped irrigation schemes, and enhancing the role of WUAs).

79. At the project level, the benefits of the investment will be much reduced if (i) the farm privatization process is delayed, (ii) old farm management practices and administrative controls over production and marketing are not eliminated, and (iii) the marketing arrangements for farming inputs and cotton are not improved. These issues are being addressed by the Project through a joint monitoring and feedback mechanism as agreed between the Government and ADB, and a key policy reforms' package based on the key recommendations of TA 4052-TAJ, and feedback from two multi-stakeholders roundtable discussions conducted with ADB assistance in 2002 and 2004. The key initiatives needed to mitigate these risks in the project areas comprise: (i) accelerated land reform, land distribution, and farm restructuring and privatization; (ii) increased farm productivity and profitability through introduction of modern farm management, and improved "on-farm" land and water management practices; (iii) improved financing of agricultural production; (iv) introduction of competitive marketing of agriculture inputs and outputs; and (v) establishment of WUAs to takeover O&M of interfarm and "on-farm" infrastructure.

80. The Project will be the ADB's third investment in the water sector, implemented by MWRLR. The risk of implementation delays arising from MWRLR's unfamiliarity with ADB procedures is therefore low and has been further mitigated by involving MWRLR staff during project processing. Their capacity will be enhanced through training, seminars and involvement during the administration missions.

## VI. ASSURANCES

### A. Specific Assurances

81. In addition to the standard assurances, the Government has given the following specific assurances, which are incorporated in the legal documents:

#### 1. Pre-Construction Works

The Borrower shall ensure that the MWRLR carries out desilting of canals and drains within the project I&D schemes, and shall provide budgetary allocation to MWRLR to ensure that these works<sup>28</sup> shall be completed before the award of civil works contracts financed by the Project.

#### 2. Environment

- (i) The Project shall be carried out, and all facilities constructed, operated, maintained, and monitored, in accordance with the existing laws, regulations, and standards of the Borrower concerning environmental protection and ADB's *Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects* and the relevant guidelines for irrigation and water supply projects.
- (ii) The Borrower shall ensure that the required budget is made available for environmental mitigation and monitoring by MWRLR and the State Committee of Nature Protection and Forestry, including vehicles, materials, equipment, and operating expenses relating to environmental management and monitoring aspects of the Project, as specified in the initial environmental examination report.

#### 3. Resettlement

- (i) The Borrower shall ensure that involuntary resettlement under the Project, if any, including loss of use of crops, land, other resources or assets, is undertaken in conformity with a resettlement plan to be promptly prepared by the Borrower in accordance with ADB's Resettlement Handbook. The compensation to the persons affected by the resettlement shall make them as well off as they would be in the

<sup>28</sup> These works involve: (i) excavation of 440,000 m<sup>3</sup> of sediments from drains, 255,000 m<sup>3</sup> from canals, and leveling of 475,000 m<sup>3</sup> of previously removed material in Farkhor district; and (ii) in Panj district excavation - 410,000 m<sup>3</sup> of materials from drains, 145,000 m<sup>3</sup> from canals, and leveling of 180,000 m<sup>3</sup>.

absence of the Project. The resettlement plan shall be updated, based on detailed designs, and it shall be disclosed to all affected persons in a form and language that they can understand, and it shall be submitted with EA's endorsement to ADB for review and approval before any civil works contract is awarded.

#### **4. Gender and Development**

The Borrower shall start, within one year of loan effectivity, implementation of the Gender Action Plan outlined in the Summary Poverty Reduction and Social Strategy. The Borrower shall ensure that, among others, (i) the female-headed farms in project areas are WUA members and that women are fully represented in project design, planning, and implementation meetings; (ii) women will make up at least 30% of the local water supply committees and they will be provided training in rural water supply management; and (iii) women will participate in all activities in the core demonstration areas and will be trained in new agricultural practices.

#### **5. Operation and Maintenance, Water Service Fees, and Fee Collection**

- (i) The Borrower shall assign responsibilities for carrying out the O&M for the project facilities. The Borrower shall provide adequate budgetary allocation, including that needed to cover the transition period up to full cost recovery and collection of the irrigation service fees.
- (ii) The Borrower shall take legislative action, not later than 31 December 2005, to set differential irrigation service fees for lift and gravity irrigation schemes. These fees shall be increased gradually until they fully cover the cost of O&M of the irrigation facilities by 31 December 2010. The Borrower shall formulate, with assistance of the Project, a potable water supply cost recovery and fee structure based on assessment of affordability especially of poor farm households and shall, not later than 31 December 2008, implement such policy and fee structure.
- (iii) The Borrower shall formulate with assistance of the Project, a potable water supply cost recovery and fee structure based on assessment of affordability especially of poor farm households and shall, not later than 31 December 2008 implement such policy and fee structure.
- (iv) The Borrower shall develop, with the assistance of the Project, and based on consultation and agreement with ADB, a mechanism to collect irrigation service fees with an objective of full collection in cash and shall, not later than 31 December 2007, implement such collection mechanism.

#### **6. Water User Associations and Water Supply Committees**

- (i) Within three years of loan effectivity the Borrower shall ensure that WUAs and Water Supply Committees are established in the Project area, including the utilization of other external donor assistance for this purpose.
- (ii) The Borrower shall ensure that the WUAs shall assume the responsibilities to carry out the O&M of the on-farm irrigation and drainage facilities after they are fully organized and trained, but not later than 2 years after rehabilitation of their infrastructure is complete.

#### **7. Agricultural Support Services**

- (i) With the assistance provided under the Project and the associated TA, the Borrower shall develop, within one year of loan effectivity, a farm support service plan and implement measures to improve farm productivity and profitability, through (a) dissemination of market information; (b) provision of farm support services for improved farming technology and crop diversification; and (c) increasing crop value through improved marketing, processing, and adoption of international standard for cotton grading. The Borrower shall jointly review with ADB on an annual basis the availability and quality of farm support services in the Project area.

- (ii) The Borrower shall ensure that the planned and existing farm support services, particularly farm machinery (provided through Japanese assistance program) are made available to the private farms in the Project area within one year of loan effectivity.

#### **8. Cotton Financing and Marketing**

- (i) Not later than 31 December 2005, the Borrower shall, in compliance with the Borrower's Land Code, change the practice of setting the planning target for cotton production, which sets both the area of farm land for producing cotton and the quantity of fiber to be produced, to a practice of setting only the quantity of cotton fiber to be produced.
- (ii) Not later than 31 December 2005, the Borrower shall make the following changes to the raw cotton and cotton fiber prices: (a) the farm-gate prices for raw cotton shall be linked to world prices for cotton fiber; (b) the setting of fixed export price for cotton fiber shall be modified from a maximum to a minimum price mechanism; and (c) these prices shall be published/made available to the public.
- (iii) The Borrower shall, within one year of loan effectivity: (a) permit multiple cotton investors to operate in any given production area; (b) ensure that the ginning services are not restricted by the administrative boundaries; and (c) permit the movement of raw cotton across the administrative boundaries for ginning and marketing.
- (iv) The Borrower shall, with the assistance of the consultants engaged under the TA for Support to Monitoring Policy Reforms and Improving Farm and Water Management, develop standard cotton financing and production contracts to ensure introduction of financial disciplines and appropriate allocation of rights, benefits, responsibilities and risks among the concerned parties. The Borrower shall, not later than 30 June 2006, submit such draft standard contracts for ADB's review and after ADB's approval, implement the use of such standard contracts in the cotton growing areas.

#### **9. Farm Reorganization and Land Reform**

- (i) The Borrower shall, not later than 31 December 2005, have developed detailed and transparent procedures acceptable to ADB to implement the Borrower's Resolution No. 522 1996 *Procedure of Reorganization of Farms and Agricultural Enterprises*, which shall ensure that:
  - (a) Farmers be allowed to choose which reorganized farm they become members/shareholders of, and they should be able to elect their own farm managers who shall be accountable to the /members/shareholders;
  - (b) individual farmers or farmer families be issued certificates of land use rights upon request;
  - (c) the sub-certificates issued to individual members of a collective dehkan farm carry the same legal rights as the certificates;
  - (d) transparent process are set up to obtain land use rights for any individual farmer or farmer family independent of the collective dehkan farms of which they are members;
  - (e) that such individual farmers or farmer families are treated equally, as other members of the collective dehkan farms, in terms of proportion of debt burden associated with the land to be transferred to them, the land quality, geographic location, and access to irrigation services and other elements affecting farming activities.
- (ii) The Borrower shall, not later than 31 December 2005, have prepared and submitted to its Parliament for review and adoption an amendment to the existing land laws, which shall enable to make the certificates of land use rights held by the individual

farms or collective dehkan farms collateral for obtaining financing from the financial institutions or other creditors.

**B. Conditions for Loan Effectiveness**

82. The Government agreed on the following conditions for loan effectiveness:(i) establishment of monitoring and diagnostic framework in a form of substance acceptable to ADB to monitor implementation of the agreed policy reforms in the project areas, and facilitate the development of relevant legislation related to O&M cost recovery, and debt restructuring; and (ii) establishment of PMO and PIUs, including appointment of qualified staff, provision of office premises, and facilities.

## PROJECT FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanism	Assumptions and Risks
<p><b>Goal</b> Improve living standards of 262,000 rural population in the Project area.</p>	<p>Incidence of poverty in the Project area reduced by 5 % within five years after project completion.</p> <p>Increase in agriculture output and farm household incomes.</p>	<p>National and regional statistics</p> <p>M&amp;E/Livelihood survey reports</p>	<p>Government remains committed to market economy reforms</p> <p>Government implements proposed changes to cotton production and marketing regime</p>
<p><b>Purpose</b> Increase crop production and incomes of rural communities farming 47,514 ha of irrigated land;  Extend access to rural potable water supply systems.</p>	<p>Agricultural production in the project area increased by total of 9,000 tons (cotton), 5,600 tons (wheat) 8 years after project completion.</p> <p>Average crop yield in the project area increased by 19 % for cotton and 21% for wheat at project completion.</p> <p>Cropping intensity will increase from 100% to 105% in the project command area.</p> <p>Safe drinking water made available to an additional 57,000 beneficiaries</p>	<p>Progress reports, M&amp;E reports and PPRs.</p> <p>Progress reports, M&amp;E reports and PPRs.</p>	<p>Supporting measures to improve farm productivity and profitability are in place, including: (1) dissemination of market information;(2) support services for improved farming technology and crop diversification in place ; and (3) crop values increased through improved marketing such as adoption of cotton grading standards</p> <p>Actions to support independent farm management decision making are implemented, including: (1) establishing effective and transparent system for transfer of land share certificate; (2) making long-term leasehold rights tradable; (3) allow farmers to choose their cropping system (4) restrictions on movement of inputs and outputs across rayons and oblasts removed.</p>
<p><b>Output</b> A. Rehabilitation of Irrigation and Drainage Infrastructure</p>	<p>Deteriorated irrigation and drainage facilities in Asht, Chubek, Panj, Vahdat and Rushon rehabilitated, including 57 km of main canals, 35 km of secondary canals and 135 km of drainage collectors rehabilitated; pumping and other associated facilities in total of 4 pump stations rehabilitated;one</p>	<p>Project progress reports, PPRs, review mission reports, Project completion report.</p>	<p>The Government adopts policy, regulatory and institutional reforms to ensure sustainable operation and maintenance of Project facilities, including: (1) application of irrigation fee set separately for lift and gravity irrigation schemes; (2) irrigation and potable water supply cost recovery policy is</p>

Design Summary	Performance Indicators/Targets	Monitoring Mechanism	Assumptions and Risks
<p>B. Support for Improved Water Management</p> <p>C. Strengthened institutional Water Management Capacity of farmers and relevant public sector agencies.</p> <p>WUAs Support Unit (WUASU) established in MWRLR</p> <p>WUAs established and operating in the core demonstration areas</p> <p>Recommended policy, institutional and regulatory framework in place.</p> <p>D. Improvement of</p>	<p>headworks rehabilitated.</p> <p>WUA Support Unit is created within MWR with adequate number of fully trained staff, with at least 20% of staff members being female.</p> <p>Participatory water supply management schemes are in place.</p> <p>Irrigation and rural water O&amp;M recovery policy recommendations implemented by the Government.</p> <p>Total of 50 local government and WUA staff are trained for improved water management and irrigation system O&amp;M, and at least 10 of whom are women.</p> <p>WUASU operating and key staff appointed, 20% of whom are women</p> <p>WUAs established in core demonstration areas, including more than half the farmers in the benefit area participating as paid-up members, and more than one third of WUA members being female, one half of whom will be from female-headed households.</p> <p>Government resolution for the project area issued to enable implementation of relevant recommendations under the farm debt resolution action plan, developed under TA4052-TAJ: Farm Debt Resolution and Policy Reforms.</p> <p>Total of 5 water supply</p>	<p>Project progress reports, PPRs, review mission reports, Project completion report.</p> <p>Project progress reports, PPRs, review mission reports, Project completion report.</p> <p>Project progress reports, PPRs, review mission reports, Project completion report.</p> <p>A progress reports, TAPRs, TA review mission reports, TA completion report.</p>	<p>established and implemented based on accurate assessment of affordability.</p> <p>Institutions and laws are in place to support development and operation of Water User Associations (WUAs).</p> <p>Planned and existing farm support services, particularly farm machines (to be provided through Japanese assistance program) are made available to the private farms in the Project area on a priority basis.</p>

Design Summary	Performance Indicators/Targets	Monitoring Mechanism	Assumptions and Risks
<p>Selected Potable Water Supply Systems</p> <p>Water supply schemes rehabilitated in the Project Area</p> <p>E. Agricultural support to Private Farmers</p> <p>Core demonstration areas established</p> <p>Pest management program</p> <p>Seed improvements introduced</p>	<p>schemes rehabilitated.</p> <ul style="list-style-type: none"> <li>• Total of 500 ha of agricultural demonstration plots is developed.</li> <li>• More than 2,500 farmers trained under the pest management program prepared and implemented by the AAS, 25% of whom are women and female household heads.</li> <li>• Improved seeds made available to more than half the farmers in the Project area.</li> <li>• Seed yield increased by more than 30%</li> </ul>	<ul style="list-style-type: none"> <li>• Project progress reports, PPRs, review mission reports, Project completion report.</li> <li>• Project progress reports, PPRs, review mission reports, Project completion report.</li> <li>• Project progress reports, PPRs, review mission reports, Project completion report.</li> </ul>	
<p><b>F. Project Management, Monitoring and Evaluation</b></p> <p>a.) PMO and PIUs established</p> <p>Monitoring and evaluation systems established</p>	<p>(a.1) One PMO established in Dushanbe and one PIU in each Project district. At least 20% of staff member are women.</p> <p>Monitoring and evaluation system for project implementation established with disaggregated gender and social/poverty data. At least 20% of staff members are women.</p>	<p>Project progress reports, PPRs, review mission reports, Project completion report.</p> <p>Project progress reports, PPRs, review mission reports, Project completion report.</p>	
<p><b>Project Activities</b></p> <p>a. Establishment of Project management and implementation units.</p>	<p>(a.1) Project Management Office in Dushanbe and Project Implementation Units in each Project</p>	<p>Executing Agency's Reports and missions' reports</p>	<p>Sufficient counterpart fund, including budgetary provision for PMO before loan effectiveness, is made available.</p>

