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Report No: 32313-TJ.

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GRANT IN THE AMOUNT OF SDR 8.7 MILLION
(US\$ 13.0 MILLION EQUIVALENT)

TO THE

REPUBLIC OF TAJIKISTAN

FOR A

FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

June 24, 2005

Environmentally and Socially Sustainable Development Unit
South East Europe Country Unit
Europe and Central Asia

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CURRENCY EQUIVALENTS

(Exchange Rate Effective March 31, 2005)

Currency Unit = Somoni
 3.04 Somoni = US\$1
 SDR 1 = US\$ 1.50803000

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AKF	Agha Khan Foundation	MOA	Ministry of Agriculture
BP	Bank Procedures	MOE	Ministry of Energy
BFC	Big Ferghana Canal	MSDSP	Mountain Societies Development Support Program
CAS	Country Assistance Strategy	NBFO	Non Bank Financial Organization
CSF	Collective and State Farm	NFC	North Ferghana Canal
CPSC	Central Project Steering Committee	NGO	Non Governmental Organization
EA	Environmental Assessment	NPV	Net Present Value
EMP	Environmental Management Plan	OD	Operational Directive
EMMP	Environmental Management and Monitoring Plan	OP	Operational Policy
ERR	Economic Rate of Return	O&M	Operation and Maintenance
FIAS	Farm Information and Advisory Service	PRSP	Poverty Reduction Support Program
FPSP	Farm Privatization Support Project	RIRP	Rural Infrastructure Rehabilitation Project
FTC	Farmer Training Center	RLRO	Regional Land Registry Office
FVWRMP	Ferghana Valley Water Resources Management Project	RPEC	Regional Project Executive Committee
		PIU	Project Implementation Unit
GDP	Gross Domestic Product	PMU	Project Management Unit
GEF	Global Environment Facility	SCEPF	State Committee for Environmental Protection and Forestry
GoT	Government of the Republic of Tajikistan	SCNP	State Committee for Nature Protection
		SECO/	Swiss State Secretariat for Economic Affairs
		SDCRSA	/ Swiss Agency for Development and Cooperation Rapid Social Assessment
Ha	Hectare	SLC	State Land Committee
IPM	Integrated Pest Management	SLSC	State Level Steering Committee
IRR	Internal rate of return	SOSWRMD	Soghd Oblast State Water Resources Management Department
LDPSC	Leninabad Department Power Supply Company	TOR	Terms of Reference
LRCSP	Land Registration and Cadastre System for Sustainable Agriculture	USAID	United States Agency for International Development
M&E	Monitoring and Evaluation	WUA	Water User Association
MMWRM	Ministry of Melioration and Water Resources Management		

Vice President:	Shigeo Katsu
Country Director:	Dennis de Tray
Sector Manager:	Joseph Goldberg
Task Team Leader:	Usaid I. El-Hanbali

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**TAJKISTAN
FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT**

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MAPS

IBRD 33874	General map of Tajikistan
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TAJIKISTAN

FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

PROJECT APPRAISAL DOCUMENT

EUROPE AND CENTRAL ASIA

ECSSD

Date: June 24, 2005	Team Leader: Usaid I. El-Hanbali
Country Director: Dennis N. de Tray	Sectors: Irrigation and drainage (80%);
Sector Manager: Joseph R. Goldberg	General water, sanitation and flood protection sector (20%)
	Themes: Water resource management (P); Other rural development (S); Participation and civic engagement (S)
Project ID: P084035	Environmental screening category: Partial Assessment
Lending Instrument: Specific Investment Loan	Safeguard screening category: Limited impact

Project Financing Data

Loan Credit Grant Guarantee Other:

For Loans/Credits/Others:

Total Bank financing: IDA Grant: SDR 8.7 million (US\$13.0 million equivalent)

Proposed terms:

Financing Plan (US\$m)

Source	Local	Foreign	Total
BORROWER/RECIPIENT	1.17	0.00	1.17
IDA GRANT FOR POOREST COUNTRY	5.90	7.10	13.00
Total:	7.07	7.10	14.17

Borrower:

Government of Tajikistan
Tajikistan

Responsible Agency:

Project Management Unit at the Ministry of Melioration and Water Resources Management
5/1 Shamci Street

Dushanbe, Tajikistan

Tel: 992-372-36-62-08 Fax: 992-372-36-62-08 E-Mail: a.ahrarov@mail.ru

Project Implementation Unit at Soghd Oblast Water Resources Management Department
Khujand, Tajikistan

Estimated disbursements (Bank FY/US\$m)									
FY	2006	2007	2008	2009	2010	0	0	0	0
Annual	1.00	3.50	4.50	3.50	1.67	0.00	0.00	0.00	0.00
Cumulative	1.00	4.50	9.00	12.50	14.17	14.17	14.17	14.17	14.17

Project implementation period: Start December 1, 2005 End: November 30, 2010

Expected effectiveness date: November 1, 2005

Expected closing date: May 31, 2011

Does the project depart from the CAS in content or other significant respects? Yes No
Ref. PAD A.3

Does the project require any exceptions from Bank policies? Yes No
Ref. PAD D.7

Have these been approved by Bank management? Yes No

Is approval for any policy exception sought from the Board? Yes No

Does the project include any critical risks rated "substantial" or "high"? Yes No
Ref. PAD C.5

Does the project meet the Regional criteria for readiness for implementation? Yes No
Ref. PAD D.7

Project development objective Ref. PAD B.2, Technical Annex 3

The project objectives are (i) to improve the capacity for increased irrigated agriculture productivity in the Ferghana Valley by improving land and water management, and (ii) to improve safety and regulation of the Kayrakum Dam and Reservoir, thereby contributing to enhanced water management security and efficiency at the basin level.

Project description Ref. PAD B.3.a, Technical Annex 4

- A. Irrigation and Drainage System Rehabilitation and Improvements
- B. Strengthening Kayrakum Reservoir Dykes and Improvement of Kayrakum Dam Safety and Reservoir Operation
- C. Institutional Development and Technical Assistance
- D. Project Management

Which safeguard policies are triggered, if any? Ref. PAD D.6, Technical Annex 10

- Environmental Assessment (OP/BP/GP 4.01) has been completed and mitigating measures are to be funded by the project grant.
- Safety of Dams (OP/BP 4.37) OP/BP 4.37 is automatically triggered by the works to be undertaken on the levies and dykes along the reservoir; general dam safety and the flood risk from breaches in the levies will be diminished by the rehabilitation works and improved operating procedures.
- Projects on International Waterways (OP/BP/GP 7.50) the physical investments expected under the project are only for rehabilitation and improvement of existing irrigation and irrigation schemes, which are not expected to change the volume of extraction/discharge of water or quality of water of the Syr Darya River.

Significant, non-standard conditions, if any, for:

Ref. PAD C.7

Board presentation: None

Grant effectiveness:

- None

Covenants applicable to project implementation:

- *Auditing.* The project will adopt Guidelines for Financial Reporting and Auditing of Projects Financed by the World Bank (June 2003). The Borrower will appoint an independent auditor in accordance with International Standards on Auditing (ISA) and terms of reference acceptable to IDA by December 31, 2005, and the audit will be carried out within six months of the end of the Borrower's fiscal year.
- *Special accounts.* The Borrower will open and properly maintain separate special account for the IDA Grant.
- *Counterpart funds and budget.* A line item will be provided in the annual National Budget beginning 2005 for funds required for implementation of each project component. By September 30 of each year, the Government shall review the provision for counterpart funds and confirm that an adequate allocation for project implementation will be included in the budget for the following calendar year.
- *Farm Land Privatization.* The Government will give priority to the privatization of farm land within the areas under the project (raions of Bobojon Gufarov and Kannibodom) so as to help setting the base conditions to establish viable WUAs and involvement of users in water management on tertiary systems.
- *Monitoring, review, and reporting.* Standard reporting covenants will apply; the PMU will send to IDA on a half-yearly basis its monitoring and evaluation reports and the status of the agreed key monitorable indicators. A project design and implementation review would be undertaken by the Government and IDA by September 30, 2008, to determine the lessons learnt and to make appropriate changes, if needed, in the project objectives, scope and components.
- *Land access restrictions.* No human settlements will be displaced as a result of project activities, and any adverse impacts on vulnerable people or any other restrictions of access to land resulting from project activities, if any, will be mitigated by project investments directly benefiting the affected people.
- *Environmental Management Plan (EMP).* The project shall be implemented in accordance with the agreed environmental management framework.
- *Implementation guidelines.* All project activities will be implemented in accordance with the Project Operational Manual acceptable to the Bank.

A. STRATEGIC CONTEXT AND RATIONALE

1. Country and sector issues

Context. Tajikistan has an area of some 141,000 km², of which about two-thirds are the foothills and high mountains of Turkistan, Zarafshan, and the Pamirs. Several ethnicities are represented in its population of 6.3 million. Independence and turmoil, followed by a bloody civil war in the 1990s, left Tajikistan among the poorest countries in the world, but its economy is now growing. Real annual growth in GDP has been in the range of 6-8% over the past few years. As of 2004, annual per capita income was estimated to be around US\$300. About 64% of the population remains below the poverty line.

Agriculture. Agriculture is critical to poverty reduction and economic growth of the country; about two thirds of Tajikistan's citizens are directly dependent on agriculture for their living. Agricultural production represents a fifth of Tajikistan's economic output. Of Tajikistan's 4.6 million ha of agricultural land, only about 780,000 ha are arable and irrigated, of which about 500,000 ha are under rotation between cotton and cereal crops, with about 290,000 ha under cotton at any one time. Cotton is the dominant cash crop; its trade represents a significant portion of foreign hard currency revenues.

Tajikistan's soils and climate give it an excellent potential for the production of grains, cotton, and a variety of horticultural crops, including orchard crops. For years, Tajikistan enjoyed among the highest yields in the region. Its cotton was in especially high demand because of its long staple and high luster. After the dramatic decline in farm productivity in the middle to late 1990s, recent years have showed some recovery; however, this turnaround has not been able to reach its full potential for a number of reasons, chief of which is the crumbling rural infrastructure, particularly irrigation facilities. In many cases, water supply systems have been kept in running condition through cannibalization of parts and shoestring repairs, but the drainage systems have been quickly falling into disrepair which has led to problems of water-logging in some areas, even yearly flooding in the worst cases. As a consequence of the collapse of irrigation systems, substantial areas have been lost to cultivation. This has occurred mostly in low lying areas due to water-logging but also at system tail ends where the volume of conveyed water shrunk to the point where cultivation has become uneconomical.

Economic and financial viability of irrigation. Improving irrigation is high on the agenda of the Government. However, as in the rest of Central Asia, the sector is confronted with issues of sustainability and cost recovery, especially in light of energy liberalization. Irrigation in Tajikistan is split in two categories; about 2/3 is gravity irrigation and about 1/3 is lift irrigation (some of which is up to 250 meters). Yet budget allocations do not reflect this reality; only 1/3 of budgeted operational and maintenance costs go to gravity irrigation, while about 2/3 of budgeted resources go to lift irrigation. Reforms in the electricity sector focus on cost recovery as major objective and pumping of irrigation water together with the large aluminum smelter are the two main consumers of electricity. Full cost recovery on irrigation would include recovering the full cost of electricity. This calls into question the economic viability of lift irrigations unless farmers switch to higher value crops, and adopt more efficient irrigation technologies so that irrigation water volumes drop dramatically.

Farm Land privatization. Farm land privatization is an important element of irrigation sustainability since water users need to be motivated through incentives to reducing the volumes (cost) of water. Individuals can only be motivated to lower use if they have a direct stake in the land they are working. It is that motivation together with more interest in the management of irrigation and drainage (I&D) services that will make it possible to collect fees and render many of these systems sustainable. The first Bank-financed Farm Privatization Support Project (FPSP) privatized 10 pilot Collective/State farms (CSFs) located in the lowlands, transferring land to some 5,782 farm families with secured land use certificates that clearly define the parcel boundaries, coordinates, and registered with a Universal Parcel Number (UPN) in a central database. The experience in that project has shown that land owners who pay for irrigation water adopt more efficient water use practices, switch to higher value crops or reduce water consumption in order to maximize the value of the water used for which they are billed.

The Ferghana Valley. The Ferghana Valley is an economically and culturally important region of Central Asia. It has a total population of about 11 million people, divided among Uzbekistan, the Kyrgyz Republic and Tajikistan. Seventy percent live in rural areas. The Ferghana Valley is rich in water resources. The Syr Darya is the main water source; however, the Valley is rich in groundwater as well. Since the collapse of the Soviet Union, the Valley's (I&D) systems have fallen into disrepair. This has resulted in unreliability in the supply of irrigation water, emergence of drainage and water-logging problems, loss of soil fertility and crop yields, and reduction in the total irrigated area. The chief element of the Valley's water control system is the Kayrakum Dam and Reservoir, which is located on the Syr Darya upstream and east of Khujand. The dam operates primarily to manage release of water (i) for irrigation to downstream agricultural areas in Uzbekistan and (ii) for hydropower generation for Tajikistan. Adjacent Valley lands to the north and south are supplied with irrigation water from (i) the Reservoir and river, with the aid of large pumping stations, (ii) two main irrigation contour canals that enter the area from Uzbekistan to the east, and (iii) tributaries of the Syr Darya and Reservoir. Numerous drainage pumping stations and irrigation/drainage tubewells evacuate drainage flows and control high groundwater levels.

Tajikistan's territory in the Valley covers about 700,000 ha, of which about 220,000 ha is suitable for irrigation. However, only 134,000 ha are water irrigated cultivation, as a result of the deterioration of irrigation infrastructure and the weakness of water management. The falloff in irrigated area has affected the livelihoods of about 2 million people in Tajikistan's share of the Valley, reducing agricultural income and increasing the incidence of poverty.

Cross border water management problems. The mountains of Tajikistan and Kyrgyzstan are the main source of water for the Aral Sea basin. Several large dams are located in these mountains that need to be recharged during the spring months if they are to provide water for irrigation mainly in summer to Uzbekistan, Turkmenistan, and Kazakhstan. The irrigation networks built during the Soviet central command era have layouts designed to carry water hundreds of miles away across national boundaries. These are today often points of contention among the countries involved, where each country sees its right to water as unalterable. In addition to cross-border problems and deterioration from years of neglected maintenance, the system suffer from a general belief that water and its infrastructure is a free resource with the result that there is little willingness to pay for it.

Conflict on water use priorities. At present, the two upstream countries, Tajikistan and the Kyrgyz Republic, use water for energy generation during the winter months, preventing the dams from recharging adequately to supply the large volume of water needed mainly in summer for irrigation in the downstream countries. Such water releases during the winter period have also in some cases caused serious flooding downstream, where water flows are inhibited by frozen canals not engineered for winter flows. Under the Soviet period, the upstream countries were provided with large yearly shipments of coal, and arrangements for gas distribution. Energy supplied in this way prevented the current problems. Today, while agreements still exist between the countries for fuel transfers in return for water, they are often broken or neglected on both sides: upstream countries not supplying agreed water quotas, and downstream countries not delivering agreed fuel supplies needed to keep residents of mountain countries warm in winter.

Institutions in the water resources sector. At present, the Ministry of Melioration and Water Resources Management (MMWRM) is in charge of water resources management and planning. The Soghd Oblast State Water Resources Management Department (SOSWRMD) is in charge of water resources management at the oblast level. Water departments at the raion (district) level are in charge of operation and maintenance (O&M) at that level. The present setup is highly centralized, with limited participation by stakeholders and beneficiaries. Budget allocations for O&M are not adequate, and the rate of water fee collection is low.