Design Summary	Performance Indicators/Targets	Monitoring Mechanism	Assumptions and Risks
<p>b. Recruitment of project design and implementation consultants.</p> <p>c. Design of irrigation rehabilitation and rural water supply schemes.</p> <p>d. Preparation of environmental/resettlement monitoring system.</p> <p>e. Procurement of goods, civil works and recruitment of consultants.</p> <p>f. Construction supervision.</p> <p>g. Development of monitoring and evaluation systems.</p> <p>h. Preparation of pest management and seed improvement programs</p> <p>i. Capacity building, policy studies and development of relevant policy, regulatory and</p>	<p>districts established as a condition for loan effectiveness.</p> <p>(b.1) Loan-financed team of international and local consultants fielded within 9 months of loan effectiveness.</p> <p>Detailed design reports completed within 18 months from the loan effectiveness.</p> <p>Environmental monitoring system is in place and regular monitoring implemented within 12 months from the loan effectiveness.</p> <p>A total of \$ 6.2 million civil works and supply contracts awarded within 24 months from the loan effectiveness.</p> <p>Periodic reports submitted on the progress, quality and other safeguard issues relating to construction works every quarter during project period.</p> <p>M&amp;E system designed and implementation commenced within 12 months from loan effectiveness. Regular M&amp;E reports submitted as part of the progress report.</p> <p>Pest management and seed improvement prepared and implemented within 6 months from loan effectiveness</p> <p>TA consultants fielded within 9 months from loan effectiveness.</p>	<p>Project reports</p> <p>Design reports</p> <p>Project progress reports, PPRs, review mission reports, Project completion report.</p> <p>Engineer's reports</p> <p>Reports from Agriculture Academy of Science</p>	<p>Qualified counterpart staff are provided to the Project.</p> <p>Sufficient ADB resources made available to support EA's recruitment/procurement actions, thereby eliminating possible delays in implementation.</p> <p>EAs are capable of using imprest fund effectively.</p> <p>Sufficient institutional and budgetary support is made available for environmental and social safeguard actions.</p> <p>Beneficiaries and local government officials actively participate in capacity development programs.</p>

Design Summary	Performance Indicators/Targets	Monitoring Mechanism	Assumptions and Risks
institutional reform packages (Piggy-backed TA).			
<b>Project Inputs</b>  Loan Project Consulting Services Civil works Equipment Materials Training, Exten. & Studies Project operations Contingencies Interest charge  Total Project cost Government ADB Loan Beneficiaries  Piggy-backed TA Consultants Training, Surveys, Equipment, etc. Total TA cost Government ADB	\$ 2.2 million \$ 5.9 million \$17.7 million \$ 0.4 million \$ 1.2 million \$ 0.8 million \$ 0.3 million \$ 0.7 million  \$29.0 million \$ 6.3 million \$22.7 million \$0.03 million  \$0.290 million \$0.335 million \$0.625 million \$0.125 million \$0.500 million	Loan Agreement  Project implementation Progress Reports  Project accounts	

## AGRICULTURE AND WATER SECTOR ANALYSIS

### A. Introduction

1. The agriculture sector resource base covers some 4.07 million ha of which 3.3 million ha are permanent pastures. The cultivated area is about 0.84 million ha of which 0.72 million ha are irrigated. Agricultural production is dominated by cotton and wheat, which together account for around 75% of total cultivated area, and provides employment for more than 50 percent of the country's labour force. The sector generates about 30% of export revenues and 35% of tax revenues. Since independence from the former Soviet Union, allocating sufficient resources to maintain rural infrastructure, including the irrigation systems, has been difficult for the Government and there has been extensive deterioration.

2. During the 1990s, Tajikistan experienced significant increases in the levels of poverty, especially in rural areas. The Government recognizes the need to reduce poverty and increase incomes. The target stated in its Poverty Reduction Strategy Paper<sup>29</sup> is to reduce the poverty level from 83% in 2001 to 60% in 2015.<sup>30</sup> Since the majority of the poor are in rural areas, these objectives cannot be achieved without effective measures to increase agricultural output and promote agricultural employment. As part of its development strategy, the Government is committed to (i) continuing the farm reorganization, (ii) improving the efficiency of irrigation water use, (iii) developing a rural credit system, (iv) rehabilitation of key irrigation facilities, and (v) implementing a poverty reduction program with a substantial agriculture sector component.

### B. Sector Performance

#### 1. Agriculture and Land

3. During the 1990s, performance in the agricultural sector was characterised by a decline in the area, yields and output of the key cotton crop and by an increase in the area and output of cereals. In many areas, food security became of overriding importance. Since 2000, cotton production has been increasing (450,000 tons in 2002) but is still below the level of 800,000 tons produced in 1990. Agricultural productivity is also well below pre-independence levels with average cotton yields currently 1.7 t/ha compared to 2.8 t/ha before independence. Cereal yields are also low at an average of 1.3 t/ha. During the same period, the number of people employed in rural areas rose by over 32%, but much of this employment is intermittent or part time and underemployment in the sector is high.<sup>31</sup>

4. Land remains the property of the state and families either individually or collectively are given land use rights, which are heritable but not tradable. These limitations restrict the evolution of commercial agriculture. The lack of clear procedures under the existing Law on Dehkan Farms adopted in 1992 for land allocation to private farmers and for dispute settlement resulted in local authorities' use of these procedures being viewed as arbitrary. To remove these flaws, the Parliament amended the law in 2002. By the end of 2002, the State Land Committee had transformed some 500 kolkhozes and sovkhoses into dehkan farms but the related land tenure rights remain weak and can be rescinded by local

<sup>29</sup> The PRSP was approved by the Majlisi Oli (Parliament) of the Republic of Tajikistan on June 19, 2002.

<sup>30</sup> Based on the Government defined poverty level of TJS20 (\$6.67) per person per month.

<sup>31</sup> Studies contributing to an understanding of the Sector include: (i) the ADB-funded Agriculture Sector Assessment Project (ASAP); (ii) the ADB PPTA for the Agriculture Rehabilitation Project (ARP); (iii) the World Bank Rural Infrastructure Rehabilitation Project; (iv) the TACIS/EuropeAid funded River Basin Management Project for the Aral Sea (ASREWAM); (v) the ADB Farm Debt Resolution and Policy Reforms Project; (vi) the Swiss-funded Integrated Water Management Project; (vii) an IFC project to provide support to farmers, the "farm ownership model"; and (viii) USAID funded projects in the water sector to provide support for the development of water user associations.

authorities. Only 10% of rural families have direct control over land assets other than household plots.<sup>32</sup> Many structural, legal, and political impediments prevent a comprehensive implementation of land reform and much of Tajikistan's rural land is managed and operated by Collective Dekhan Farms, Joint Stock Companies or Co-operative Production Farms which are little different in operation to the old kolkhozes.<sup>33</sup> For cotton production, agricultural inputs and outputs are funnelled through the farm management from a single outside investor and associated ginnery. These monopolistic conditions lead to high input prices, poor farm management, reduced profitability, debts and a lack of choice for family dehqan farms and obstruct the flow of benefits to farm households and to the poor agricultural workers.

5. Since 1997, many farms have accumulated significant amounts of debt, which is linked to the financing of cotton, using the crop as collateral.<sup>34</sup> More than 70% of farm debt is concentrated within 108 farms which have never repaid any cotton loans.<sup>35</sup> These collective dehqan farms have been reorganized in such a way during the land reform process that any economic incentives to improve performance have been minimized. For this type of farm, the farm managers are largely unaccountable to the members (who are responsible for repayment of the debt). Debt levels are now high enough in many cases to provide a further disincentive to production and are placing a constraint on the further development of irrigated agriculture. Along with policy reforms, it has been proposed by the recently conducted study (TA 4052-TAJ) that a financial restructure of the unprofitable farms take place to resolve this problem.

6. The proposed debt resolution strategy is based on the premise that the solution to farm debt is profitable farms. The main contention of the recent study is that the number of unprofitable farms will not increase without major restructuring of the existing collective dehqan farms and substantial policy reforms to create an appropriate commercial environment for farm enterprises to grow.

7. Many existing farms as well as newly organized dehqan farms suffer from a lack of access to efficient machinery services, supplies of inputs (including credit) at competitive prices and technical extension services. At the agrarian structure level, many large cooperative dehqan farms have a monopoly on agricultural inputs, and farmers have few options to purchase inputs elsewhere due to their debt and dependency on the co-operative farms. The inputs provided by the co-operative dehqan farms can be twice as expensive as inputs purchased in the markets, and often the inputs are provided late. Independent dehqan farms, on the other hand, are free to purchase inputs they want in local markets at competitive prices, although the lack of alternative sources of credit can affect the production activities of these farms and act as a constraint against achieving higher output levels.

8. Proposed policy reforms for farm debt resolution include: (i) farm management reforms to restructure collective farms into smaller manageable farms with legal status and farm managers who are made accountable to their members; (ii) government reforms to stop issuing cotton production targets and stop linking raw cotton prices to those of cotton fibre; (iii) land reforms on enacting legislation for land registration and leasehold rights; (iv) agricultural finance reforms on recognition of land and leases as collateral, implementation

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<sup>32</sup> These and most other land reform issues are being addressed by ongoing World Bank Projects, the recently completed Farm Debt Resolution and Policy Reform project, some bilateral agencies and by an FAO led co-ordination group monitoring the land reform process.

<sup>33</sup> Under these arrangements, a Chairman holds a single land certificate for the entire farm, and individual dehqan farms are neither independent nor private.

<sup>34</sup> During this period cotton credit has been almost the only source of working capital available to farms and some farm managers freely admit that some of the funds have been used to finance crops other than cotton.

<sup>35</sup> The TA for *Farm Debt Resolution and Policy Reform* (TA 4052-TAJ) has recently completed a detailed study of this issue.

of loan classification and loss provisions, and investors accepting liability for trade credit; (v) cotton processing and marketing reforms to reduce the costs of cotton exports, force ginneries to compete for raw material supplies and allow open pricing of cotton sales; and (vi) irrigation finance reforms to link water fees to land tax payments, ensure pricing of water delivery reflects its true costs, promote self-financing of gravity systems and develop a strategy for the future of high-level pumping schemes.

9. Due to the lack of budget and personnel there is no formal agricultural extension service in Tajikistan. At the district level, agricultural offices try to provide some agricultural extension and advice, but they have limited resources. Some NGOs are also providing limited services. At the field level, farmers receive little systematic information on agricultural inputs, markets or improved water management techniques. Independent dehkan farmers may seek advice and information from any source but those linked to collective dehkan farms have few options to pursue information and extension advice. The World Bank has established a National Agricultural Training Center under its Farm Privatization Support Project. Trainees from the center have begun the process of setting up extension services. Improving access to these services could increase productivity by helping farmers to (i) improve crop yields, (ii) intensify their crop rotations, and (iii) diversify their cropping to achieve higher revenues.

## 2. Water Management

10. Water resources management systems in Tajikistan have not changed significantly since the Soviet period but as agriculture evolves from the former centrally directed model to one where farmers have greater freedom to manage resources these management systems are no longer appropriate.

11. Water User Associations (WUAs) are increasingly providing water management roles and performing on-farm O&M. Under the old Soviet system, the collective and state farms acted as the "middlemen" between the large government ministries supplying water, and the field level application of water. With the breakup of the Soviet Union, that link or connection between water supply and demand has been broken, and there is now a large gap (almost a black hole) between the "big water" suppliers at the Ministry, and the "small water" users at the field level. Farm water management at the field level is a vital part of improved irrigation management and development, but it is a neglected area in Tajikistan's irrigation systems.

12. Rehabilitation of irrigation systems is linked to the cost of maintaining them.<sup>36</sup> Government's ability to support the cost of operation and maintenance is limited and irrigation service fees were therefore introduced in 1996. Irrigation service fees depend on the volume nominally supplied and so depend on the crop grown. The tariff is currently TJS6 (US\$2) per 1000m<sup>3</sup>, although the general lack of measuring and metering installations precludes the proper application of volumetric irrigation service fees.<sup>37</sup> Irrigation service fees are uniform across the country and do not differentiate between gravity and pump irrigation schemes even though energy costs in pump irrigation schemes typically account for at least two thirds of total O&M costs. The water fees at the current level are almost sufficient to cover off-farm O&M costs, excluding the costs of operating and maintaining

<sup>36</sup> As expressed in a study by the International Programme for Technology and Research in Irrigation and Drainage (Issues Paper No. 2, June 1999) in reviewing the adequacy of irrigation system maintenance: *"Many irrigation systems constructed within recent decades are failing within their design lifetime. About two-thirds of recent international lending has been for systems which have suffered premature technical failure. Many millions of dollars invested in the original infrastructure are being written off and anticipated returns have not been achieved because maintenance is inadequate."*

<sup>37</sup> In a number of locations the MWRLR and its line offices have begun to introduce measuring devices on the tertiary distribution system, for example in parts of the Asht-2 cascade. An SDC project *Integrated Water Resources Management in Fergana Valley* is also introducing measuring devices in pilot areas.

pump stations. In 2003, reported expenditures on off-farm O&M were about \$5 per ha, compared with an estimated requirement for gravity schemes of \$5.6 per ha. The total O&M costs for the pump stations and pumping, at the current electricity tariff, are about twice the total cost for the gravity schemes. Increasing cost recovery through water fees or payment in kind using community labour is the only possible long term solution for meeting O&M costs and sustaining the irrigation system but current low levels of farm income imply that a phased approach to cost recovery will be necessary.

## C. Sector Institutions

### 1. Legal Basis

13. The Water Code is the legal basis for resource management at present but requires revision to accommodate the concept of basin wide water resources management and water allocation across sectors. It also needs to be amended to recognize explicitly the role of water as an economic good. Although the Water Code provides for the formation of Water Users' Associations (WUAs), it needs to be updated to promote and safeguard their specific requirements through the incorporation of appropriate legal provisions.<sup>38</sup>

### 2. National Institutions

14. The Ministry of Water Resources and Land Reclamation plays a key role in the system of water resources administration of Tajikistan. In particular, it is responsible for the construction, operation and maintenance of irrigation and drainage infrastructure, and river regulation works. However, a number of other agencies also hold some water management responsibilities, with monitoring and water management for energy generation being key areas where responsibilities are shared.<sup>39</sup>

15. The fragmentation of responsibilities in the water resources sector and a lack of coordination between the two major water users in Tajikistan limits efficient utilization of available water for both agriculture and power generation. To improve water resource utilization, Government needs to harmonize the conflicting water requirements of the major users. A river basin or watershed management approach to water resources utilization has generally been accepted by the MWRLR as the most appropriate approach to water resources utilization and management. A river basin management approach also implies an institutional framework, which would also re-define the role of the MWRLR as either a bulk water user or as a regulatory authority.

16. The responsibilities of the Ministry of Agriculture include the development of agriculture, ensuring the efficiency of land use and the preservation of the quality of agricultural land. The Ministry develops cotton production targets and schedules for oblasts and rayons, which provide the basis for annual irrigation plans prepared at the farm level and approved by MWRLR and its regional and district offices. The Ministry also controls the transportation, storage and use of chemical fertilizers and herbicides for cotton production and determines the content of residual quantity of pesticides in water and soil. A major

<sup>38</sup> A detailed review of the legal and institutional aspects of water management within Tajikistan has been prepared by the TACIS-funded project Aral Sea Water Resources Management Project (ASWERAM: Project 30560: Development of effective integrated water resources management in two pilot subcatchments of the Aral Sea basin).

<sup>39</sup> To detail the provision of the Water Code, the Government has progressively adopted a series of Decisions (*postanovlenye*) calling, in turn, for ministerial orders (*prekaz*) and instructions (*instruktsia*) for their implementation. A list of the water and water-related legislation in force is shown on Table 1.2, Supplementary Appendix L. The main provisions of Tajikistan's Water Code are found in Appendix E, Supplementary Appendix L.

weakness in the sector is that there is no overall agricultural sector strategy and therefore a lack of direction in programs and activities.

17. The report on Farm Debt Resolution and Policy Reforms (TA 4052-TAJ) contains a comprehensive analysis of the institutional issues involved and detailed findings and recommendations. O&M financing, including respective expenditure allocations between gravity and pumping schemes, policy issues and proposal for institutional change are covered in Annex 5, Irrigation and Drainage Systems Finances. Annex 6 on Water Resources Management, Finances and Institutions presents an overview of the water sector, including analysis of existing infrastructure and institutions, highlights development issues and operational constraints, and recommends institutional changes.

### 3. Local Institutions

18. At the regional and district levels, MWRLR's regional (*Oblvodkhoz*) and district (*Raivodkhoz*) offices are responsible for the development and distribution of water resources and for the construction, and O&M of the I&D networks, from system headworks down to farm boundaries. The district offices make agreements with farms and WUAs for the delivery of water, but these agreements only mention the volume of water to be delivered and make no reference to the timing of deliveries.

19. At the district level the Ministry of Agriculture is represented by the Department of Agriculture within the Hukumat and the first deputy of the Hukumat is always responsible for agricultural matters within the local administration. The role of the department is essentially one of planning and co-ordination of production. It does not include, for example, any extension or technical service for crop production. Under the former system, technical inputs were provided by specialists attached to the sovkhoses and kolkhoses or by research institutes. In the post-independence period, this system has collapsed and while the Ministry of Agriculture retains its planning and managerial function the provision of technical services to the sector has largely collapsed.

### D. Sector Challenges

20. The principal challenges facing the agriculture and water sector are to increase agricultural production and productivity to benefit all farm households through greater employment opportunities, higher incomes and increased food security. Irrigation infrastructure is a key element in the rural economy but has deteriorated extensively due to the civil conflict and the lack of resources for adequate operation, maintenance and investment. Key areas for the future are the maintenance, operation and sustainability of irrigation infrastructure, farmer participation in irrigation management, the reduction of farm debt and increased access to credit, improved agricultural support services and an incentive structure for promoting increased production. In order to provide the resources for continuing maintenance of the irrigation and drainage systems appropriate scales of payment for water need to be used, and regular payment of these fees assured.<sup>40</sup>

21. TA linked to the loan will provide for the establishment of a WUA support unit within MWRLR and the institutionalization of water user groups as an accepted part of the overall management of water resources. The TA will also identify measures that can be taken to

<sup>40</sup> To ensure increased farm productivity and improved rural living standards, and to support project implementation, the review and loan fact-finding mission for TA No. 4143-TAJ: Water Resources Development and Rehabilitation initiated policy dialogue with the Government of Tajikistan covering the following initiatives: (i) introduction of differential water fees for gravity and pumped irrigation schemes; (ii) full cost recovery for potable water supply systems; (iii) enhanced support to the WUAs operation; and (iv) accelerated farm restructuring and land distribution in the project area. A matrix summarizing the key policy reforms is shown as Appendix 8 of the Aide Memoire of the Mission.

enhance and strengthen the role of the private sector in the provision of input and output services to the agricultural sector.

22. Government has already made considerable progress towards the establishment of more sustainable policies for land, agriculture and water and it is committed to furthering this process and enhancing the performance of the agriculture and water sectors to improve incomes and reduce rural poverty. The Project will support this objective through the rehabilitation of essential irrigation infrastructure in 5 project areas,

23. Though many rural institutions are weak, there is wide acknowledgement from both government and donors that change is needed, not least of which is the growing realization that institutional strengthening must go hand-in-hand with physical rehabilitation. It is anticipated that WUAs will take on increasing importance in Tajikistan's farm water management and O&M. Likewise, village based organizations developing potable water supply systems need institutional strengthening, to ensure long term O&M and financial viability. Agricultural institutions, need to be re-focused on the needs of the farmers, and providing services to farmers, rather than on the needs of larger external investors. The rural poor, especially vulnerable groups such as women, also require institutional support and active participation in all project activities. The Project will explicitly provide institutional capacity building in these sectors, to ensure the long-term institutional and financial viability of rural institutions.

### MAJOR EXTERNAL ASSISTANCE RELATED TO AGRICULTURE SECTOR

Project	Funding Source	Amount (\$ million)	Year
Institutional Building Technical Assistance Project	WB	5.0	1996
Agriculture Recovery and Social Protection Credit	WB	50.0	1996
Pilot Poverty Alleviation Project	WB	12.0	1997
Postconflict Rehabilitation Credit	WB	10.0	1997
Postconflict Emergency Reconstruction Project	WB	10.0	1998
Structural Adjustment Credit Project	WB	50.0	1998
Emergency Flood Assistance Project	WB	5.0	1998
Structural Adjustment Credit (Supplement)	WB	6.7	1999
Farm Privatization Support Project	WB	20.0	1999
Institutional Building Technical Assistance Project (2)	WB	6.7	1999
Emergency Flood Assistance Project (Supplement)	WB	2.0	1999
Lake Sarez Emergency Mitigation Project	WB	0.5	2000
Rural Infrastructure Rehabilitation Project	WB	20.0	2000
Emergency Drought Assistance	WB	3.1	2001
Structural Adjustment Credit Project (2)	WB	50.0	2001
Second Poverty Alleviation Project	WB	13.8	2002
Pamir Private Power Project	WB	10.0	2002
Community Agriculture and Watershed Management Project	WB	20.0	2004
<b>Subtotal</b>		<b>295.0</b>	
Postconflict Infrastructure Program	ADB	40.0	1998
Emergency Flood Rehabilitation Project	ADB	5.0	1999
Emergency Restoration of Yavan Water Conveyance System Project	ADB	3.6	2001
Agriculture Rehabilitation Project	ADB	35.0	2002
<b>Subtotal</b>		<b>83.6</b>	
Tajikistan Rural Poverty Reduction Project	JFPR	2.9	2000
<b>Subtotal</b>		<b>2.9</b>	
Farm Privatization Support Project	EU, USAID	1.1	1996
Seed Program Project	EU	11.0	1996
Reconstruction, Rehabilitation and Development Program	UNDP	13.5	1996
Farmers' Irrigation Project	USAID	1.5	2000
Dangara Valley Irrigation Project	IDB	20.0	2001
Irrigation Sector Improvement Project	USAID	2.5	2002
Farmer Ownership Model	IFC	0.25	2002
Development of Effective Integrated Water Resources Management (ASREWAM)	EU		2003
Water User Association Program (Central Asia)	USAID	7.5	2004
Non-Project Grant funded Aid Program	Japan	20.0	2001
SEF SugdAgroServe/ Farmer Ownership Model	IFC	0.5	2004
<b>Subtotal</b>		<b>77.85</b>	
SEF SugdAgroServe/ Farmer Ownership Model	IFC	0.5	2004
<b>Total</b>		<b>459.35</b>	

ADB = Asian Development Bank, EU = European Union, IDB = Islamic Development Bank, IFC = International Finance Corporation, JFPR = Japan Fund for Poverty Reduction, UNDP = United Nations Development Programme, USAID = US Agency for International Development, WB = World Bank.

Source: Asian Development Bank Estimates

## SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

### A. Introduction

1. This summary initial environmental examination (SIEE) includes an assessment of environmental benefits; adverse effects; and recommended mitigation and monitoring measures related to the Irrigation Rehabilitation Project in Tajikistan.<sup>41</sup>

### B. Description of the Project

2. The objective of the Project is to increase the income of rural communities through: provision of reliable irrigation supplies in the project areas, improved farm productivity, improved access to safe water for targeted rural communities, and policy reforms supporting project implementation. The Project will be located in five districts and will have four components: (i) cost-effective and prioritized rehabilitation of irrigation and drainage infrastructure and support to improve water management covering 47,000 hectares (ha) with a rural beneficiary population of 246,000; (ii) improvement of rural water supply systems for 53,000 beneficiaries; (iii) support to private farmers for improved agricultural development with on-farm demonstrations covering 1,000 ha; and (iv) project management, monitoring, and evaluation. The proposed total project cost is \$29 million.

### C. Description of the Environment

3. The climate of Tajikistan is continental, with hot summers and cold winters. Rainfall is low and falls mainly in winter and spring. Lowland project areas are situated on sloping alluvial outwash fans or level valley floors below and in-between moderate to steeply sloping mountains. Soils are typically silty gray-brown desert soils of alluvial origin and relatively low inherent fertility. In some places loess (wind-blown) soils have been developed for irrigation; these are more fertile but suffer from erosion where water is uncontrolled. Soil salinity is a problem in some locations due to high groundwater resulting from excess irrigation and/or poor drainage. One project area lies along the Bartang River in the Pamirs, a tributary of the Panj River which forms the border with Afghanistan.<sup>42</sup> Irrigation water supplies are all taken from surface water. Chemical water quality is generally good, but high sediment levels, variable flows, shifting river channels, and bank erosion affect irrigation system intakes and cause silting of canals and rapid wear of pumps. Groundwater is fresh under the larger, snow-fed rivers, but can be saline elsewhere.

4. Tajikistan's wide range of altitudes is home to a rich mixture of ecosystems and has rich biodiversity, however, the ecosystems in project areas have been extensively modified in the last 50 years.<sup>43</sup> As a result both terrestrial and aquatic biodiversity is considered to have been much reduced since the beginning of accelerated agricultural and industrial development in the 1950s. The project areas are now commercial agricultural landscapes comprising cultivated fields, orchards and vineyards, mulberry and poplar plantations, roads, canals, drains, and built-up areas with houses and gardens. These artificial landscapes

<sup>41</sup> The SIEE summarizes the IEE which is based on information provided in the project feasibility study, a review of available reports and national environmental regulations, the analysis of existing data, discussions with stakeholders, and field visits. The IEE report has been reviewed by the State Committee for Nature Protection and Forestry. Comments on the draft IEE were received on 19 July 2004 and a revised version has been submitted for Government approval.

<sup>42</sup> This highland landscape is one of steep-sided mountain valleys with snow-fed mountain streams, active alluvial cones and fans, terraces, fast-flowing rivers, erosion, and very limited vegetation cover. Irrigable land is scarce, with some 1,400 ha in the entire district, mostly at around 2,000 meter (m) elevation on poorly drained, erosion-prone floodplain land beside the Panj River.

<sup>43</sup> This is due to large-scale projects for irrigation especially for cotton, hydroelectricity, water reservoirs, mining, agricultural expansion and logging. Industrial pollution, discharge of mining wastes, use of pesticides, and the construction of infrastructure for water resource development have had a particularly severe impact on aquatic and riparian ecosystems. The protracted civil war and economic problems that followed independence reduced industrial pollution but exacerbated other problems, in particular uncontrolled deforestation for fuelwood, agricultural expansion, hunting, and fires.

provide little habitat for endangered or threatened species. There are no protected areas within the project areas.

5. The project areas are dependent on agriculture. The principal crop within the irrigation systems is irrigated cotton. Most agricultural workers wages are extremely low and often unpaid or made in kind (cotton stalks for winter fuel). Household food security is dependent on household plots, rainfed winter wheat on former rangeland, limited domestic livestock, and remittances from male household members working seasonally in Russia. There are high degrees of poverty in the project area, whose districts have all been classified as poor, very poor or extremely poor in a recent national survey<sup>44</sup>. The rural poor eat an inadequate diet, have insufficient income or production to provide food for all seasons, and have low stocks of food. Malnutrition is widespread.

6. Public health in the project area is affected by both agricultural practices and problematic drinking water supplies. Food insecurity encourages the expansion of wet rice cultivation close to human settlements, which provides habitat for malaria-transmitting mosquitoes. Most piped water systems have fallen into disrepair. Many rural households now depend on surface water, usually rivers or canals. This water is often of low bacteriological and chemical quality and, together with low levels of hygiene and high groundwater levels in human settlements that adversely affects sanitation, contributes to the high levels of communicable disease, especially amongst children.

#### **D. Potential Environmental Impacts and Mitigation Measures**

7. **Environmental Benefits.** The Project will have significant positive environmental impacts primarily through arrested land degradation due to salinity build-up and soil erosion in irrigated areas, and providing rural water supply in the project area.<sup>45</sup> The improvement of intake structures, construction of sedimentation basins, and provision of sediment handling equipment will reduce sediment entering the systems by 70%. The repair of canal lining and key control structures, and the desilting of canals will result in restoration of canal capacity and a reduction in water losses thereby improving water availability. The re-vegetation of sand dunes will prevent the deposition of saline wind-blown sand on pressure pipes. Desilting drains will improve the drainage system reducing waterlogging and secondary soil salinization. The problem of waterlogging affects not only agricultural areas but also human settlements resulting in higher groundwater which adversely affects sanitation and causes public health problems.

8. The Project will support sustainable agricultural development including the promotion of integrated pest management (IPM). The Project will also support the establishment of on-farm water management demonstration sites in each project area. These will promote the use of techniques such as land levelling and precise irrigation applications, thus promoting improved water use efficiency. Through the provision of safe water supply to rural communities, the Project is expected to result in significant positive impacts on public health, household workload, and quality of rural life. Significant positive impacts on agricultural development and productivity, rural incomes, institutional development, public health, and soil and water resources, brought by the Project will enhance net environmental benefits.

9. **Environmental Issues Related to Project Location.** The Project will rehabilitate existing systems for irrigation water supply, which are based on diversion of river flows. There will be no additional abstraction above pre-existing levels except on one mountain stream and therefore no change in river hydrology. The quality and volume of return flows

<sup>44</sup> National Social Investment Fund for Tajikistan (NSIFT). 2002. Investment Plan for the Second Poverty Reduction Project. Dushanbe.

<sup>45</sup> These address two of the six major environmental problems in Tajikistan (ADB. 2003. Draft Tajikistan Country Environmental Analysis. Manila.)

are not expected to change measurably within the lifetime of the Project.<sup>46</sup> The Project has been designed to avoid involuntary resettlement and impacts due to conflicting land use or additional impediments to movement of people and livestock. Resettlement impacts, if any, will be addressed through a short resettlement plan in accordance with Government regulations and approval procedures, as well as ADB safeguard policies.

10. The settling basins proposed for rehabilitation and construction at canal intakes along the Panj River are adjacent to wetlands in controlled zones along the border with Afghanistan. Measures will be undertaken to minimize impacts on wetland habitats during construction. In Rushon, Farkhor, and Panj Districts irrigated areas are subject to bank erosion along the Panj River. The Ministry of Emergency Situations and Civil Defense is undertaking bank protection works in some of these areas. In Sughd Region, gravity water supply to the eastern parts of the Asht irrigation scheme adjacent to the project area is reported to be affected by inadequate irrigation releases from Uzbekistan despite an international water sharing agreement. Improved cooperation should be sought. In Khatlon Region, water is taken from the Panj River which forms the border with Afghanistan—no additional diversion is considered and the status quo will not be altered by the Project.

11. All drinking water supplies will be from springs or groundwater. Water abstraction will be small-scale and will not significantly affect local rivers or aquifers. All centralized water supplies will be disinfected to avoid impacts from poor water quality. The Project will not cause conflicts in water use.

12. **Environmental Issues Related to Project Design.** The project areas rely on surface water diversion for irrigation water supply. Major design issues are (i) management of flood flows at intakes, (ii) capture of water during low flows, and (iii) high levels of suspended sediment. Project investments will be designed to resist flooding and erosion, and to cope with high sediment levels and variable flows. High sediment levels are a major burden on maintenance budgets, but can be reduced by providing settling basins at the main intakes. The Project will ensure that these structures are properly designed and will provide training to ensure efficient operation. Projected return flows from the settling basins and from drainage will not significantly alter downstream water quality either in terms of mineralization or sediment. The Project will assist in minimizing irrigation water supply conflicts by supporting the development of government capacity to promote water users' associations (WUA), by improving the reliability of the supply, and by setting up on-farm water management demonstration areas to promote increased water use efficiency.

13. Consistent with the provisions of the Water Code and associated decree number 437 issued in 2002, the Project will ensure that measures are undertaken to ensure adverse effects on fish resources are mitigated. The most crucial issues are the impacts on upstream fish movement of the proposed weir on the Kofarnihon River, and the integration of measures to avoid fish entrainment in intakes and pumps to be rehabilitated. The Project will support the fishery and pumping study intended to be carried out at Qairogum Reservoir by ADB's Agriculture Rehabilitation Project (ARP), and apply the findings to the irrigation pumping stations to be rehabilitated under the Project.