Government strategy. The Government's Poverty Reduction Strategy Policy emphasizes economic growth, provision of basic social services, and targeted support to the poor and improved governance. In the agricultural sector, the Government's strategy supports enhanced access for the poor to land and water; efficient use of land, water, financial and other resources; and reduction of government intervention in private farm decision making. Because high-yield agriculture in Tajikistan is dependent on irrigation, the Government emphasizes the need to rehabilitate main irrigation infrastructure and to improve water management. The Government aims to increase the contribution of users to the overall sustainability of such systems through collection of water fees, and involvement of user groups in the management of the local infrastructure.

Government actions. The Government is in the process of reforming the agriculture and irrigation sectors by promoting the creation of private family farms and providing a liberalized price and trade environment. In 2001, the Government passed legislation for rational use and protection of water resources and management of water resources at the basin level based on demand management principle. In the irrigation sector, a revised draft Water Code is being prepared for submission to the Majlis Oli (parliament) that will regulate rules of water extraction, use and discharge. Also, the Government is preparing a new regulation which will allow more users participation and establishment of water users associations (WUAs).

The government has also slowly been introducing reforms to the pricing of water. Cost of water over the past four years has tripled, although, admittedly, starting from a very low base line. It is working on a policy that will include differentiated prices across systems reflecting operation and maintenance costs, thus slowly moving towards cost recovery in the irrigation sector. At present, from experience gathered under FPSP, fees collected on gravity systems are approaching

about half of operating and short term maintenance costs. However, WUAs need to increase their reserves in order to undertake large scale rehabilitation (capital investments) which will become necessary on rehabilitated structures over the course of the next five years. In areas with lift irrigation, cost recovery is about 10% of what is needed, excluding rehabilitation.

The Rural Infrastructure Rehabilitation Project (RIRP) now in implementation is tackling the conveyance systems that feed the private farms established under the FPSP and is simultaneously improving water delivery to command areas in proximity of the project areas. It also seeks to improve drinking water infrastructure and build significant institutional capacity in local water management by creating water users' associations (WUAs) and village water organizations (VWOs) to take over management of water at the farm and village level respectively.

2. Rationale for Bank involvement.

Tajikistan's CAS for 2006-2009 will be presented to the Bank's Board on July 26, 2005. The objectives of that CAS are (i) improve business opportunities in rural and urban areas, (ii) preserve and enhance the quality of health and education, and (iii) improve the delivery of energy services and exploit the country's hydropower potential. The Ferghana Valley Water Resources Management Project (FVWRMP) would support the first objective by enhancing business opportunities in rural areas. Farmers and private agriculture business would benefit from improved irrigation and drainage systems to be implemented under the project, which would result in more efficient agriculture production, higher incomes and other business related activities.

Through the implementation of the RIRP, the Bank has acquired considerable experience with the irrigation and water distribution issues in Tajikistan. The experience gathered through that project will greatly facilitate the implementation of the FVWRMP. Bank support will build upon the experience, analysis and relationships that have been established under its projects and sector work and under the programs of other donors working in the irrigation sector.

The Bank and the Government have also recently approved the Land Registration and Cadastre System for Sustainable Agriculture Project (LRCSP), a project that would expand the efforts on farm land privatization by investments in the State Land Committee (SLC). The objective is to build capacity of the SLC to complete its mandate to privatize agricultural land by issuing land use certificates to individual farm families with clearly demarcated land parcels including coordinates and registered through a UPN at the central office in Dushanbe to set the foundation of a functioning rural cadastre. The benefits of the privatization process will be greatly enhanced with the simultaneous rehabilitation of basic rural infrastructure supporting irrigation. The areas to be covered under FVWRMP will be identified as priority areas for privatization so as to ensure that the proper incentives are in place to help with improved water management and introduction of water users associations.

3. Higher level objectives to which the project contributes

As noted above, most water resources available for irrigation in Central Asia originate in Tajikistan and Kyrgyzstan, both of which have large reservoir structures and dams where water from snow melt is collected and can be released during the dry summer season to downstream countries for which this is the only source of irrigation water. The project will focus on the Soghd Oblast of Tajikistan and the westernmost portion of the Ferghana Valley, aiming to achieve purely national benefits in terms of improving local irrigation and drainage systems, while simultaneously reestablishing the safety and improved operations of Kayrakum Dam and Reservoir, thereby benefiting downstream countries as well as Tajikistan herself.

B. PROJECT DESCRIPTION

1. Lending instrument

This specific investment project will be financed through an IDA grant of US\$13.0 million equivalent and Government contribution of US\$ 1.17 million, financing a total project cost of US\$14.17 million.

2. Program objective and phases

The FVWRMP is aimed at helping the Government of Tajikistan to address the deficiencies affecting irrigation and drainage in the Eastern part of the Soghd Oblast and to improve the overall state of water management in the area of the Kayrakum Reservoir structures, affecting irrigated agriculture in most of the Ferghana Valley. The proposed project would address critical elements of the irrigation and drainage systems to improve their performance and efficiency, and would improve the safety and operation of Kayrakum Dam. Interventions under the project are to focus on improvements to Ferghana Valley systems and areas located south of the Kayrakum Reservoir, in Kanibodom and Bobojon Gafurov raions. An irrigation area of about 30,000 ha will be covered under the project, benefiting about 250,000 people. The improvements under this project will secure irrigated agriculture and simultaneously will improve operational performance and safety of the reservoir structures that serve a large part of the Ferghana Valley.

3. Project development objective and key indicators

The project objectives are (i) to improve the capacity for increased irrigated agriculture productivity in the Ferghana Valley by improving land and water management, and (ii) to improve safety and regulation of the Kayrakum Dam and Reservoir, thereby contributing to enhanced water management security and efficiency at the basin level.

Expected project outcomes include:

- improved reliability of pumped irrigation water supply,
- improved irrigation water use efficiencies,
- increased reuse of groundwater for irrigation

- improved conditions for I&D systems operation and maintenance (O&M),
- reduced flooding and waterlogging,
- well established institutional arrangements for users' participation in the operations and maintenance of I&D systems through formation of Water User Associations (WUAs),
- increased agricultural production, and
- improvements to dam and reservoir safety and operations.

Selected key indicators include:

- 70% reduction of flooded and waterlogged land areas within project perimeters near levees,
- 30% improvement in timely water availability in irrigated areas under project,
- WUA established and functioning adequately in Western Kanibodom,
- 80% collection of billed water fees from WUAs established for more than a year under the project, for O&M of I&D gravity and pumping systems, particularly tubewell systems,
- 10% minimum increase in crop yields,
- dam safety management and emergency action plan in place,
- forecast accuracy for available reservoir storage volumes and inflow/outflow volumes improved to 70% accuracy level.

4. Project components

To meet its objectives the proposed project will contain four distinct components that will address rehabilitation of I&D infrastructure, improvement of safety and operation of the Kayrakum Dam and Reservoir, development of institutional and technical capacity, and provision of project management support, all to ensure the sustainability of systems and institutions supported by the project. The four components are as follows, and further details are given in Annex 4.

A. *Irrigation and Drainage Systems Rehabilitation and Improvements (US\$ 9.02 million).* This component will finance design and works for rehabilitation of pumped and gravity I&D systems serving some 30,000 ha of farm land in the Kanibodom and Bobojon Gufarov raions, including (i) reforming and cleaning of main and secondary off-farm collector drains, and rehabilitation of associated drainage pumping stations, (ii) renovation of I&D tubewell systems, (iii) rehabilitation of selected major irrigation pumping station systems, (iv) repairs and lining of selected sections of the Big Ferghana Canal (BFC), and (v) improvements to selected inter-farm and on-farm surface and subsurface I&D systems.