14. The Project will promote improved seed production, multiplication and distribution. These activities will not affect the limited existing agrobiodiversity or wild diversity. Tajikistan is developing policies and capacity in relation to genetically-modified organisms following its accession to the Cartagena Protocol on Biosafety of the Convention on Biological Diversity. The Project will operate in accordance with the Protocol.

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<sup>46</sup> This assumes complementary activities will not result in significant changes in irrigation system operation and farmer behavior.

15. **Environmental Issues Related to Construction Stage.** The Project will not involve extensive earthworks on sloping ground, and is not expected to create erosion hazards. Existing gulying in Vahdat District will be dealt with through structural and vegetative measures. Sediment from desilting operations in channels is non-toxic and will be disposed of in fields or other approved sites. All work in or near rivers will be carefully controlled to avoid localized pollution from waste oils and spills of diesel. Work near the Panj River will require security clearance from the border security force and formal confirmation from Russian military authorities that the areas are clear of mines.

16. Health, safety and environmental management standards during construction will be improved by developing and enforcing relevant contract clauses. In addition to controlling solid and liquid waste disposal and site environmental management especially dust, these clauses will include a requirement for testing oils for polychlorinated biphenyls (PCBs) from any transformers removed from service, and their proper disposal. Careful attention will also be given to transparency in tendering and payment procedures and effective supervision on site. The Project will also provide testing kits to local units of the Sanitary-Epidemiological Station to support drinking water source approval functions.

17. **Environmental Issues Related to Project Operation.** Flood damage to canal intakes will be reduced by appropriate intake strengthening and design. Siltation of canals and sediment damage to pumps will be reduced by providing settling basins. Silt from settling basins will either be disposed of to waste land or flushed back to the main rivers. No significant impacts are expected.<sup>47</sup> Reduced siltation of canals will permit diversion of maintenance funds to de-silting of drainage channels, reducing groundwater levels and thereby reducing secondary salinization. Pesticide and fertilizer use may increase if agricultural incomes rise; the Project will train farmers in IPM techniques and no significant negative impacts are expected.

18. A total of \$ 112,000 or 0.4% of total project costs will be invested for implementing the recommended mitigation measures, excluding consulting services.

## **E. Environmental Monitoring Program and Institutional Requirements**

19. A monitoring and evaluation unit (MEU) will be established within the Project Management Office (PMO) to monitor project implementation, performance and impacts. Consultants will be engaged to provide further assessment of environmental impacts of project components, evaluate environmental monitoring requirements, and prepare a long-term environmental monitoring program for the Project.<sup>48</sup> Consultants' inputs will also be provided to assist in planning and executing the required fisheries studies, and consequent measures to be adopted. For sustainability, the Project's environmental monitoring program should be based on making maximum use of existing institutions and building on directly relevant initiatives such as those undertaken under the ARP. The ARP is supporting the State Committee for Nature Protection and Forestry (SCNPF) with about \$100,000 to ensure regular monitoring of environmental impacts and mitigation measures. In addition, ADB has

<sup>47</sup> The sustainability of the project's improvements to irrigation water supply, groundwater, and soil conditions is dependent on adequate operation and maintenance (O&M) of the rehabilitated intakes, canals, gates, and drains. O&M of main structures will remain the responsibility of MWRLR's district administrations (rayvodkhoz) or their successor organizations. Cost recovery will be sought through higher tariffs on water users, reflecting higher reliability of supply, and better collection rates.

<sup>48</sup> The environmental monitoring program will have two components: environmental compliance monitoring focusing on ensuring that physical investments are carried out in accordance with relevant clauses in contract documents and Government regulations; and environmental performance monitoring. Environmental performance monitoring will cover: (i) key variables on each irrigation scheme (irrigation water quality, drainage water quality, depth to groundwater, and soil quality); (ii) health, gender and other social impacts; and (iii) public involvement (through input of local information by the WUAs and water supply committees). Additional consultants inputs of 2 person-months international and 4 person-months domestic, will reduce the risk of under-performance of environmental monitoring and evaluation.

assisted the SCNPF with a 12-month institutional strengthening TA<sup>49</sup> which included the supply of field monitoring equipment. The World Bank Rural Infrastructure Rehabilitation Project has supplied equipment and training to the central laboratory of MWRLR's specialized Hydro-geological Amelioration Expedition for monitoring irrigation and drainage water quality.<sup>50</sup>

## **F. Public Consultation and Information Disclosure**

20. A significant level of public consultation was undertaken during project preparation. Stakeholders at the central, regional, district and project area levels were identified. Fieldwork for poverty and social analysis sought the opinion of stakeholders including the conduct of a large numbers of village and farm-level interviews. A household survey was undertaken involving 200 respondents. Meetings were conducted with concerned government agencies at all administrative levels. Interviews were held with nongovernmental organizations and farmers to collect data and identify local issues and priorities. A stakeholder workshop was held in Dushanbe in July 2004 to obtain feedback on the proposals in the Interim Report and assist final design. All consultations supported the Project interventions, which match clear district-level priorities. The stakeholder workshop was followed by meetings with the SCNPF to elicit their comments on the IEE and to ensure that the Project followed environmental regulations of Tajikistan. During Project implementation, public participation will be channeled through the WUAs and water supply committees.

## **G. Findings and Conclusions**

21. The Project will have significant positive environmental impacts primarily through arrested land degradation due to salinity build-up and soil erosion in irrigated areas, and providing rural water supply in the project area—major environmental issues in Tajikistan. Findings show that the Project will have no significant adverse environmental impacts. Sufficient mitigation measures, and environmental management and monitoring integrated into project design and cost will address the small impacts identified. A full-scale environmental impact assessment is required.

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<sup>49</sup> ADB, 2000. *Technical Assistance to the Republic of Tajikistan for Capacity Building for Environmental Assessment and Monitoring Project*. Manila.

<sup>50</sup> The IEE notes that regional soil and water or environmental laboratories will require some further upgrading and rationalization.

**Table A5.1. Project Components by Year**  
(\$'000)

Item	Totals Including Contingencies						Total
	2005	2006	2007	2008	2009	2010	
<b>A. Rehabilitation of Irrigation &amp; Drainage Infrastructure</b>							
Asht	38.6	1,058.5	4,039.0	3,538.7	832.9	-	9,507.7
Vahdat	145.9	268.8	687.2	341.6	-	-	1,443.5
Farkhor	179.3	940.5	2,064.1	2,146.7	459.5	-	5,790.0
Panj	130.5	688.4	1,637.0	1,349.2	162.7	-	3,967.8
Rushon	59.9	145.6	217.5	216.5	115.3	-	754.8
Water Management Support	64.6	9.8	4.9	4.9	4.8	-	88.9
<b>Subtotal Rehabilitation of Irrigation &amp; Drainage Infrastructure</b>	<b>618.7</b>	<b>3,111.6</b>	<b>8,649.8</b>	<b>7,597.5</b>	<b>1,575.2</b>	<b>-</b>	<b>21,552.8</b>
B. Support for Agricultural Development	103.7	247.4	142.5	141.9	140.6	109.3	885.5
C. Improvement of Potable Water Supply Systems	34.8	542.3	1,157.5	675.4	99.5	-	2,509.5
D. Project Management	824.0	1,139.1	527.6	386.3	293.7	210.4	3,381.0
<b>Total PROJECT COSTS</b>	<b>1,581.2</b>	<b>5,040.3</b>	<b>10,477.5</b>	<b>8,801.1</b>	<b>2,108.9</b>	<b>319.7</b>	<b>28,328.8</b>

Table A5.2. Components Project Cost Summary

Items	(Local '000)			(US\$ '000)			% Foreign Exchange	% Total Base Costs
	Local	Foreign	Total	Local	Foreign	Total		
<b>A. Rehabilitation of Irrigation &amp; Drainage Infrastructure</b>								
Asht	13,176.1	15,548.2	28,724.3	4,392.0	5,182.7	9,574.8	54	34
Vahdat	3,261.2	967.7	4,228.9	1,087.1	322.6	1,409.6	23	5
Farkhor	10,148.6	7,045.6	17,194.2	3,382.9	2,348.5	5,731.4	41	20
Panj	7,253.7	4,476.8	11,730.5	2,417.9	1,492.3	3,910.2	38	14
Rushon	1,884.1	330.4	2,214.4	628.0	110.1	738.1	15	3
Water Management Support	191.7	70.9	262.6	63.9	23.6	87.5	27	-
<b>Subtotal Rehabilitation of Irrigation &amp; Drainage Infrastructure</b>	<b>35,915.4</b>	<b>28,439.6</b>	<b>64,355.0</b>	<b>11,971.8</b>	<b>9,479.9</b>	<b>21,451.7</b>	<b>44</b>	<b>76</b>
B. Support for Agricultural Development	2,314.5	286.8	2,601.3	771.5	95.6	867.1	11	3
C. Improvement of Potable Water Supply Systems	3,934.6	3,423.2	7,357.8	1,311.5	1,141.1	2,452.6	47	9
D. Project Management	4,413.1	5,471.0	9,884.1	1,471.0	1,823.7	3,294.7	55	12
<b>Total BASELINE COSTS</b>	<b>46,577.5</b>	<b>37,620.6</b>	<b>84,198.1</b>	<b>15,525.8</b>	<b>12,540.2</b>	<b>28,066.0</b>	<b>45</b>	<b>100</b>
Physical Contingencies	1,903.0	1,143.0	3,046.0	634.3	381.0	1,015.3	38	4
Price Contingencies	7,040.2	5,451.0	12,491.2	-421.7	-330.9	-752.6	44	-3
<b>Total PROJECT COSTS</b>	<b>55,520.7</b>	<b>44,214.6</b>	<b>99,735.4</b>	<b>15,738.4</b>	<b>12,590.3</b>	<b>28,328.8</b>	<b>44</b>	<b>101</b>
Interest During Implementation	-	2,364.0	2,364.0	-	685.5	685.5	100	2
<b>Total Costs to be Financed</b>	<b>55,520.7</b>	<b>46,578.6</b>	<b>102,099.4</b>	<b>15,738.4</b>	<b>13,275.9</b>	<b>29,014.3</b>	<b>46</b>	<b>103</b>

**Table A5.3. Expenditure Accounts Project Cost Summary**

Item	(Local '000)			(US\$ '000)			% Foreign Exchange	% Total Base Costs
	Local	Foreign	Total	Local	Foreign	Total		
<b>I. Investment Costs</b>	45							
<b>A. Civil Works</b>								
Off-farm Structures	13,381.3	2,271.0	15,652.3	4,460.4	757.0	5,217.4	15	19
Minor Civil Works & Buildings	541.7	135.4	677.2	180.6	45.1	225.7	20	1
Water Supply & Sanitation	1,083.6	270.9	1,354.6	361.2	90.3	451.5	20	2
<b>Subtotal Civil Works</b>	<b>15,006.7</b>	<b>2,677.4</b>	<b>17,684.0</b>	<b>5,002.2</b>	<b>892.5</b>	<b>5,894.7</b>	<b>15</b>	<b>21</b>
<b>B. Equipment</b>								
Office Equipment & Supplies	192.6	192.6	385.3	64.2	64.2	128.4	50	-
Pumps, Motors & Machinery	9,287.3	16,510.8	25,798.2	3,095.8	5,503.6	8,599.4	64	31
Pipes & Other Equipment	10,240.5	9,489.4	19,729.9	3,413.5	3,163.1	6,576.6	48	23
Electrical Equipment	3,674.0	3,006.0	6,680.1	1,224.7	1,002.0	2,226.7	45	8
<b>Subtotal Equipment</b>	<b>23,394.5</b>	<b>29,198.9</b>	<b>52,593.4</b>	<b>7,798.2</b>	<b>9,733.0</b>	<b>17,531.1</b>	<b>56</b>	<b>62</b>
C. Vehicles	79.8	205.2	285.0	26.6	68.4	95.0	72	-
<b>D. Materials</b>								
Office & Laboratory Materials	153.6	115.0	268.7	51.2	38.3	89.6	43	-
I&D Materials	543.3	362.2	905.5	181.1	120.7	301.8	40	1
<b>Subtotal Materials</b>	<b>696.9</b>	<b>477.2</b>	<b>1,174.2</b>	<b>232.3</b>	<b>159.1</b>	<b>391.4</b>	<b>41</b>	<b>1</b>
<b>E. Training, Extension &amp; Studies</b>								
Training & Extension	2,510.1	-	2,510.1	836.7	-	836.7	-	3
Surveys & Studies	1,056.0	-	1,056.0	352.0	-	352.0	-	1
Water Committees	33.9	-	33.9	11.3	-	11.3	-	-
<b>Subtotal Training, Extension &amp; Studies</b>	<b>3,600.0</b>	<b>-</b>	<b>3,600.0</b>	<b>1,200.0</b>	<b>-</b>	<b>1,200.0</b>	<b>-</b>	<b>4</b>
<b>G. Consulting Services</b>								
International Consultants	-	5,061.9	5,061.9	-	1,687.3	1,687.3	100	6
National Consultants	1,476.9	-	1,476.9	492.3	-	492.3	-	2
<b>Subtotal Consulting Services</b>	<b>1,476.9</b>	<b>5,061.9</b>	<b>6,538.8</b>	<b>492.3</b>	<b>1,687.3</b>	<b>2,179.6</b>	<b>77</b>	<b>8</b>
<b>H. Project Operations</b>								
Office & Staff Costs	754.7	-	754.7	251.6	-	251.6	-	1
PMO & PIU Costs	1,568.0	-	1,568.0	522.7	-	522.7	-	2
<b>Subtotal Project Operations</b>	<b>2,322.7</b>	<b>-</b>	<b>2,322.7</b>	<b>774.2</b>	<b>-</b>	<b>774.2</b>	<b>-</b>	<b>3</b>
<b>Total BASELINE COSTS</b>	<b>46,577.5</b>	<b>37,620.6</b>	<b>84,198.1</b>	<b>15,525.8</b>	<b>12,540.2</b>	<b>28,066.0</b>	<b>45</b>	<b>100</b>
Physical Contingencies	1,903.0	1,143.0	3,046.0	634.3	381.0	1,015.3	38	4
Price Contingencies	7,040.2	5,451.0	12,491.2	-421.7	-330.9	-752.6	44	-3
<b>Total PROJECT COSTS</b>	<b>55,520.7</b>	<b>44,214.6</b>	<b>99,735.4</b>	<b>15,738.4</b>	<b>12,590.3</b>	<b>28,328.8</b>	<b>44</b>	<b>101</b>
Interest During Implementation	-	2,364.0	2,364.0	-	685.5	685.5	100	2
<b>Total Costs to be Financed</b>	<b>55,520.7</b>	<b>46,578.6</b>	<b>102,099.4</b>	<b>15,738.4</b>	<b>13,275.9</b>	<b>29,014.3</b>	<b>46</b>	<b>103</b>

**Table A5.4. Expenditure Accounts by Components (Totals Including Contingencies)**  
(\$'000)

	Rehabilitation of Irrigation & Drainage Infrastructure					Water Management Support	Support for Agricultural Development	Improvement of Potable		Total
	Asht	Vahdat	Farkhor	Panj	Rushon			Water Supply Systems	Project Management	
<b>I. Investment Costs</b>										
<b>A. Civil Works</b>										
Off-farm Structures	779.9	1,046.0	1,479.4	1,309.2	723.6	-	-	-	-	5,338.1
Minor Civil Works & Buildings	103.7	-	78.5	48.4	-	-	-	-	-	230.7
Water Supply & Sanitation	-	-	-	-	-	-	-	462.0	-	462.0
<b>Subtotal Civil Works</b>	<b>883.7</b>	<b>1,046.0</b>	<b>1,557.9</b>	<b>1,357.5</b>	<b>723.6</b>	<b>-</b>	<b>-</b>	<b>462.0</b>	<b>-</b>	<b>6,030.7</b>
<b>B. Equipment</b>										
Office Equipment & Supplies	-	-	-	-	-	0.0	44.1	-	89.4	133.5
Pumps, Motors & Machinery	5,734.0	-	1,630.9	899.0	-	-	-	150.0	-	8,413.9
Pipes & Other Equipment	1,862.7	7.7	1,643.1	1,390.6	-	54.7	101.1	1,660.7	-	6,720.6
Electrical Equipment	996.1	-	911.3	277.9	-	-	-	90.2	-	2,275.5
<b>Subtotal Equipment</b>	<b>8,592.8</b>	<b>7.7</b>	<b>4,185.3</b>	<b>2,567.6</b>	<b>-</b>	<b>54.7</b>	<b>145.1</b>	<b>1,900.9</b>	<b>89.4</b>	<b>17,543.5</b>
C. Vehicles	-	-	-	-	-	-	5.2	-	93.7	98.9
<b>D. Materials</b>										
Office & Laboratory Materials	-	-	-	-	-	-	-	18.4	73.0	91.4
I&D Materials	-	297.5	-	11.5	-	-	-	-	-	309.0
<b>Subtotal Materials</b>	<b>-</b>	<b>297.5</b>	<b>-</b>	<b>11.5</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>18.4</b>	<b>73.0</b>	<b>400.4</b>
<b>E. Training, Extension &amp; Studies</b>										
Training & Extension	-	-	-	-	-	34.2	697.8	47.9	71.5	851.5
Surveys & Studies	31.2	92.2	46.8	31.2	31.2	-	-	68.8	61.2	362.8
Water Committees	-	-	-	-	-	-	-	11.6	-	11.6
<b>Subtotal Training, Extension &amp; Studies</b>	<b>31.2</b>	<b>92.2</b>	<b>46.8</b>	<b>31.2</b>	<b>31.2</b>	<b>34.2</b>	<b>697.8</b>	<b>128.3</b>	<b>132.7</b>	<b>1,225.8</b>
<b>G. Consulting Services</b>										
International Consultants	-	-	-	-	-	-	-	-	1,735.2	1,735.2
National Consultants	-	-	-	-	-	-	-	-	503.1	503.1
<b>Subtotal Consulting Services</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2,238.4</b>	<b>2,238.4</b>
<b>H. Project Operations</b>										
Office & Staff Costs	-	-	-	-	-	-	-	-	257.9	257.9
PMO & PIU Costs	-	-	-	-	-	-	37.3	-	495.8	533.2
<b>Subtotal Project Operations</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>37.3</b>	<b>-</b>	<b>753.8</b>	<b>791.1</b>
<b>Total PROJECT COSTS</b>	<b>9,507.7</b>	<b>1,443.5</b>	<b>5,790.0</b>	<b>3,967.8</b>	<b>754.8</b>	<b>88.9</b>	<b>885.5</b>	<b>2,509.5</b>	<b>3,381.0</b>	<b>28,328.8</b>
Taxes	1,819.8	224.3	941.8	639.1	90.1	10.4	32.6	469.2	54.1	4,281.4
Foreign Exchange	5,118.5	330.4	2,356.1	1,506.0	112.6	24.6	98.7	1,166.9	1,876.6	12,590.3







## INDICATIVE CONTRACT PACKAGES

Component/Package	Tentative Value (\$)	Mode of Procurement <sup>a</sup>
<b>A. Support for Agriculture Development</b>		
Procurement of Equipment for Seed Production	108,000	IS
<b>B. Rehabilitation of Irrigation and Drainage Infrastructure</b>		
<b>1. Rehabilitation of Canal Headworks, and Pumping Stations</b>		
<b>a. Irrigation and Drainage Infrastructure in Asht District</b>		
i. Delivery/Installation/Rehabilitation of ANS-1,2 and 3B pumping stations	5,700,000	ICB
ii. Delivery, Installation and Testing of Pressure Delivery Pipes for ANS-1, 2 and 3B pumping stations	2,000,000	ICB
iii. Intake Channel to ANS-1 Pump Station, headworks and forebay	275,000	LCB
iv. Rehabilitation of Off-Farm Irrigation Infrastructure and Construction of Pangaz-Say Headworks	5,000,000	LCB
<b>b. Irrigation and Drainage Infrastructure in Farkhor District</b>		
i. Delivery/Installation/Rehabilitation of Urtaboz-1, 3, 4 and 4a pumping stations	2,600,000	ICB
ii. Delivery, Installation and Testing of Pressure Delivery Pipes for Urtaboz-1, 3, 4 and 4a pumping stations	1,600,000	ICB
iii. Construction of a Sedimentation Basin including Structures at Chubek Headworks	960,000	ICB
iv. Rehabilitation of Off-Farm Irrigation and Drainage Infrastructure	510,000	LCB
<b>c. Irrigation and Drainage Infrastructure in Panj District</b>		
i. Delivery/Installation/Rehabilitation of Fayzabadqala-0 and 1 pumping stations	1,170,000	ICB
ii. Delivery, Installation and Testing of Pressure Delivery Pipes for Fayzabadqala-0 and 1 pumping stations	1,390,000	ICB
iii. Rehabilitation of Halqoyar Intake Canal and Construction of Sedimentation basin	429,000	LCB
iv. Rehabilitation of Off-Farm Irrigation and Drainage Infrastructure	880,000	LCB
<b>d. Irrigation and Drainage Infrastructure in Rushon District</b>		
i. Rehabilitation of Off-Farm Irrigation Canals and Structures	530,000	LCB
ii. Minor work and sediment removal	193,000	LCB
<b>e. Irrigation and Drainage Infrastructure in Vahdat District</b>		
i. Rehabilitation of Rohati Main Canal, Headworks, and Structure Protection	440,000	LCB
i. Replacement of Siphon on Rohati Main Canal	696,000	LCB
ii. Rehabilitation of Dashtibed Canal Headworks and Protection Works	214,000	LCB
<b>2. Support to Water Management Agencies</b>		
<b>Operation and Maintenance Machinery</b>		
Procurement of O&M Machinery for desilting of sediment basins	817,000	IS
<b>WUA Support</b>		
Equipment for WUA Support Unit (MWRLR, Field Offices)	129,000	IS
Procurement of Water Management Equipment	25,000	DP
<b>C. Improvement of Potable Water Supply Systems</b>		
<b>1. Improvement of Potable Water Supply of Shaydon Village in Asht District</b>		
a. Delivery/Installation of Water Supply Pipes and Rehabilitation of Water Supply Infrastructure	556,000	LCB
<b>2. Improvement of Potable Water Supply System of Gulshan Village in Farkhor District</b>		
a. Delivery/Installation of Water Supply Equipment and Rehabilitation of Water Supply Infrastructure	338,000	LCB
<b>3. Improvement of Potable Water Supply of Somoni Farm Villages in Panj District</b>		
a. Delivery/Installation of Water Supply Pipes, Equipment and Rehabilitation of Water Supply Infrastructure	907,900	LCB
<b>4. Improvement of Potable Water Supply of Rushan Villages in Rushon District</b>		
a. Delivery/Installation of Water Supply Pipes and Rehabilitation of Water Supply Infrastructure	273,000	LCB
<b>5. Improvement of Potable Water Supply of Simiganj Jamoat in Vahdat District</b>		
a. Drilling of Boreholes, Delivery and Installation of Handpumps	288,000	LCB
<b>D Support to PMO</b>		
a. Procurement of environmental monitoring equipment and furniture	25,000	DP

<sup>a</sup> DP = direct purchase, ICB = international competitive bidding, IS = international shopping, LCB = local competitive bidding.



**TECHNICAL ASSISTANCE**  
**SUPPORT FOR MONITORING POLICY REFORMS**  
**AND IMPROVING FARM AND WATER MANAGEMENT**

**A. Objectives and Scope**

1. The objectives of the technical assistance (TA) are to (i) monitor progress made by the Government in implementing policy reforms that would create a conducive environment for project implementation; (ii) promote competitive providers of farm inputs, technical advice, credit and marketing of products in the selected project areas, and (iii) assist the Government in establishing a water user associations (WUAs) support unit within the Ministry of Water Resources and Land Reclamation (MWRLR).

2. The TA will provide regular monitoring and reporting on progress being made by the Government towards its commitments to meeting safeguards listed in the loan agreement, and also provide an independent monitor of contract award and implementation. The TA for the alternative business providers will focus on (i) analyzing the strengths and limitations of existing business providers beyond the services offered by the traditional investors<sup>51</sup>; and (ii) providing capacity building for selected provider(s) to expand their services to private farmers in the project area. The TA support for the WUAs' unit will focus on (i) defining the unit's mandate, organizational structure, functions, staffing pattern, and legal status; (ii) the development of guidelines for WUA formation and support within the country, and (iii) providing institutional strengthening to ensure the Support Unit could properly operate in a sustainable manner.

3. The TA is divided into two phases: the preparation and the capacity building phases. The outcome would be the farmers in the project areas would receive better service from providers of irrigation and drainage, and be more able to manage their own farms effectively.

**B. Consultants**

4. The TA will require a total input of 12 person months of international and 37 person months of domestic consultants. The following breakdown of the consultants is indicative and subject to revision at consultant selection stage, allowing one specialist to cater for more than one position, and person months are given in parenthesis. The international consultant inputs will include: an irrigation institutions specialist/team leader (7); an agricultural economist (3), financial management/banking specialist (2). The domestic consultancy inputs will comprise: a legal specialist (3); a water users association specialist (6); irrigation specialist (4); a financial management/banking specialist (6); an agricultural economist (3), and monitoring and evaluation specialist (12), and a public awareness specialist (3).

5. Asian Development Bank (ADB) will engage, through a suitably qualified firm, international consultants with domestic associates to provide services in accordance with the terms of reference following the *ADB's Guidelines on the Use of Consultants and arrangements*. The consultants will be required to work closely with the MWRLR and other key stakeholders. The other Government institutions that might participate in the TA implementation include the National Bank of Tajikistan, Ministry of Agriculture; Ministry of Economics and Trade, and Ministry of Justice. The consultants shall also interact with the ADB financed Agricultural Rehabilitation Project, and relevant ongoing projects of other international agencies. Intensive consultations should also be conducted with civil society organizations such as CARE International, ACTED, Agha Khan Foundation; and private

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<sup>51</sup> Traditional investors are local traders/exporters who provide seasonal credit, mostly in kind, to farmers using farming products, mainly cotton, as collateral.

sector organizations, such as *Tojiksogirof* Bank, First Microfinance Bank, farmers, water user associations and traders.

### **C. Description of Tasks**

#### **i. Phase-I: Needs Assessment, Analysis and Preparatory Activities**

##### **a. Selection of Alternative Business Providers**

6. The consultants will undertake the following tasks:

- (i) Assess marketing channels and value added chains of key farming inputs and products; assess the inputs' delivery system in the project areas;
- (ii) Examine margins gained by each chain and channel from/to the farm gate in the project area to main producers/buyers;
- (iii) Assess the marketing mechanisms for key farming inputs and products, and evaluate the available banking and non-banking agricultural financial services in the project areas;
- (iv) Assess the impact of legal, administrative and other factors that might limit development of a free market in provision of farmer support services, and identify how these restrictions might be overcome
- (v) Examine the current investor services in the project area such as credit, farm debts; technical advice; inputs (fertilizers, pesticides, fuel, seeds, etc.) trading; and assess the strengths and limitations of the potential alternative providers to develop competitive business structures in the project area;
- (vi) Develop ranking/selection criteria and, in consultation with the Project Steering Committee (PSC) rank the alternative providers to farmers in the project area to identify the best project partners to develop agricultural business services in the project areas; and
- (vii) In consultation with the farmers and business providers, develop a detailed implementation plan for providing technical support to assist the establishment of alternative marketing structures in the core demonstration areas.

##### **b. Establishment of WUAs Support Unit at MWRLR**

7. The consultants will carry out the following tasks:

- (i) Assess the existing structures within MWRLR that are working with WUAs, and study alternatives for establishing either a new WUAs Support Unit, or for restructuring existing divisions to support WUAs development and operation;
- (ii) Assess the scope, structure and functions of WUAs established by other projects and financiers, and their linkages to MWRLR;
- (iii) Develop (following consultation) appropriate definitions of WUA structure, responsibilities and method of operating for adoption throughout Tajikistan
- (iv) Develop a proposal for organizational arrangements for the WUA Support Unit including its objectives, legal status, mandate, functions, organizational structure, staffing, job descriptions of key staff, etc. – including arrangements for field units such as those to be supported under WRDP;
- (v) Assess capacity building, training needs and other support required by the WUA Support Unit to develop viable and sustainable WUAs in Tajikistan;
- (vi) Prepare guidelines, operation manual, financial plan, and assess the resources required for the day-to-day operation of the Support Unit; and

- (vii) Develop detailed implementation plan for the establishment of the Support Unit as a viable part of MWRLR.

**ii. Phase-II: Capacity Building**

**a. Monitoring of Reforms and Information Dissemination**

8. The dissemination of the TA recommendations, reports, proposed plan of actions will be conducted mostly through reports, consultations and workshops. The consultants will carry out following tasks:

- (i) Consult the key stakeholders regarding the recommendations and proposed plan of actions developed during Phase-I (i.e. the organizational arrangements and needs assessment for the WUA Support Unit and the selected business providers); and adjust the detailed implementation plan of the TA Phase-II to incorporate the main recommendations;
- (ii) Propose systems for monitoring of reforms in the core demonstration areas;
- (iii) Monitor progress on implementation of policy reforms in the project areas, as agreed by the Government, and their impact on farm productivity/profitability, cost and availability of inputs, financial gains, farmers' incentives, etc. The TA will also provide feedback regarding compliance with agreements regarding policy reforms with various bilateral and multilateral agencies, specifically with ADB, World Bank and IMF.
- (iv) Establish a monitoring system as a check against corruption in the award and execution of contracts under the main Project loan. This monitoring will ensure transparency in contract award procedures, and an independent check on the satisfactory implementation of the contracts.
- (v) Carry out an awareness campaign, including development of dissemination materials (e.g. brochures, posters, etc.) for the services offered by the WUA Support Unit and alternative business providers. Disseminate information to farmers in the project areas through consultations, group meetings, and mass media.
- (vi) Organize a workshop at the end of the Phase-II to disseminate the TA recommendations and proposed actions, and assess/analyze implementation of policy reforms in the area

**b. Capacity Building for Selected Business Providers**

9. The consultants will carry out the following tasks:

- (i) Provide technical assistance and support to the selected business providers in developing competitive market structures in the Project core demonstration areas;
- (ii) Develop sample financial agreements for provision of farm inputs and products which are even-handed, easily understood and transparent;
- (iii) Support the selected business providers in introducing internationally recognized investment and lending practices in the core demonstration areas;
- (iv) Propose appropriate systems for investment monitoring in the core demonstration areas; and
- (v) Formulate recommendations concerning how agricultural business provision could be extended to the full WRDP project area and the rest of the country.

### **c. Capacity Building for the WUAs Support Unit**

10. Phase-II of the TA, will commence after staff have been recruited to the Support Unit. The consultants will carry out the following tasks:

- (i) Provide office equipment and support services required for operationalization of the Unit;
- (ii) Train WUA Support Unit staff as identified during the needs assessment in Phase-I;
- (iii) Develop the use of operational guidelines and practices prepared in the first phase of activity for establishment of WUAs through focus on operations to form WUAs using the WRDP project areas as a pilot area, identifying ways to improve procedures and develop an efficient mechanism for collection of water fees; and
- (iv) Develop, in consultation with the key stakeholders, and as a result of experience gained in the pilot area, a program for replication of WUAs services within the Project area, and propose actions for improvement of on-farm water management. Finalize recommendations for how the WUASU should operate.