B. *Strengthening Kayrakum Reservoir Dykes and Improvement of Kayrakum Dam Safety and Reservoir Operation (US\$ 3.03 million).* This component will fund (i) design and works related to rehabilitation of the Kayrakum Reservoir dykes in Kanibodom and Bobojon Gufarov raions, and (ii) technical studies, dredging and other equipment and instrumentations, and minor works to increase operational performance

and improve management of the Kayrakum Dam and Reservoir, to improve dam safety and to develop dam and reservoir emergency procedures.

C. Institutional Development and Technical Assistance (US\$ 1.37 million). This component will fund the necessary institutional capacity building for (i) establishment of WUAs, (ii) improving agricultural productivity and achieving more efficient water use patterns, and (iii) ensuring proper environmental impact mitigating measures. Activities will include training, and demonstration programs as well as information dissemination exercises and technical assistance (TA) from international and local specialists.

D. Project Management (US\$ 0.75 million). This component will fund assistance to the central Project Management Unit (PMU) and to the regional Project Implementation Unit (PIU) established for project implementation. Items to be covered under this component will include (i) establishment and support of a PMU in Dushanbe within the MMWRM, and of a PIU in Khujand, (ii) local and international TA for managerial, technical, financial, procurement and administrative supervision of implementation activities, (iii) setup and operation of a project monitoring and evaluation (M&E) system, and (iv) an institutional strengthening program incorporating relevant training and study tours.

5. Lessons learned and reflected in the project design

The concept and design of the project draw on Bank experiences in similar projects implemented in ex-Soviet countries and globally. Particularly relevant lessons learned and reflected in project design are summarized below.

(a) **Integrated and all-inclusive approach.** Development interventions that improve only physical infrastructure have been found to be generally unsustainable over the long term. Long-term sustainability is improved by attending to key associated social, environmental, institutional and financial development aspects. The project addresses this finding through an approach that covers both physical and non-physical improvements to the irrigated agriculture sector in an integrated manner.

(b) **Flooding, waterlogging and high groundwater levels.** For security of the water supply, rehabilitation of Kayrakum Reservoir pumping stations to ensure delivery of irrigation water is a high priority for the Government. However, a one-sided focus on pumping capacity does not take into account the fact that much of the project area is adversely affected by flooding, waterlogging and high groundwater levels. International experience shows that irrigation problems and drainage problems need to be resolved jointly. In addition, a focus on minimizing water abstraction and disposal volumes is driven by water and environmental management factors and by economic considerations. In the project area, the sources and causes of excess water are various, and some of the excess water problems may have an international dimension. Problems that can be addressed under the project will be attended to in conjunction with the irrigation delivery

improvements, and with better water management and introducing conjunctive use (surface water + groundwater) where it is possible. Physical system interventions will be complemented by studies and initial implementation activities relating to non-physical water management improvements.

(c) ***Power systems.*** It has been a common finding in ex-Soviet countries that power and water infrastructure systems have greatly deteriorated. Because I&D systems are heavily dependent on power, their rehabilitation must also address power system deficiencies. The project therefore includes support needed for the electromechanical installations that are to be rehabilitated.

(d) ***WUAs.*** There is a great deal of international experience on institution of WUAs where I&D systems are managed by the beneficiary farmers and rural communities. This experience is to be applied toward development of such organizations under the project. Two lessons from that experience to be applied are: (i) for successful, democratically functioning, WUA, members should be system users who are owners, or who have secure and long-term tenancy of the lands being serviced; and (ii) for sustainable financial self-reliance, WUAs need to correspond to a minimum size of I&D service area, assumed in this case to be in the range from about 3,000 to 6,000 ha. For the first, farm land privatization is being addressed under the LRCSP that is expected to be effective by the time activities under the FVWRMP are to be implemented, and that will focus on FVWRMP areas. For the second, the minimum size criterion will be a determining factor in the formation of WUAs under the project.

(e) ***Agricultural production and socio-economic conditions.*** Levels of agricultural output and farm incomes are the ultimate determinants of sustainability of I&D systems, because the resources for O&M originate largely from these. Therefore, suitable agricultural enhancement, training and extension programs are to be carried out and supported under the project.

6. Alternatives considered and reasons for rejection

(a) ***Piecemeal major infrastructure investments.*** The Government originally considered that its priority investments should be in repair and rehabilitation of selected major but disparate water system infrastructure components (mainly pumping station systems). This approach would not necessarily result in improvements to overall systems and services supporting irrigated agriculture in the corresponding command areas. In the end, the approach was revised because such investments on their own would not be expected to (i) provide sufficient protection and security of operation of the major system components, (ii) allow for sustainable long-term O&M of the installations, or (iii) generate the agricultural and socio-economic benefits to render the investments viable over the long term. Hence the proposed project would comprise a full range of physical, socio-institutional and agricultural improvements in selected command areas.

(b) ***Gravity system improvements with no dam and reservoir improvements.*** Because only relatively modest resources are available for this project, and because the Government originally did not favor investments to improve safety and operations at Kayrakum Dam and Reservoir, a project focusing on gravity-system improvements was outlined. Such a project would have achieved physical and operational improvements primarily in gravity surface I&D systems, improving efficiencies and generating water savings, and hence reducing the dependency on pumped systems. Financially and economically less-attractive investments in rehabilitation of pumping-station systems would have been postponed. Because such a project would not depend on the dam and reservoir, investments in those would also have been postponed. However, the strategic importance of Reservoir-based pumped irrigation systems argued against this approach. Nevertheless, some elements of this alternative approach have been retained: improvements to high-lift pumping systems not based on the Reservoir are not being included at this stage, while efficiency improvements continue as an important feature.

(c) ***Development of new lands.*** Some potential for development of new lands for irrigated agriculture may exist. There have been suggestions that such development could be included under the project. The potential for such development remains to be established through project-related water resource studies. Meanwhile, the inclusion of new lands development in the project has been rejected in favor of higher priority attention to be given to proper physical and operational restoration of existing systems.

(d) ***Full development of command areas.*** The principle of complete and integrated command area development would indicate that all needed improvements, both physical and non-physical, should be undertaken under the project for command areas to be addressed. Despite the value of this principle, it will not be adhered to in full, as a result of the partial nature of progress and success to date of the land reform process. Primary (off-farm) and some key secondary (inter-farm) physical system improvements are to be implemented on a command-area basis, but full completion of other secondary (inter-farm) and all tertiary and lower-order (on-farm) physical improvements, and corresponding socio-institutional and agricultural development programs, are to be implemented only for selected systems and areas corresponding to predominantly privatized farm lands.

C. IMPLEMENTATION

1. Partnership arrangements

The project complements part of an irrigation project supported by Asian Development Bank that is rehabilitating rural infrastructure at the lower end of the Kayrakum Reservoir. In combination, these two projects will improve water management and irrigation for most of the most valuable land in Konibodom and Bobojon Gufarov raions. Furthermore, the project is linked with USAID's efforts to improve water resources management in the irrigation sector of Tajikistan, Uzbekistan and Kyrgyzstan. USAID's efforts concentrate on building capacity at the level of WUAs and supporting the drafting of a regulatory and legislative framework to facilitate establishments of effective WUAs. The Swiss Department for Economic Cooperation, SECO, has shown keen interest in supporting this project. However, its funding was not available in time for inclusion in the project design at the appraisal stage.

2. Institutional and implementation arrangements

A Central Project Steering Committee (CPSC) has been established to oversee project preparation. It is chaired by the Deputy Prime Minister responsible for the Agriculture Sector, with the Minister of Melioration and Water Resources Management as the Deputy Chairman. It includes representatives of the Ministry of Agriculture, Ministry of Finance, Ministry of Energy and Ministry of Health, the chairmen of the State Committee for Nature Protection (SCNP) and State Land Committee (SLC) and the director of the central Project Preparation Unit (PPU). The CPSC is also expected to oversee project implementation. Its main roles will be (i) to provide administrative direction and guidance to resolve problems that cut across several ministries, (ii) to formulate policies that interrelate to various concerned sectors, (iii) to review and approve annual work programs and budgets, and (iv) to resolve implementation bottlenecks needing top level intervention.

The central PMU, to be established in Dushanbe within the Ministry of Melioration and Water Resources Management (MMWRM), but with budgetary independence from MMWRM, will be responsible for the implementation of the project. Staff working for the PMU will be selected on a competitive basis and will be paid from the project resources at rates agreed with the Bank. The PMU will be largely responsible for procurement and for administration and financial management of the project as well as for M&E.

A regional Project Implementation Unit (PIU) in Khujand will lead technical support and coordination related to I&D infrastructure improvements, and will ensure the quality of execution of design and works contracts. It will similarly oversee the establishment and development of WUAs under the project. In its work, the PIU will closely coordinate its efforts with the Oblast and Raion offices of the MMWRM and other pertinent line offices of involved ministries. The project's agricultural support component will be implemented under the PIU in close coordination with the Farm Information and Advisory Service (FIAS) established under the FPSP which has now been turned over to the Ministry of Agriculture. FIAS has equipment, materials and training courses that will help achieve successful implementation in this area. The

PIU is also expected to implement the project's environmental activities in close coordination with the SCNP, which has been supporting other Bank projects in the implementation of environmental mitigation measures during works construction and assuming the institutional responsibility to ensure continuity of necessary soil and water testing. Financial management functions will be centralized within the PMU that will have adequate number of staff to provide accounting support that may be required in the regional PIU.

Strength and Weaknesses: The primary strength of the PMU financial management system will be derived from its continuity from the PPU, and thus will have personnel with a minimum of understanding of Bank financial management requirements. The Project Preparation Unit (PPU) has been implementing the preparation of the project with funding from a PHRD grant. A financial manager was hired prior to negotiations, and has participated in the development of project accounting system for the project. The financial management action plan discussed and agreed during negotiations has been satisfactorily implemented, and the PMU now has an accounting system that is capable of monitoring resources and expenditures of the project and generates reports such as the Financial Monitoring Reports. The financial manager recently attended a financial management and disbursement seminar organized by the World Bank, and has acquired some familiarity with World Bank procedures. However, both the project coordinator and the financial manager do not have experience with implementation of World Bank-financed projects, and additional training will be required, as well implementation support by Bank staff.

3. Monitoring and evaluation of outcomes/results

The Results Framework is in Annex 3. Monitoring and evaluation will make use of existing data sources, supplemented by regular routine project data collection, and special survey and assessment updates undertaken by contracted specialists. Monitoring of groundwater levels and crop yields in the project areas will also be included. The evaluation of outcomes will make use of baseline measurements from poverty assessments, the social assessment and the environmental assessment and of analysis of data recorded by the MMWRM and the PMU from bi-annual updates of data from the project monitoring system, from special assessments, and from other sources. The project also includes arrangements for participatory monitoring WUAs and communities affected by the project.

4. Sustainability

- Technical sustainability is to be achieved through the provision of adequate TA for project planning and implementation, including procurement and technical quality control.
- Institutional sustainability will be addressed through capacity building in the beneficiary rural communities and in technical support for agencies and relevant line ministries, and by instituting the participation of all stakeholders in the O&M and water management activities needed for proper functioning of I&D systems, including service fee aspects.
- Financial sustainability will be promoted through the establishment of WUAs to take responsibility for upkeep and management of lower-order systems, to

contract with the responsible Government agencies for provision of system services, and to pay for these through collection of fees from the water-using community. Current FPSP experience shows a clear willingness of users to pay water fees if water is delivered in accordance with yearly agreement made between Members and their WUA, as well as between the WUA and the raion office of the MMWRM.

- Environmental sustainability will be addressed through implementation of the environmental management framework and through direct investments to ensure proper mitigating measures relating to impacts resulting from works and increased farm productivity.
- Social and cultural sustainability will be addressed through close involvement of stakeholders in the design and planning process to ensure that the rehabilitation works effectively address the most urgent needs of the local population.

5. Critical risks and possible controversial aspects

Risks	Risk Mitigation Measures	Risk Rating with Mitigation
<i>To project development objective</i>		
Procurement and financial management aspects	The project would provide project-specific training on procurement and financial management	S
Need regional cooperation to improve operation and management of Kayrakum Reservoir	The Regional IDA Initiative for regional cooperation would help in fostering cooperation among affected countries with area in the Ferghana Valley. Also, during supervision, the project team will work closely with the other planned similar project in Ferghana Valley to ensure an adequate regional cooperation.	H
Government may not have sufficient funds to provide counterpart budget	New expenditure eligibility framework increases standard disbursement percentages and counterpart budget can be minimized and which the project is using. In addition, the project requires inclusion of project-specific line items in the annual government budgets.	M
Limited capacity to implement the project in the institutions that operate and maintain the I&D systems.	The project would include investments designed to strengthen the capacity of those institutions, such as training and provision of equipment.	M
To component results		
Farm land privatization is essential for the establishment of the WUAs. However, there is a risk that the LRCSP move slower than planned which would affect establishment of WUAs.	The Government is committed to implement the project, also the Bank Team has gained a good experience in implementing the FPSP which would be helpful in implementing the LRCSP.	M
Sustainability of WUAs and rehabilitated infrastructure is only achievable with adequate cost recovery on pumped water	Early on, the project will integrate WUAs formation with experience gained under the FPSP and RIRP: training material and courses, manuals and documentation developed under those projects.	S
Overall risk rating		S

[Risk ratings: L <25%; M 25-50%; S 50-75%; H > 75% likelihood]

6. Grant conditions and covenants

Conditions of Project Effectiveness: Adoption by the MMWRM of a Project Operational Manual (MOP) satisfactory to IDA.

Conditions of Disbursement: None.

Other Conditions in the Legal Agreements:

- **Auditing.** The project will adopt *Guidelines for Financial Reporting and Auditing of Projects Financed by the World Bank (June 2003)*. The Borrower will appoint an independent auditor in accordance with International Standards on Auditing (ISA) and terms of reference acceptable to IDA by December 31, 2005, and the audit will be carried out within six months of the end of the Borrower's fiscal year.
- **Special account.** The Borrower will open and properly maintain separate special account for the IDA Grant.
- **Counterpart funds and budget.** A line item will be provided in the annual National Budget beginning 2005 for funds required for implementation of each project component. By September 30 of each year, the Government shall review the provision for counterpart funds and confirm that an adequate allocation for project implementation will be included in the budget for the following calendar year.
- **Farm Land Privatization.** The Government will give priority to the privatization of farm land within the areas under the project (raions of Bobojon Gufarov and Kannibodom) so as to help setting the base conditions to establish viable WUAs and involvement of users in water management on tertiary systems.
- **Monitoring, review, and reporting.** Standard reporting covenants will apply: the PMU will send to IDA on a half-yearly basis its monitoring and evaluation reports and the status of the agreed key monitorable indicators. A project design and implementation review would be undertaken by the Government and IDA by September 30 2008, to determine the lessons learnt and to make appropriate changes, if needed, in the project objectives, scope and components.
- **Land access restrictions.** No human settlements will be displaced as a result of project activities, and any adverse impacts on vulnerable people or any other restrictions of access to land resulting from project activities, if any, will be mitigated by project investments directly benefiting the affected people.
- **Environmental Management Plan (EMP).** The project shall be implemented in accordance with the agreed environmental management framework.
- **Implementation guidelines.** All project activities will be implemented in accordance with a Project Operational Manual acceptable to the Bank

D. APPRAISAL SUMMARY

1. Economic and financial analyses

Cost Benefit Analysis Summary (Economic Analysis)

	Performance indicator
Economic analysis:	
Economic rate of return	20,0%
Net present value	US\$ 6.1 million
Financial analysis:	
Financial rate of return	18,2%
Net present value	US\$ 4.7 million
Project baseline costs	US\$ 14.17 million

In order to examine the economic feasibility of the project, a financial and economic analysis was carried out focusing on the effects of the project on agricultural productivity. The performance indicators of the investment analysis are the Economic Rate of Return (ERR), Financial Rate of Return (FRR) and the Net Present Value (NPV).