### **D. IMPLEMENTATION ARRANGEMENTS**

11. The Executing Agency for the TA will be MWRLR. The TA will be guided and monitored by the Project Steering Committee already established under the loan project. MWRLR will provide counterpart staff and facilities to work with the TA consultants.

### **E. TA SCHEDULE AND REPORTING**

12. The TA will be implemented over a period of 24 months, starting at the beginning of 2006. The duration of Phase-I will be six months, and of Phase-II 12 months. It is anticipated there will be a period of up to 6 months between the two phases, to allow sufficient time to the MWRLR to recruit staff and prepare legal documents. The consultants will submit to the MWRLR and the ADB two inception reports: each one month after starting work on a Phase of the project. The consultants will also submit a final report for Phase-I, a midterm report on progress made in month 7 of Phase-II, a comprehensive draft final report at the end of the 10th month of Phase II; and a final report by the end of TA implementation. Each report shall include a report on the Government's progress towards meeting loan safeguards.

### **F. ESTIMATED COSTS**

13. The total cost of the TA is estimated at \$ 625,000 equivalent, of which \$500,000 equivalent will be provided by ADB on a grant basis. The Government through in-kind contributions will finance the remaining \$125,000 equivalent. The estimated breakdown of the costs is given in Table A8.1. Additional financing/contributions from the selected business providers, farmers and other stakeholders will be sought during the TA implementation.

**Table A8.1: Cost Estimates and Financing Plan**  
(\$ '000)

Item	Foreign Exchange	Local Currency	Total Cost
<b>A Asian Development Bank Financing</b>			
1 Consultants			
a. Remuneration and Per Diem			
i. International Consultants	216,000		216,000
ii. Domestic Consultants		37,000	37,000
b. International and Local Travel	25,000	5,000	30,000
c. Reports and Communications	5,000	5,000	10,000
2 Equipment and Supplies	40,000	40,000	80,000
3 Workshops/seminars	16,000	34,000	50,000
4 Interpreters and Translators	12,000		12,000
5 Land Transport and Administrative Support	6,000	4,000	10,000
6 Representative for Contract Negotiations	5,000		5,000
7 Contingencies	50,000		50,000
<b>Subtotal (A)</b>	<b>375,000</b>	<b>125,000</b>	<b>500,000</b>
<b>B Government and Financing</b>			
1 Office Accommodation		12,000	12,000
2 Remuneration of Counterpart Staff		60,000	60,000
3 Travel and Per Diem of Counterpart Staff		12,000	12,000
4 Survey and Data		15,000	15,000
5 Workshops and Seminars		6,000	6,000
6 Logistical Support		7,500	7,500
8 Contingencies		12,500	12,500
<b>Subtotal (B)</b>		<b>125,000</b>	<b>125,000</b>
<b>Total</b>	<b>375,000</b>	<b>250,000</b>	<b>625,000</b>

Source: Asian Development Bank estimates.

## PRELIMINARY TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Targets	Monitoring Mechanisms	Assumptions and Risks
<p><b>1. Goal</b></p> <p>Support implementation of conducive policies for agricultural public and private investment in Tajikistan</p>	<p>Five years after project completion:</p> <p>Conducive policies are in place, adequately implemented and monitored.</p> <p>Agricultural public and private investment in rural areas have increased by __%</p>	<p>Project Performance Reports (PPR)</p> <p>National and regional statistics</p>	<p>Maintained stability of political, macro-economy and security condition in the country</p>
<p><b>2. Purpose</b></p> <p>Assist the Government in:</p> <ul style="list-style-type: none"> <li>- monitoring the progress of policy reforms</li> <li>- promoting competitive providers of farm inputs, technical advice, credit and marketing of products in the selected project areas</li> <li>- establishing a water user associations (WUAs) support unit within the Ministry of Water Resources and Land Reclamation (MWRLR).</li> </ul>	<p>By the end of the Project:</p> <p>Monitoring mechanism for policy reforms implementation is in place and applied by the Government</p> <p>Number of competitive providers identified/supported</p> <p>WUA support unit within the MWRLR established</p>	<p>Project monitoring and evaluation report (M&amp;E)</p> <p>PPR</p>	<p>Policies on water and agriculture promote financially viable farming</p> <p>Prices of farm inputs and outputs do not greatly fluctuate</p> <p>WUA support unit is adequately financed by the Government</p>

The TA framework, including outputs, specific activities, and required inputs, will be further developed during implementation of the TA.



## FINANCIAL AND ECONOMIC ANALYSES

### A. Introduction

1. Economic and financial analyses were carried out to justify the economic viability of the Project and the financial viability of farms. In general, comparisons of costs and benefits in the analysis of projects are made on the basis of quantifiable physical inputs and outputs. Incremental net benefits are estimated, where possible, on the basis of the changes expected to occur and other conditions expected to prevail within targeted geographic areas (i) in the absence of the proposed project's interventions, and (ii) as a consequence of implementing the proposed interventions. For the economic analysis these quantifiable inputs and outputs are valued according to their border price equivalents. For the financial analysis, established prices are applied as determined by local markets.

2. The principal objective of the economic analysis is to establish whether proposed investments are profitable for the economy as a whole, determined when the Net Present Value (NPV) of costs and benefits are positive when discounted at the opportunity cost of capital.

3. The project has four principal components, which are:

- Rehabilitation of Irrigation and Drainage Infrastructure
- Support for Agricultural Development
- Improvement of Potable Water Supply Systems
- Project Management

The Rehabilitation of Irrigation and Drainage Infrastructure component includes rehabilitation of both pump stations and of headworks, canal structures and other civil works. Within the component there are 5 subcomponent for the districts of Asht, Vahdat, Farkhor, Panj and Rushon. Each district subcomponent has been assessed separately and then combined to give an assessment for the whole project. The costs of the Support for Agricultural Development are pro-rated for the overall project options according to the investment in irrigation and drainage in each district. The costs of Project Management are split evenly among the 5 subcomponents.

4. Economic analysis for the Improvement of Potable Water Supply Systems has been carried out separately using the timesavings method recently developed by ADB's Economic Research Department for the analysis of rural water supply systems. This method compares timesavings with the annualized capital costs and operation and maintenance (O&M) costs of each system to determine whether the minimum requirement of positive NPV at the opportunity cost of capital is met. It does not calculate actual NPV or Economic internal Rate of Return (EIRR). All 5 water supply schemes have results consistent with EIRR greater than 12%. The costs and benefits of this component are not included in the assessment of the overall project.

### B. Areas, Cropping Pattern and Yields

5. The total project area, in the 5 districts, is 47,514 ha of irrigated land, with an estimated 262,000 beneficiaries. The two major crops, cotton and wheat, are planted on about 50% and 21% of the area. The remaining area is planted with fruit, vegetables and fodder. Orchards are particularly important in Asht district and in the upper part of the Asht-1 cascade are the dominant crop, occupying about 75% of the area. Present average yields vary among the districts, from 1.2 t/ha for cotton in Asht to 2.0 t/ha in Panj. For wheat average yields vary from 1.6 t/ha in Asht to 3.1 t/ha in Farkhor.

6. The quality of seed available to farmers, especially for the major crops, is generally of a low standard with the result that yields are lower than could be achieved if seed of higher performing varieties were more widely available. Increasing the supply of higher quality seed

can have significant benefits for farmers. Crop pests and diseases are also widespread, with similar negative impacts on crop output.

7. Double cropping is not widespread in Tajikistan, although there is some scope for it in locations where a short cycle vegetable or fodder crop can follow wheat or an early vegetable crop. The potential and practical possibilities for intensifying and diversifying crop production will be demonstrated in the crop production program in the core demonstration areas. Gradual adoption of these methods, supported by expanding domestic markets as the economy grows, will lead to an increase in cropping intensity.

### **C. Major Assumptions**

8. Economic and financial prices for traded goods (wheat and cotton and nitrogen, phosphorous and potassium fertilizers) are derived from World Bank commodity price projections for the years up to 2015. Prices are adjusted to 2004 constant prices using the Manufacturing Unit Values (MUV) index and are adjusted for insurance, freight and handling to derive border prices. The border prices are adjusted by the Shadow Exchange Rate Factor (SERF) and by deductions for local transport, storage, handling and processing costs (where appropriate) to obtain estimated farm gate prices and are converted to Somoni at the official exchange rate.

9. Prices for non-traded agricultural inputs and outputs are based on 2004 prices in the project districts. A combination of official sources, data from farms in each district and market prices, adjusted to allow for transport and traders' margins have been used. Machinery costs have been based on current data from farms in each district for the principal mechanized activities. Taxes on land and wages have been applied at the current rates in the financial analysis of farm budgets.

10. Daily wage rates for each district have been calculated based on data from farms in each district. This data generally implies different daily rates for each crop, but in order to simplify the analysis a single average rate has been estimated and applied for each district. These rates vary from TJS1.00 per day in Rushon to TJS1.50 per day in Asht and Vahdat.

11. The cost of pumping water to farms in the Asht and Farkhor pump irrigation areas is directly proportional to the cost of electricity. The financial price used in the analysis is TJS 0.012/kWh which is the current price applying for the water sector. The economic price adopted for this project is the long run marginal cost of electricity of \$0.021/kWh (TJS 0.063/kWh).<sup>52</sup>

12. The analysis is in 2004 constant prices. An exchange rate of \$1= TJS3.00 has been used, the discount rate is 12 percent and the project life is 25 years. The SERF is 1.11, which is the value generally accepted for use in Tajikistan and is consistent with the general level of tariffs in force and with other factors affecting domestic prices. Domestic and non-traded goods are valued at their local market rates. The shadow wage rate factor for rural labor is 0.80, which reflects the high levels of unemployment and underemployment currently found in rural areas of Tajikistan.

### **D. Benefits**

13. Agricultural production will be the principal source of benefits for the Project. The level of benefits accruing varies among the districts, with the main differences occurring between pump and gravity fed areas:

- with rehabilitation of pump stations, the water supply to farms will be assured and the risk of supply failure reduced or eliminated; the security of supply will

<sup>52</sup> World Bank. 2004. *Tajikistan: Energy Utility Reform Review – A Strategic Approach to Sector Development*. Washington, D.C.

reduce the potential for stress during critical growth periods and encourage farmers to increase investment in production.

- without rehabilitation, the pump stations would continue in operation for some time – perhaps 10 years or more – but would experience a gradual decline in efficiency and in the volumes of water supplied to the canals as they age further.
- rehabilitation of headworks, canals and canal structures in areas supplied by gravity will also improve the reliability and timeliness of supply and will reduce the risk of stress at critical periods of plant growth.
- without rehabilitation of these structures, the supply of water to farms will gradually be less reliable and the volumes supplied may decline. In gravity fed areas the decline will be less than in pump irrigation areas and the risk of total failure of supply is minimal.

14. The Project supports the expansion of the supply of high quality seed available to farmers and will introduce a training program in integrated pest management. Both of these programs will have a positive impact on crop yields and agricultural production.

15. Rehabilitation of the pumping cascades results in energy savings in Asht and Farkhor districts. Significant energy saving benefits also arise from the conversion of the upper parts of the Asht-1 cascade to predominantly gravity supply through the diversion of the Pongaz-Say river.

#### E. Economic Internal Rate of Return

16. The EIRR for the Project is 20.7% with an NPV of \$ 9.9 million. The EIRR and NPV for the district subprojects are shown in Table A9.1. All the district subprojects have acceptable EIRRs well above 12%.

**Table A9.1: EIRR and NPV**

Subproject	NPV (\$'000)	EIRR (%)
Asht	1,324	16.2
Vahdat	1,407	23.3
Farkhor	5,254	26.1
Panj	1,779	19.3
Rushon	117	13.5
<b>Project</b>	<b>9,880</b>	<b>20.7</b>

#### F. Sensitivity Analysis

17. The results of the sensitivity analysis for the Project are shown in Table A9.2. As well as testing the results for variations in input and output prices, the effects on EIRR of key assumptions have also been tested.

**Table A9.2: Sensitivity Analysis**

Scenario	NPV (\$'000)	EIRR (%)
Base	9,880	20.7
1. Input prices +10%	8,501	19.6
2. Output prices - 10%	5,675	17.2
3. Project costs +10%	7,649	18.2
4. With project yields -10%	7,298	18.6

5. Delay in benefits 2 years	3,212	14.3
6. Costs +10%, Output prices -10%	3,444	14.9
7. Costs -10%, Output prices +10%	16,317	27.1

18. The economic results for the Project are robust to negative changes in key variables. The combination of cost overruns and a fall in all output prices would reduce the project outcome, but would have to be severe to threaten viability. Delays in project implementation and consequent delays in achieving benefits would be the most likely source of a threat to the Project's overall economic viability.

### G. Financial Analysis: Farm Budgets

19. Based on the models developed to assess the project, farm budgets were estimated for large farms, dehkan farms and household plots, for each district. These allow the impact of the Project on the different types of farms to be evaluated. There are still many large farms operating in these districts, but the Government is committed to phasing them out within several years and replacing them with individual dehkan farms. The expected impact of the Project on dehkan farms and household plots is therefore important.

20. As shown in Table A9.3, the dehkan farms all show increases in income with the Project, with the largest proportional increases in Asht where current yields for cotton and wheat are low compared with other districts. The smallest expected increases in dehkan farm income are in the gravity fed parts of the Farkhor-Chubek system, but these and other gravity fed areas are less vulnerable than the pump irrigation areas to falls in income without the Project.

21. The Project will also have a positive impact on production from household plots in all areas, with the increase after 7 years ranging from 20% in the Farkhor-Chubek gravity areas to around 30% in the pump irrigation areas of Asht and Farkhor because of the expected greater impact of the Project on water supply in the pumped areas. These increases are important because many rural households depend upon the production of these plots to supplement food supplies and, to a lesser extent, household income as indicated in Table A9.4.

**Table A9.3: Farm Net Income – Dehkan Farms (TJS)**  
2004 constant prices

District	Area (ha)	Present	Future with Project		Future without Project	
			year 5	year 10	year 5	year 10
Asht-1 – upper area	16.6	692	2,182	2,613	233	-328
Asht-1 – lower area	16.6	-124	2,676	3,844	-705	-1,899
Vahdat	5.0	2,171	3,032	3,241	2,394	2,376
Farkhor - pump area	69.0	20,959	31,257	37,138	17,091	9,937
Farkhor – gravity area	69.0	20,959	30,103	35,157	22,896	22,265
Panj	22.0	12,906	15,709	16,670	13,576	13,151
Rushon	44.0	28,074	37,324	41,356	26,948	25,080

Note: Pumping cost of water not included.

**Table A9.4: Farm Net Income – Household Plots (TJS)**  
**2004 constant prices**

District	Area (ha)	Present	Future with Project		Future without Project	
			year 5	year 10	year 5	year 10
Asht-1 – upper area	0.18	133	172	188	116	96
Asht-1 – lower area	0.18	119	158	181	99	81
Vahdat	0.13	185	221	243	185	185
Farkhor - pump area	0.09	89	111	133	68	51
Farkhor - gravity area	0.09	83	101	115	80	76
Panj	0.22	173	198	214	128	128
Rushon	0.05	128	159	176	117	108

Note: Pumping cost of water not included.

## SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY (SPRSS)

## A. Linkages to the Country Poverty Analysis

<b>Is the sector identified as a national priority in country poverty analysis?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is the sector identified as a national priority in country poverty partnership agreement?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<p><b>Contribution of the sector or subsector to reduce poverty in Tajikistan:</b></p> <p>Growth in Tajikistan's agriculture sector and the cotton subsector in particular, would play a crucial role in poverty reduction. In 2002, the agriculture sector contributed 26% of the country's Gross Domestic Product (GDP) and two thirds of its labor force (World Bank (WB), 2004, <i>Tajikistan Poverty Assessment Update</i> (draft), 19). Cotton subsector, which supported three fourths of the country's farm households and occupied the same share of its farmlands, accounted for 30% of Tajikistan's export revenues (<i>ibid</i>).</p> <p>Although there is no official definition of poverty line in the country<sup>53</sup>, recent available statistics indicated that income poverty in Tajikistan is widespread and severe in the countryside, especially in the cotton-growing areas. If defined according to the State Statistical Agency's (SSA) minimum food basket benchmark of Tajik Ruble (TJ) 20,000 per person, the poverty incidence of the country in 1999 was 83%; this declined to 67% in 2003 (<i>ibid</i>, 3). The WB study (2004), which used a poverty threshold of \$2.15 per person per day (at 2000 purchasing power parity (PPP)), also showed a decreasing (albeit high) trend- from 81% in 1999 down to 64% in 2003. Poverty was more prevalent in rural areas where 65% of its households were poor (using the \$2.15 per day poverty line definition), compared to 59% in the urban centers. Khatlon and Sughd regions, which produced 85% of the country's cotton and home to 65% of the country's population, accounted for 76% of the total poor households and 72% of the total extremely poor households (using the \$1/person/day at 2000 PPP). The rural poor comprised mainly of agricultural workers especially in cotton farms, families with many children, the elderly, the sick and invalids, and women (especially the female-headed households). Labor income remained the most important income source for all households (at 45% of total household income), followed by the imputed value of food produced at home and gifts of foodstuffs (24%) (<i>ibid</i>, Annex 1). Consumption expenses grew even for the poor households in 2003. As expected, the share of total household expenditure on food for the bottom 20% of the income decile was higher (71-73% of all expenditure on food) than the top 20% (62%). Interestingly, the share of the imputed consumption value of home food-produced to total food expenditures was much lower for all household incomes levels when compared to its share in 1999. More than half of food expenditures for all household income groups were purchased from the market. The major reason for the lower share of home food consumption was because food from the garden plots was becoming more insufficient to support the family due to declining productivity of these plots. While access to food from markets may have improved, the purchasing power especially of the bottom 20% was nevertheless still insufficient so that various coping mechanisms (like selling household assets, sending children to relatives, eating smaller proportions, etc.) were employed. The most disturbing from a nutritional viewpoint was that more than half of the poorest households ate an average of one meal or less a day.</p> <p>While high and continued positive economic growth in the past years (averaging at 8% per annum) particularly from the agricultural sector, has contributed to poverty reduction (as indicated by the poverty reduction elasticity of 1.08), the benefits to the rural poor were uneven. Khatlon and Sugd, which recorded the highest per capita Gross Domestic Product (GDP) growth rates in 2003, had still the largest proportion of poor households. Inequality of consumption expenditures in these areas also increased with Khatlon recording and was second to the most skewed in Khatlon. The major reason for the high GDP growth rates in the cotton-growing regions was the increase in the world price for cotton. For growth to have a more lasting impact on poverty in the cotton subsector, structural reforms would be required that would essentially improve the profitability of cotton farms and that in turn, would translate to higher incomes to the poor cotton farmers and farm workers. The most immediate area of reforms is measures that would increase the productivity of the farms. These include the rehabilitation of irrigation and drainage (I&amp;D) facilities, and access to inputs, improved land and water management practices, and credit. Another reform measure is land reform that would transform the farmers and farm workers into independent dekhan farmers. And the third is the change in the present ginnery system, which works to the disadvantage of cotton farmers.</p> <p>It should be stressed that poverty in Tajikistan is also non-income based, characterized by worsening human development situation due to lack of essential services, and increasing economic and social disparities that particularly affect women. A key element of non-income based poverty is the lack of clean drinking water in rural Tajikistan. The Poverty Reduction Strategy Paper (PRSP, 2003) reported that only 40% of Tajikistan's population used piped water at home or outdoors. Limited access to potable water has a tremendous impact on poverty, including work-days lost due to illness, time spent transporting water from long distances, etc.</p>	

<sup>53</sup> Various definitions of poverty line have been posited. In the World Bank (WB) draft report (2004, Annex 1), it provided a summary of some of these definitions. For instance aside from the minimum food basket (which is not comparable to the internationally-determined caloric intake equivalent) of Tajik Ruble (TJ)20,000, the Government's State Statistical Agency has a "rational nutrition norm index of TJ27,400. Poverty incidence for this poverty line was 93% in 1999, down to 83% in 2003. The WB also estimated the headcount ratio for a \$1a day per person, which was termed as extreme poverty; the poverty rates were 36% in 1999 and 18% in 2003. The ADB (2003) departed from the income approach and used a wealth index. Poverty incidence for 2002 was

<b>B. Poverty Analysis</b>	<b>Poverty Classification: Poverty Intervention</b>
<p>Though poverty statistics countrywide indicate that the incidence of poverty is decreasing, most villagers in the Project's cotton-growing areas think otherwise. During stakeholder meetings, villagers who participated in the self-rating poverty assessments said that the income structure has not changed and that poor households in their villages constitute approximately 75% of all households, middle about 15%, and rich 10%. Local villagers typically described the poor or vulnerable groups as agricultural workers, dekhani farmers working for collective dekhani farms or joint stock farms, government workers on salary, households without garden plots or livestock, single women without husbands, households containing multiple families under one roof, pensioners, and invalids. Villagers identified the rich in their villages as independent dekhani farmers, people who had developed an asset base during the Soviet period (and still maintained that asset base), and those who knew how to operate in a market economy.</p> <p>At the five project sites, three general themes emerged as a cause of poverty - lack of water for irrigation and drinking, lack of access to land, and lack of jobs. Villagers saw physical improvements in their irrigation systems as a potential avenue to escape extreme poverty, if the improvements led directly to more reliable and assured irrigation water supplies for both large cotton fields and also smaller household gardens. Villagers also consistently commented on the need for more opportunities to become independent dekhani farmers, in control of their agricultural inputs and outputs, rather than dependent on collective dekhani farms and outside investors. Finally, rural villagers in the Project sites consistently decried the lack of opportunities for improving their socio-economic position, primarily through employment opportunities. One village official in a Project district estimated that of the local high school graduates 500 students in a year, only 100 will find work. The other 400 will be unemployed. Village women in particular often stated that they have skills (e.g. baking, weaving, etc.) but they have no "job place" to demonstrate those skills and make income.</p> <p>The design of the Project addresses the key causes of income poverty. Low productivity and hence low incomes from cotton farms are caused by the unreliable supply of irrigation water; this in turn, is due to deteriorating I&amp;D facilities. The Project will cover the rehabilitation of I&amp;D facilities on 47,514 has. in 5 cotton-growing districts. The five districts were selected through a systematic screening and stakeholder consultations that took into account social (predominance of poor households) and institutional factors, high potentials to increase economic and social benefits, and low operation and maintenance (O&amp;M) costs. Rehabilitation of I&amp;D will be complemented with improvements of on-farm land and water management through formation of Water Users Association (WUAs) in core demonstration areas and the establishment of a WUAs Support Unit in the Ministry of Water Resources and Land Reclamation (MWRLR). Development of WUAs that take charge of the O&amp;M of I&amp;D facilities will decrease the costs of rehabilitating these facilities; ensure reliable provision and delivery of irrigation water to cotton and household plots; and in the medium term, reduce the salinization of cotton land. Together with improved land and water management practices, these Project measures will increase yields and cropping intensities in both the cotton and household farms; improve income returns from cotton and the garden plots; will generate on-farm jobs; and thus, will ensure more stable and secure farm income. To assist the extremely poor households, the Project will also use a food-for-work scheme for implementing simple civil works requiring unskilled workers. The Project is likewise pro-gender. Women-headed farm households and women farmers will be proactively involved in the whole Project cycle and the organizational development of WUAs.</p> <p>The Project will support and monitor the implementation of agriculture and water sector policy reforms in these areas. Key of these measures are those on the establishment of dekhani farms and development of land markets. Studies have shown that dekhani farms have better yield and income performances than the collective farms. Non-income poverty will also be partly addressed by the Project through the provision of rural potable water for a population of 57,000 in selected Project areas.</p>	

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estimated at 53%. Lastly, the survey conducted by the National Social Investment of Tajikistan in 2003 and which was assisted by the local councils and government, came up with a headcount ratio of 60%. All figures indicated high poverty rates, which in fact were the highest in Central Asia.

Irrigation development in the Project areas will lead to job creation, lower unemployment figures, and higher incomes, thus spurring growth in rural industries. Approximately 153,000 poor farm households will benefit from the Project; generate an increase of 41% in dekhan farm incomes, and 33% in household plots incomes; and create opportunities for growth in rural services and industry. Increased agriculture outputs (cotton by 23% and wheat by 21%) will lead to increased rural incomes, particularly among the poor. Together with the food-for-work program that will target the extremely poor in the project areas, improved agriculture activities will spur the demand for labor estimated at 750,000 labor-days. In sum, the economic benefits will redound more to the poor households than the beneficiary groups. Sustained income benefits to the poor households will translate in the medium term, in a decrease in the poverty incidence in the project area by 5%.

The Project will also produce indirect impacts. Improved land privatization efforts would accelerate the poor's ability to generate income, as being an independent dekhan farmer consistently means more freedom of choice, more ability to follow the market, and ultimately higher incomes. Full land privatization often results in cheaper farm inputs, as competition accompanies land privatization. Independent dekhan farmers in the project sites consistently reported agricultural input prices 50 % cheaper than that input prices at collective dekhan farms.

Lastly, non-income poverty will be addressed in this Project by rehabilitating rural water supply systems, and 5,150 poor households are estimated to benefit from new potable water supply facilities.

### C. Participation Process

**Is there a stakeholder analysis?**  Yes  No

Twelve stakeholder meetings were held in all five project irrigation systems. A total of 175 stakeholders participated in the dialogues. Stakeholder representatives included those from local government, irrigation, and agricultural officials, teachers, doctors/health workers, women's groups, agricultural workers, dekhan farmers (independent and collective), landless laborers, Dekhan Farmers' Associations, and local non-governmental organizations (NGOs). After gathering quantitative descriptive data from local village officials, discussions were held focusing on: poverty (definition, causes, how to escape, etc.), village needs and demands, rural and agricultural structure, debt, socio-economic profile, and prospects and constraints of water users' associations (WUAs). Wealth ranking and role playing exercises were also employed to more fully understand the villagers' perceptions, attitudes, and behavior towards poverty. These structured exercises gave the villagers opportunities to express their experiences in living with poverty, and to try to formulate some general ideas of how to escape poverty. During the stakeholder meetings, the participation exercises helped sharpen how the irrigation rehabilitation should be carried out and managed, and how the Project could be focused more to fight poverty (e.g. better water management, employing local villagers in civil works to the maximum extent possible, urging the government to accelerate and improve land privatization, etc.).

**Is there a participation strategy?**  Yes  No

The Project's participation strategy will focus on ensuring the involvement of the Project beneficiaries - including the poor, women, and vulnerable groups - in all phases of project design, implementation, and monitoring. Both participatory processes and local rural institutions will be established to operationalize these participatory approaches. Processes include: (i) further stakeholder meetings at the village level as project design and implementation proceeds, (ii) a participatory and community-based monitoring and evaluation (M&E) mechanism and process focusing on strengthening local users' groups during the actual monitoring process, (iii) rehabilitation consultation/dialogues with farmers meeting regularly with irrigation officials (primarily through the WUAs) to coordinate canal closings, water delivery times, and future irrigation canal management strategies, and (iv) inter-community exchanges/immersions with Ministry of Water Resources and Land Reclamation officials, government policy-makers, representatives of donors, and project officials, to exchange experiences and improve implementation procedures. Rural institutions will include: (i) WUAs formed in the irrigation systems focusing on improved irrigation management, and operations and maintenance, (ii) participatory Water Committees responsible for long-term operation and maintenance of the rehabilitated village water supply system, (iii) women's groups supported by international and local NGOs, focusing not only on activities specific to women, but also enlarging activities for women to fully participate in all project activities, and (iv) informal associations of independent dekhan farmers who have banded together for economies of scale.

### D. Gender Development

A Gender Action Plan has been prepared (Appendix 11) that will maximize the impact of this Project on women. The Plan has five focal areas: (i) women's representation, (ii) skills enhancement for women, (iii) provision for a gender specialist, (iv) gender sensitivity in monitoring and evaluation, and (v) advocacy for gender and development.

**Has an output been prepared?**  Yes  No

### E. Social Safeguards and other Social Risks

Item	Significant/	Plan Required
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	<b>Not Significant/ None</b>	<b>Strategy to Address Issues</b>	
<b>Resettlement</b>	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	A short resettlement plan for 9 families was prepared.	<input type="checkbox"/> Full <input checked="" type="checkbox"/> Short <input type="checkbox"/> None
<b>Affordability</b>	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	Differential irrigation water charges will be used for different types of irrigation systems with different operational costs. Examine subsidies for use fees for the poor.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Labor</b>	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	A food-for-work program is included to address the low income of the extremely poor. Improved productivity arising from access to more reliable irrigation water coupled by better access to land and farm management practices, would increase demand particularly for contractual farm work.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Indigenous Peoples</b>	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	None	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Other Risks/ Vulnerabilities</b>	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	None	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

## **GENDER ACTION PLAN**

### **A. Gender Status and Issues**

1. Because of Tajikistan's civil war in the mid-1990s, and migration of males in search of work in Russia, female-headed households are very common in rural Tajikistan. It is estimated that about 18% of total rural households are female-headed households. The share of this type of households is expected to rise as more men from the rural areas migrate in search of work. As many of the men do not send remittances to their families from Russia, the women often have to play multiple role of earning income for their families, providing for their food sustenance, and taking care of the children. In the project sites, the women are in-charge of the garden plots, which are often the family's main source of food. Reliable access to irrigation water would help women in increasing their garden plot's productivity.

2. Aside from the garden plots, women augment their incomes by working. However, unemployment and underemployment in the villages were considered as one of the most important problems by villagers (especially the women) during the stakeholder meetings held in the five project sites. Some jamoat officials estimated the level of unemployment in their areas at 80 percent. Often, there are only one or two employers in a given area, such as a cotton factory, or schools. Women are traditionally working in the social (education and health) and agricultural sectors, where wages are five to eight times lower than salaries in industrial and construction sectors. Women's role in the cotton farm is particularly important during both planting (spring) and harvest (fall) seasons where as much as 90% of the field workers are women and children. However, salaries as an agricultural worker on the collective dekhan farm are extremely low. During cotton harvesting, agricultural workers were paid per kilogram picked, ranging from approximately 6 diram/kg picked to 55 diram/kg picked.

3. Thus, any economic event in the cotton sector will have large implications for women's incomes, their time, and their families. At five different occasions during the twelve stakeholder meetings, women working in the cotton sector pointed to the pile of beans on the meeting table representing the rich in the village, and said that if they were going to move their families to that socio-economic category, they would need better water, land, and jobs. They said their present status as agricultural workers in the cotton sector was characterized by unreliable water supplies, and few opportunities to join the ranks of independent dekhan farmers and/or find employment opportunities.

4. Increasing access to potable drinking water will also help women in the project sites. About 30% of the farm households in the project sites get water from rivers, lakes and ponds. Roughly 41% of the project households use water from sources more than 100 meters away and majority of those who fetch the water are the women and children. Water-borne diseases are likewise common illnesses in these areas. Improved access to potable water supplies would thus help women play a more active role in village economic activities, as less time would be spent in carrying water and caring for the sick.

### **B. Gender Strategy and Action Plan**

5. The project will address these concerns by taking actions that one one hand will improve women's (i) participation in the Water User's Association (WUAs), Water committees, and in the planning, implementation, and monitoring and evaluation of the project; (ii) access to project information; (iii) technical skills in farm production and organizational skills as they become involved in community-based organizations and project-related activities; and on the other (b) will promote gender responsiveness among policymakers and other stakeholders involved in the project.

6. The Project's Gender Action Plan will focus on:
- **Women's Representation.** The Project will ensure that in the provision and delivery of each of the 4 Project components, participation of women through their proper representation will be ensured. Under the component on rehabilitation of irrigation and drainage system, (i) 50% of female-headed households in the project sites will serve as members in the WUAs, and (ii) at least 25% of women representation in the project design, planning, and implementation meetings. For the improvement of potable water supply systems, (iii) women will constitute at least 30% of the local drinking water decision-making bodies. In the support for agricultural development, (iv) at least 30% of women farm workers are members of local farmers' groups. Finally, in the project management, monitoring and evaluation (M&E) component, project management offices, project implementation units, and the M&E units will ensure at least 20% representation from women.
  - **Skills Enhancement for Women.** The Project will ensure that (iii) at least 20% of female-headed farm households will participate in the Project's core demonstration areas; (iv) 25% of women are trained in land and water farm management, new cultural practices, as well as rural water supply management; and (v) 25% of women participate in other organizational skills enrichment activities.
  - **Provision of a Gender Specialist.** A Gender and Social Development Specialist (GSDS) will be employed to (i) provide an assessment of the gender and social (including poverty) issues and concerns in the project sites using quantitative and qualitative methods of analysis, (ii) using a participatory approach, develop a gender and social plan of action that will address the issues and concerns especially those related to the project; and (iii) develop an implementation mechanism and advocacy strategy for following through the action plan. The specialist will also assist in the design of the M&E evaluation system so that it will adequately incorporate gender, poverty, and social concerns.
  - **Gender Sensitivity in Monitoring and Evaluation.** The GSDS will ensure that the design of the M&E system will appropriately incorporate inputs, outputs, and outcome indicators that reflect women's concerns about the project. The M&E system shall also include a feedback mechanism that objectively provide the Project implementers with ways of soliciting and assessing the perceptions and views of the Project's beneficiaries especially the women on the progress and impact of the project.
  - **Advocacy for Gender and Development.** Gender and development as an integral policy outcome of the project will be pursued through inclusion of gender-related agenda in the policy dialogues with central and local policy makers, stakeholder meetings, and other forums that will be initiated during the Project period.

## SHORT RESETTLEMENT PLAN

### A. Background

1. The Irrigation Rehabilitation Project will improve the living standards of farming communities in project areas with improvements in farm household incomes through increased farm productivity and improved access to potable water. To achieve this the Project has four main components: (i) selected rehabilitation of irrigation and drainage infrastructure, (ii) support for agricultural development; (iii) improvement of potable water supply systems; and (iv) project management.

2. Within WRDRP, rehabilitation and improvement of irrigation/drainage systems and rural water supply systems have potential limited involuntary resettlement impacts.

3. All land in Tajikistan is state-owned. Land use is directed/permitted by the State through the district administrations, specifically the local offices of the State Land Committee and district administrative (Hukumat) offices. Inheritable land use rights are provided for under Tajikistan's land tenure reform, but the process is at a very early stage of implementation. Tajikistan's Land Code addresses potential compensation for people who legally occupy government land and are forced to relocate, but the Land Code does not address compensation for people illegally occupying government land and forced to relocate.

4. **Potable Water Supply Systems.** In Asht District, the construction of a drinking water reservoir will require a village road to be moved slightly (a few meters), thus using some additional empty government wasteland. Additionally, it is possible that a small edge of a household fence, which encloses a large vegetable garden, may also have to be moved slightly (less than a meter, along a distance of less than 5.0 meters (m) and thus involving no more than 5.0 square m. As the potential drinking water reservoir is fed by springs, the location of the reservoir is critical and it may be that other design options are not feasible. The actual degree of constraint will not be possible to determine until the topographical survey is carried out at the start of the design process. It is presumed that the fenced land is legally occupied and compensation would therefore need to be negotiated if the garden is to be encroached. It is quite possible that for such a small area the compensation could be in-kind, such as provision of a new fence and gate, rather than financial.

5. Additionally, some rehabilitation of rural water systems requires laying of underground pipes, which will require digging up agricultural land during the off-season, outside the growing period. Temporarily, therefore, this pipe laying could disrupt some agricultural land, though the land would be restored for the next growing season. There will be no impact on harvest from these activities and therefore no compensation will be required. MWRLR has agreed that during the laying of underground pipes, households whose agricultural land are affected will be given priority for construction jobs with contractors to the maximum extent possible.

6. **Irrigation and Drainage Rehabilitation.** For irrigation and drainage rehabilitation, works will be confined within the boundaries of installations (e.g. pumping stations), or along linear structures (irrigation and drainage canals).

7. There will be very limited new construction in WRDRP. The priority for new construction in WRDRP is a new settling basin on government land near the intake of the main canal in Hamadoni District, Khatlon Region. The size of the potential settling basin will be from 10 to 15 ha. Nine Tajik households without title or permission to use the land are presently cultivating approximately 6.5 ha of government land at the settling basin site. The households members are not living at the site, they are only cultivating land at the site. No structures, therefore, would have to be moved or replaced. The size of the future settling

basin requires less than half of the land potentially available for construction and therefore there is scope of selecting a more advantageous location and not extending to areas illegally and irregularly cultivated by persons residing in villages outside the site. Nevertheless, a Short Resettlement Plan has been developed to adequately address and compensate these households, ensuring that their livelihoods will not be negatively affected by the construction of the settling basin.

8. Seven of the nine households were contacted, interviewed, and consulted about the potential Project and the possible resettlement required. The size of the land being cultivated by the seven interviewed households is shown in Table A12.1.

**Table A12.1: Size of Cultivated Land per Household**

Household	Estimated Size of Land Cultivated (hectares)
1	0.80
2	1.40
3	0.61
4	0.50
5	0.20
6	0.02
7	3.00
<b>Total</b>	<b>6.53</b>

9. Farmers from the seven households contacted said the other two households farm very small plots of land on the potential settling basin site, approximately 0.02 hectares (ha) each.

10. Two of 7 interviewed households have 4 family members, and the other 5 households have from 12 to 24 family members. The heads of the 7 households all have secondary level education, with 2 heads of households with technical secondary education, and 2 with university level education. Household members are either former or present employees of the District Irrigation Office and they are very familiar with the needs for irrigation system rehabilitation and a new settling basin. Five of 7 households have children living and working in Russia.

11. The main crops grown in the 6.5 ha are wheat, onion, cucumber, tomato, melons, and maize. The interviewed farmers did not know the exact yields of their crops, but they estimate that onions were at about 2.0 mt./ha, melon at 1.5 mt/ha, maize at 4.0 mt/ha<sup>54</sup>. Three of 7 households (covering 3.63 ha of the total 6.53 ha) reported that the crops are for home consumption and they receive no cash income from the crops. The other 4 households (covering 2.9 ha out of the total 6.53 ha) estimated that they receive small annual incomes from the crops grown, ranging from 300-400 Somoni/year (\$100-\$133), to 3,000 Somoni/year (\$1,000)<sup>55</sup>.

12. Six of the 7 households reported that they were not farming land outside of the land they are cultivating in the proposed settling basin site.<sup>56</sup> One household reported that they have 0.7 ha of land outside the site.

<sup>54</sup> The accuracy of their yield estimates is questionable and would require further verification. One respondent guessed his onion yield was 7.0-8.0 mt/ha.

<sup>55</sup> The accuracy of these income figures is also questionable. The respondents have no formal records of either their yields or incomes, and during the interviews the respondents said that they really didn't know the yields or incomes. It was only when interviewers asked for estimates of yields and incomes, that the respondents provided information. Data from the Poverty and Social Analysis in nearby Farkhor District show annual household incomes range from about 2,600 Somoni (\$866) to 24,000 Somonis (\$8,000).

<sup>56</sup> Like many rural households in Tajikistan, it is very likely that these seven households do have household gardens and Presidential Land plots outside of the site, but during the interviews, they only referred to independent land outside of the site.

13. During more qualitative discussions with the seven households, were aware of the benefits to the entire district if a settling basin were to be constructed, as they all work for the District Irrigation Office. The respondents said they realize they have no title or permission to farm this land, but since the land was vacant, they started cultivating small plots there. The heads of household interviewed all agreed that they would have no objection to giving up this land for the settling basin. They agreed that being offered alternative land by the District Hukumat (Administrative) Office would be accepted, as well as receiving employment and wages during the construction of the settling basin.

#### **B. Scope of Land Acquisition and Resettlement**

14. There will be no land acquisition during resettlement as the government presently owns the land, and there are no structures on the land. Only the 6.5 ha of cultivated land will be affected. There will be no loss of homes, but the loss of livelihoods will be compensated.

#### **C. Objectives, Policy Framework, and Entitlements**

15. The Tajikistan Land Code (Article 48) states that if land is taken from a physical and juridical/legal person for state and public needs, those persons will be apportioned the same value of land, and losses including income will be fully compensated. The Chief of the Department of International Relations at Tajikistan's State Land Committee has stated that the district level Hukumat can compensate people who are forced to relocate, even if it is only cultivated land, not houses, that must be relocated. Extensive discussions have been held with the Hamadoni District Hukumat to ensure that the nine households receive full and complete compensation.

16. The ADB policy on Involuntary Resettlement addresses "losses of land, resources, and means of livelihood or social support systems, which people suffer as a result of ADB projects...". The proposed Project will not cause any population displacement, but there is the possibility that a few households may lose access to land from which they derive some income. Although these households do not possess land use rights, the resettlement plan ensures that those whose lives and incomes may be affected will be assisted to ensure the same level of well-being prior to the Project.

#### **D. Consultation, and Grievance Redress Participation**

17. Consultations with the affected people cultivating the 6.5 ha have been on-going since the PPTA-stage, involving trips to sites by both international and national consultants, consultations with the affected people, socio-economic questionnaires, qualitative discussions with members of the affected households, multiple meetings with district-level Hukumat and Irrigation Offices, and numerous discussions at the national level with the State Land Committee of Tajikistan, and the Ministry of Water Resources and Land Reclamation (MWRLR) in Dushanbe.

18. All parties to the discussions have agreed to ensure the welfare of the 9 affected households. Most of the 9 households have members who are presently or previously employed by the District Irrigation Office. The district level Hukumat in Hamadoni District, in coordination with the District Irrigation Offices in Hamadoni and Farkhor, will address any appeals of affected persons.

#### **E. Compensation, Relocation, and Income Restoration**

19. There are three key elements related to compensation, relocation, and income restoration. First, the Hukumat of Hamadoni District has agreed to provide irrigated land for the 9 households, of equal or better quality, for compensation for their potential loss of livelihood. Attachment 1 gives the letter of the Hukumat regarding compensation. Second,

MWRLR has agreed that during construction of the settling basin, members from the 9 households will be given priority for construction jobs with contractors to the maximum extent possible<sup>57</sup>. Third, MWRLR has also agreed to the extent possible, qualified members from the 9 affected households will be considered for employment with the District Irrigation Office. As noted above, most of the households have members already employed by the District Irrigation Office, making future employment even more likely.

20. There will be no housing relocation, as the households are living outside the proposed construction site. Only cultivated land will be affected. The land provided to the households from the district Hukumat will also have to consider accessibility, fertility, and quality of irrigation water.

#### **F. Institutional Framework**

21. Planning, implementation, inspection and assessment will be the responsibility of the district Hukumat, in coordination with the District Irrigation Office. The Project Management Office (PMO) and the MWRLR will also provide oversight to the implementation of the resettlement plan. Dissemination of information and public discussions with the affected people will also be undertaken at periodic intervals to ensure proper implementation of the resettlement plan and facilitate resettlement.

#### **G. Resettlement Budget and Financing**

22. There will be no land acquisition. For households that lose access to land, MWRLR will ensure that replacement land will be provided by the Hukumat and households will receive land use rights on this land. There will be minor costs involved in monitoring and providing support for resettlement, and those costs, as well as any unforeseen costs, will be covered by Project (see Project Management Budget).

#### **H. Implementation Schedule**

23. Detailed planning and implementation of resettlement will take place well before the beginning of civil works construction of the settling basin. Details are provided in Table A12.2.

#### **I. Monitoring and Evaluation**

24. The PMO will implement a detailed Monitoring and Evaluation Plan for the entire Project, including preparation, implementation, and after effects. With regard to resettlement, the PMO will develop baseline data for monitoring indicators including: amount of land lost; amount of replacement land (of similar or better quality); number of jobs provided (temporary and permanent); compensation payments; and other assistance for moving/training, and tracking of household incomes (or agricultural incomes or output value). In support of these activities, affected persons will be invited to attend public meetings to discuss issues regarding the resettlement.

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<sup>57</sup> It should be noted that the 7 households interviewed enthusiastically agreed that if they were able to receive employment during the construction of the settling basin, they would willingly give up their illegal cultivation on this 6.5 ha. The prospect of income-producing jobs seemed to outweigh their desire to continue cultivating these small plots of land. It is also difficult at this time to accurately estimate the potential income lost due to the loss of the 6.5 ha, as 3 of 7 households reported no income from the crops, and the other 4 households were very vague regarding income received from the crops. Though income was reported from these 4 households, farmers generally said that crops were for home consumption. In any event, jobs during the construction of the settling basin could pay as much as 300 Somoni/person/month.

**Table A12.2: Approximate Schedule for Resettlement Efforts**

Activity	Time
Consultations with Affected People, Hukumat, and District Irrigation Office	--On-Going
Detailed Resettlement Planning and Social Preparation including a complete census of households eligible for entitlements (names of households and claimed land areas recorded by the PMO) prior to loan effectiveness	--Six Months Prior to Construction
Finalization of New Land Site	--Three Months Prior to Construction
Resettlement	--One Month Prior to Construction [condition for civil works commencement on settling basin]

## **J. Conclusion**

25. The overall philosophy and thrust of the resettlement plan is to ensure that the 9 households cultivating the 6.5 ha without titles will be fully compensated for any economic, social, or institutional distress they may suffer as a result of the construction of the settling basin benefiting approximately 17,700 ha. The resettlement plan is designed to ensure that these 9 households are in no way adversely affected by their cultivation on the government land.

**Attachment 1**

**COPY OF LETTER FROM HAMADONI DISTRICT HUKUMAT AFFIRMING  
COMPENSATION FOR FARMERS CULTIVATING ILLEGAL PLOTS OF LAND**

ЧУМХУРИИ ТОЧИКИСТОН  
ВИЛОЯТИ ХАТЛОН  
ХУКУМАТИ НОХИЯИ МИР САИД  
АЛИИ ХАМАДОНИ



REPUBLIC OF TAJIKISTAN  
KHATLON REGION  
HUKUMAT OF MIR SAID ALI  
HAMADONI DISTRICT

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Republic of Tajikistan, Khatlon region, Mir Said Ali Hamadoni district, microtown Moskva, Ismoil Somon str.– 18, tel: 22-33

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АЗ \_\_\_\_\_ № \_\_\_\_\_  
From 28.07.2004 № 1138

TO: MINISTER OF WATER RESOURCES  
AND LAND RECLAMATION OF  
THE REPUBLIC OF TAJIKISTAN  
NAZIROV A.A.

COPY TO: PROJECT TEAM LEADER  
“DEVELOPMENT AND REHABILITATION  
OF WATER RESOURCES” ADB  
MANFRED STEIDEL

Hukumat of Hamadoni district confirms its interest in developing the Sediment Basin in the area selected and near the main water intake point of Chubek canal. The Hukumat supports any constructive proposal for building this technically, economically and important structure.

The Hukumat is ready to provide land of equal value for physical and juridical persons, who's land is located within the perimeter of the future sediment basin.

CHAIRMAN

ISMAILOV Yo. B.