The calculations have been limited to the direct economic benefits to Tajikistan and directly related to agricultural productivity increases. The various project components will result in an improved irrigation water delivery and a reduction of problems caused by flooding and high groundwater levels. Significant non-quantified benefits will accrue under the project, including improvement of management know-how on the irrigated farms, reduction of water levels in several communities that will substantially reducing waterborne disease and the strain on local infrastructure, and improved water management in the basin which will have positive effects for the local environment.

The project interventions are concentrated in the Kanibodom and Bobojon Gafurov raions and correspond to a total irrigated area of 30,000 ha. The dominant crop is cotton, cultivated on 66% of the arable land, followed by wheat, apricots and fodder production for livestock. It is expected that apricot yields will increase by 22%, field crop yields including; wheat, and fodder yields would increase between 13 – 17% while cotton yields would increase by around 10%. Also it is expected, that in addition to the project investment costs of US\$ 14.17 million, costs for fertilizer, chemicals, seeds and labor will rise which will result in an increase in working capital of farms. The project investment analysis is based on economic prices. Border prices are estimated for cotton and wheat. In addition, family labor is assessed with opportunity costs and additional costs of transport, collection and government taxes are taken into account in cotton production.

The estimated ERR of the project is 20.0%, meaning that the Tajik economy would realize a 20.0% rate of return from implementing the project, which is well in excess of the opportunity cost of capital (OCC), taken at the discount rate of 12%. The net present value (NPV) with 12% discount rate and a project period of 20 years is estimated at US\$ 6.1 million. The FRR amounts to 18.2% and the corresponding NPV is US\$ 4.7 million.

Sensitivity analyses have been carried out for various risks. For the project as a whole, the total cost of the project would have to increase by 48.3% to reduce the ERR to the opportunity cost of capital. If the crop prices (cotton and wheat) were 10% less than assumed, the ERR would still be 17.6%.

2. Technical

The major works to be undertaken under the project (embankments, excavation of drains, irrigation canal lining, and repair to pumping stations and tubewells) are relatively simple. The Government's experience in constructing pumping irrigation schemes stretches back to the 1970s. However, to ensure quality of civil works construction, the works would be packaged for bidding purposes to attract qualified contractors, and contract management and construction supervision would be carried out with the assistance of qualified engineering firms.

Detailed designs for all I&D works (including I&D works within the areas of WUAs) would be prepared jointly by an international engineering firm and national staff. Designs and bidding documents for works within the areas of three WUAs (two from Kanibodom raion and one from Bobojon Gafurov raion) would be prepared as soon as possible after agreements have been reached between the PIU and the WUAs about the priority of works to be undertaken. This process will streamline the interactions between the consultants and the WUAs, and will set design and survey standards including typical designs for standard structures.

The design of drainage water pumping capacity should consider a reservoir level of 348.00 m above sea level; this is 0.50 m above full reservoir level yet 0.35 m below maximum reservoir level. This is considered to be sufficient given that full use of the reservoirs flood storage will rarely (if ever) occur, and that if it does so, it would only be for a few days. Experience in the past has shown that the protection against wave action of the embankment slopes along the southern fringes of the reservoir is of crucial importance, as is regular maintenance of the embankments in summer after high reservoir levels in winter and spring.

Lining of the Big Ferghana Canal (BFC) should be done according to a detailed survey prioritizing sections of the BFC for lining with reference to water-saving impact. This and other works for the improvement of irrigation water supply should be carried out in close cooperation with ADB's Irrigation Rehabilitation Project in Bobojon Gafurov raion.

3. Fiduciary

Financial management. An-assessment of the financial management arrangements for the Ferghana Valley Water Resource Management Project was undertaken in January and April 2005, to determine whether the financial management arrangements put in place by the Project Preparation Unit (PPU) are acceptable to IDA, and to monitor the process of strengthening the financial management system (FMS) in readiness for the proposed project. These financial management arrangements include the systems of accounting, financial reporting, auditing, internal controls and budgeting. The PPU under the Ministry of Melioration and Water Resources Management would be converted to a PMU to be the implementing agency for the proposed project. The PPU has installed an accounting system that can satisfactorily track the resources and expenditures for the project. A financial manager has been hired to maintain the project accounting system, using the installed 1C accounting software. The accounting system is

capable of recording all transactions and balances, supporting the preparation of regular financial statements, and safeguarding the assets of the project. Staff will, however, require some additional training in the use of this new software, as well as World Bank financial management and disbursement procedures. A draft of the manual of financial procedures has been reviewed by the Bank and has been found to be satisfactory. The manual will, however, be subject to review during project implementation.

Procurement: The PMU will have the responsibility for all project-related procurement. The PMU local staff will be fully trained in the procurement of goods, works and services. Substantial resources have been made available under the project management, to build the capacity of the PMU to assume procurement and financial management responsibilities. There is a procurement plan for the first eighteen months of the project life. See Annexes 7 and 8 for details.

4. Social

A rapid social assessment (RSA) was undertaken with the aim of ensuring that the FVWRMP achieve three key development objectives in the Ferghana Valley: (a) increased employment and income of farmers; (b) increased cropped area and crop yield; and (c) increased irrigation water supply, promote more efficient water use in summer, and reduced flooding and waterlogging year round. These objectives respond to the three strategic outcomes of World Bank projects: Social Inclusion, Empowerment and Security.

The RSA provides input on how different stakeholders in selected rural communities assess their social, economic and irrigation water-related agricultural needs and problems. It sought to identify the most vulnerable groups and the most critical risks facing poor farmers. It further assessed the capacity of central and local government and other institutions currently involved or with an interest in local water management, for contributing to the development objectives, as well as identified the main beneficiaries of the project activities.

The local research team, under the supervision of the international consultant, employed both quantitative and qualitative methodologies for the RSA. About 280 questionnaires consisting of over 30 questions were administered in two raions (regions), Bobojon Gafurov raion and Kanibodom raion of Soghd Oblast in the Ferghana Valley. The data collected covered issues related to several variables: socio-economic status, income, irrigation and farming, health, attitudes towards central government offices, and people's willingness to form local cooperatives or community organizations, such as Water Users Associations (WUAs) for managing water issues at the local level. Six focus groups were held, three in each of the two regions with residents and local farmers. One focus group consisted of all women to highlight gender related issues. Several site visits were made to the farms and houses of local residents to observe problems such as waterlogged lands and dampness inside houses. More than 20 key informant interviews with government officials were conducted.

Main conclusions drawn from the social assessment are that the project does address the main concerns of the local population. Its impact even at the individual level is positive and no possible negative impacts have been identified. Improved water management will greatly affect the quality of life of the population by reducing periods and levels of flooding which will result

in improved sanitary conditions and reduce exposure to molds, fungi and other form of degradation, thus improving health conditions in those areas. Similarly, better water management will improve the yields of family gardens and improve drinking water supply which will greatly reduce exposure to waterborne diseases. The report also identified a willingness to pay for the improved living conditions which would bode well for sustainability of WUAs. The social assessment does however note that significant difficulties can be expected in forming such associations in a truly bottom-up and democratic fashion. Finally, the social assessment found that there is no risk of displacement; this project mostly relate to the rehabilitation of existing structures where management procedures and access restrictions were defined when the systems were first constructed. Similarly, the rehabilitation of existing structures will not introduce any limitations on grazing rights or access to water for livestock.

A key issue is that the project benefits under the current land ownership structure are not accruing to farmers but will mainly go to the cotton traders and government overall. In order to have the local population reap the bulk of the benefits, equitable and fair farm land privatization will be crucial. This is mitigated by the fact that LRCSP will focus its farm land privatization efforts on the project area.

5. Environment

The environmental assessment (EA) confirmed the Category “B” designation for the proposed project. It found no significant, irreversible, cumulative or long-term adverse impacts. In fact, the EA identified a number of positive impacts of the proposed project including improved irrigated agricultural productivity, improved public health, reduced water losses and enhanced soil fertility. It identified only minor negative impacts, such as infrastructure construction impacts, impacts on water quality and soil fertility, and threats to biodiversity and habitat, which could be effectively prevented or reduced through application of appropriate preventive actions, mitigation measures and monitoring. The EA also confirmed the application of two other safeguard policies (i.e. projects on international waterways and safety of dams) and examined but rejected application of the safeguard policy for pest management. Finally, the EA determined that the project, as currently proposed, does not trigger any of the remaining safeguard policies involving forestry, natural habitat, cultural property, indigenous peoples, involuntary resettlement or projects in disputed areas.

The EA recommended the following preventive actions and mitigation measures, supported by ecological and social monitoring, to address the few potential negative impacts identified: (i) environmental management guidelines and appropriate site-management plans to minimize any damage caused by contractors during construction activities and ensure proper disposal of excavated sediment and construction waste; (ii) training in proper agricultural and water management practices and water quality/quantity monitoring to address the potential threats to water quality in water bodies in the project areas; (iii) installation of fish protection devices at pumping stations to prevent damage to fish and

other aquatic life; and (iv) studies, information dissemination to address public health concerns from drinking water problems and water-related diseases.

The Environmental Management Plan (EMP) recommends (i) a mitigation plan comprising the necessary preventive actions and mitigation measures to address potential adverse impacts; (ii) a monitoring plan comprising the monitoring of key ecological and social indicators; and (iii) institutional strengthening, including capacity building, training and study tours, equipment, special studies and public awareness campaigns. The EMP includes a schedule for PIU implementation of these measures and a budget for about US\$ 200,000 over the life of the project.

The EMP team began the process of consulting the relevant stakeholders and beneficiaries of the project during its initial screening mission in November 2004. The team met with various national and local officials of MMWRM, SCEPE, MOA, etc. in Dushanbe, Khujand, Kanibodom raion and Bobojon Gafurov raion, as well as with representatives of national and local environmental and social NGOs. The team also visited a number of sites in the proposed project areas during its field assessment in order to view conditions and to meet with farmers and other beneficiaries of the proposed project in the field. The EMP team continued its consultations during the project workshop in Khujand in December 2004, exchanging initial findings on the technical, social and environmental aspects of the project with local officials, international experts and members of cooperatives. The EMP team held three formal, publicly announced consultations in the project area in late February and early March 2005.

The Environmental Management Plan (EMP) report has been translated into Russian and is publicly available in MMWRM in Dushanbe and .Khujand. Following a formal letter from MMWRM on March 15, 2005 the EA report was submitted to the InfoShop.

As noted above, the PIU will be charged with administering and coordinating the monitoring plan for the ecological and social indicators identified in the EA's analysis of preventive actions and mitigation measures. The EMP includes a detailed and fully costed monitoring plan. Monitoring these indicators should allow the PIU to determine the direct and indirect environmental and social impacts. In the course of its work, the PIU will closely coordinate its work with local representatives of the SCEPF to ensure that the sampling and testing of soil and water continue beyond the life of the project.

6. Safeguard policies

Safeguard Policies Triggered by the Project	Yes	No
<u>Environmental Assessment (OP/BP/GP 4.01)</u>	[X]	[]
Natural Habitats (OP/BP 4.04)	[]	[X]
Pest Management (OP 4.09)	[]	[X]
Cultural Property (OPN 11.03, being revised as OP 4.11)	[]	[X]
Involuntary Resettlement (OP/BP 4.12)	[]	[X]
Indigenous Peoples (OD 4.20, being revised as OP 4.10)	[]	[X]
Forests (OP/BP 4.36)	[]	[X]
Safety of Dams (OP/BP 4.37)	[X]	[]
Projects in Disputed Areas (OP/BP/GP 7.60)*	[]	[X]
Projects on International Waterways (OP/BP/GP 7.50)	[X]	[]

* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas

Although the project areas are mostly on international waterways (flood control works and drainage works), most of the investments expected under the project are only for rehabilitation and improvement of existing irrigation and drainage schemes, which are not expected to change the volume of extraction/discharge of water or quality of water of the Syr Darya River. Also, the dam safety component will enhance the safety of the Kayrakum Dam, while the improved operation of its reservoir would ensure larger water volumes available for regional irrigation. Therefore, given the rehabilitation nature of the activities under this project, it has been decided that no notification to other riparian states is required under the Bank policy.

While OP/BP 4.37 (Safety of Dams) is automatically triggered by the works to be undertaken on the levies and dykes along the reservoir, general dam safety and the flood risk from breaches in the levies will be diminished by the rehabilitation works and improved operating procedures. Furthermore, the team has been consulting the Bank Dam Safety Advisor on actions related to dam safety issues. The planned project activities include updating the dam safety studies; providing provisional funds to deal with critical issues of dam safety; and establishing a panel, consisting of local and international experts in the country, to conduct yearly inspection and monitoring of the dam, all of which are deemed to satisfactorily fulfill the requirements of OP/BP4.37.

7. Policy Exceptions and Readiness

No policy exceptions.

Annex 1: Country and Sector or Program Background
TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT
PROJECT

Regional characteristics. The Ferghana Valley is culturally and economically an important region of Central Asia with a total population of about 11 million people, of whom 70% live in rural areas, spread among Uzbekistan, Kyrgyz Republic and Tajikistan. The Ferghana Valley is rich in water resources, including groundwater resources. The Syr Darya is the main source of water supply in the Valley. After the collapse of the Soviet Union, the I&D systems have fallen into disrepair throughout the region, leading to unreliable supply of irrigation water, drainage and water-logging problems, reduced soil fertility and crop yields and reduction in irrigated area. The systems have deteriorated from years of neglecting maintenance, and a general belief that water and its infrastructure is a free resource for which there is little willingness to pay.

Cross border water management problems and conflicts on water use priorities. The mountains of Tajikistan and Kyrgyzstan are the main water reserves for the Ferghana Valley and the greater part of the Aral Sea Basin, as such both countries have several large dams that need to be recharged during the spring months so as to provide for water for irrigation mainly in the summer to their neighbors, Uzbekistan, Turkmenistan, and Kazakhstan to a lesser degree during the irrigation season from March through September. The irrigation networks built under Soviet central command with a layout designed for carrying of water to great distances several hundred miles away are today often points of contention among the countries of the region where each country sees its right to water as unalterable.

Upstream countries use water for energy generation during the winter months, which prevents the dams to recharge sufficiently to supply the abundant water volumes needed for irrigation in the riparian countries. These water releases during the winter period have in some cases also led to serious flooding problems downstream where water flows are inhibited by frozen canals. Under the Soviet period, large yearly shipments of coal, and arrangements for gas distribution to upstream countries prevented these problems. While agreements exist between the countries for fuel transfers in return for water, they are often broken or neglected on both sides, upstream countries not supplying agreed water quotas, and riparian countries not delivering the necessary fossil fuel to keep residents of mountain countries warm.

Country and project area characteristics. Tajikistan has an area of some 141,000 Km² of which some two thirds form the foothills and high mountains of Turkistan, Zarafshan, and the Pamirs. Several regional ethnicities are represented in its 6.3 million population. Independence and turmoil followed by a bloody civil war left it among the poorest countries in the world, but the economy is now growing. Real annual GDP growth has ranged from 6% to 8% over the past few years. As of 2004, annual per capita income was estimated to be around US\$300, but some 64% of the population remains below the poverty line. Some two thirds of the population is directly dependent for their living on agriculture of which the greater part is rainfed pasture land and agricultural production represents a fifth of the economic output. Of Tajikistan's 4.6 million ha of agricultural land, only about 780,000 ha are arable and irrigated, some of which 500,000 ha in lowlands are under rotation between cotton and cereal crops, with about 320,000 ha under cotton at any one time. Cotton the dominant cash crop and its trade represents a fifth of foreign hard currency.

Tajikistan's Northern Soghd Oblast, where the proposed project is to be located, is for the most part in the Ferghana Valley and includes a population of some 2 million people of which two thirds are living in rural areas and depend on Agriculture. The valley's principal water control feature is the Kayrakum Dam and Reservoir, located on the Syr Darya river upstream from (east of Khujand) . The dam operates primarily for irrigation releases to downstream agricultural areas in Uzbekistan, and also for hydropower generation for Tajikistan. The adjacent valley lands (northern and southern) are served for irrigation from (i) the reservoir and river, by large pumping stations, (ii) two main irrigation contour canals that enter the area from Uzbekistan (in the east), and (iii) a number of tributaries of the Syr Darya river and Kayrakum Reservoir. There are also numerous drainage pumping stations and irrigation/drainage tubewells for evacuating drainage flows and controlling high groundwater levels. All of these water resources infrastructure system components have both physical and operational problems that significantly impede effective management of the water resources. Arable land in the Soghd Oblast represents some 700,000 ha of which some 220,000 are irrigated but only 134,000 remain under cultivation due to the collapse of the local drainage and irrigation infrastructure.

Agricultural potential. Tajikistan's soils and climate give it an excellent potential for the production of grains, cotton, and a variety of horticultural crops, including orchards crops. For years, Tajikistan used to enjoy the highest yields in the region and its cotton especially was in high demand due to its long staple and high luster. After the dramatic falls in farm productivity in the mid to late nineties, the recent years have show some recovery, however, this turn around has not been able to reach its full potential for a number of reasons, but chief of which is the crumbling rural infrastructure, especially irrigation facilities. In many cases, the supply systems have been kept running with a lot of pirating of parts and shoestring repairs, but the drainage systems have been quickly falling into disrepair which has led to problems of waterlogging in some areas, even yearly flooding in the worst cases. As a consequence of the collapse of irrigation systems, substantial areas have been lost to cultivation, mostly in low laying areas due to water logging but also at system tail ends where the volume of conveyed water has shrunk to the point where cultivation has become uneconomical.

The GOT is very dependent on tax revenue from cotton production. Mandated cotton quotas and price structures, and related arrangements for input investment and output purchases, are one of the dominant characteristics of the irrigated agriculture sector in the valley. Cotton is almost the dominant crop where production conditions allow. Field crops rotated with cotton include wheat and other cereals. The favored crops elsewhere are generally high-value fruit trees and vegetables; but, there are also some significant areas of irrigated fodder crops.

Farm land privatization. Farm land privatization is an important element of irrigation sustainability since water users need to be motivated through incentives to reducing the volumes (cost) of water. Individuals can only be motivated to lower use if they have a direct stake in the land they are working. It is that motivation together with more interest in the management of I&D services that will make it possible to collect fees and render many of these systems sustainable. The first Bank-financed Farm Privatization Support Project (FPSP) privatized 10 pilot Collective/State farms (CSFs) located in the lowlands, transferring land to some 5,782 farm families with secured land use certificates that clearly define the parcel boundaries, coordinates, and registered with a Universal Parcel Number (UPN) in a central database. FPSP thus established a transparent, equitable and generally acceptable model of privatization for

Tajikistan¹. To varying degrees, a number of areas have begun to adopt this mechanism, particularly the higher level plateaus. By end of 2003, there were an estimated 21,000 private farms covering some 350,000 ha of which some 30,000 ha are irrigated land including the 19,000 ha under the Bank's 10 pilot farms. On the ground privatization is most prevalent in the upper plains and valleys of the foothills, converting CSFs to family farms, but not all of these family farms have received proper certificates.

The proportion of land area that has been meaningfully privatized in the area through land reform is small, but where such privatization has occurred some positive socio-economic changes have been observed. Farmers have been able to select cropping patterns, obtain favorably priced inputs and benefit from alternative markets for outputs. However, such land reform has tended to occur only in poorly served or marginal areas; state and collective farming systems continue to operate in the prime irrigated agriculture areas.

The Government has agreed with the World Bank to undertake the (LRCSP) that would help address the shortcomings in farm land privatization. Such a project is expected to strengthen the capacity of the State Land Committee (SLC) so as to be able to issue land certificates across the country through some five to seven regional offices. These land certificates would be centrally registered, forming the base for a land cadastre, and would include a map defining exact coordinates, boundaries and ownership of each parcel of privatized land.

It is expected that the LRCSP will be closely coordinated with the FVWRMP to ensure that the farm land privatization process takes place simultaneously with the rehabilitation works. While works at the primary and secondary level are not directly affected by privatization. However, before any significant lower-level system works would be allowed to begin, farmers would have to have obtained their registered land use certificates. It is only once farmers have obtained the documentation clearly defining their land rights that effective WUAs could be formed and thus the link between ownership and efficient water use can be established. For this to take place, the PMU and PIU of the FVWMP would work in coordination with the new privatization project to ensure that the land in the areas of the project would be privatized thus setting the stage for establishment of WUAs and more involvement by users in the operations of the rehabilitated facilities and introducing cost recovery measures.

Economic and financial viability of the irrigation sector. Irrigation is high on the agenda of government, however, as in the rest of Central Asia, the sector is confronted with issues of sustainability and cost recovery, especially in light of energy liberalization, irrigation in Tajikistan is split in two categories, about 2/3 as gravity irrigation and about 1/3 as lift irrigation, some of which up to 250 meters. Yet, only 1/3 of budgeted operational and maintenance costs got to gravity irrigation and about 2/3 of budgeted resources go to lift irrigation. With reforms in the electricity sector, cost recovery is a major objective and pumping of irrigation water together with the large aluminum smelter are the two main consumers of electricity. With full cost recovery on irrigation, including full cost of electricity, lift irrigation's economic viability is facing increasing difficulties, unless farmers switch to higher value crops, and adopt more efficient irrigation technologies so that pumped water volumes drop dramatically. The payments collected within existing WUAs under the FPSP on gravity irrigation cover about half of the operating costs of the raion-level O&M agency) and are insufficient to cover

¹ Farm privatization comprises a range of steps, starting with the decision in principle by farm workers to privatize their CSF, followed by the identification and allocation of land parcels, and culminating in the registration of these parcels in order to ensure transparency and tenure security.

significant maintenance of on farm structures under jurisdiction of WUAs. In areas with lift irrigation, tariffs would have to rise tenfold from current levels in order to cover raidvokhoze costs. However, collection rates are good and water tariffs have increased gradually which have led to improving the situation.

This project envisages using some of the groundwater that is extracted to reduce the water table for irrigation. While that may not be possible everywhere because of possible salt and mineral levels, the major advantage of such a mechanism is that the benefits from pumping can be doubled, on the one hand from controlling the water table in the proximity of the reservoir levies and on the other from bringing water to areas which have previously relied on pumped-irrigation canals to obtain their water. Organizing WUAs and water user groups around smaller tubewells also has the advantage of improving the connection between the water users on the one hand and the need to properly maintain the equipment on the other, since no higher level authority is supplying the water. Because of the combined benefit, a greater pool of stakeholders will be interested in maintaining the system and thus would be willing to financially contribute to the operation and maintenance of the systems.

Annex 2: Major Related Projects Financed by the Bank and/or other Agencies
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Project Name	ID	US\$ Million	Institution	Approval
Farm Privatization Support Project, Tajikistan	P049718	20	IBRD/IDA	10-Jun-1999
Farm & Privatization Support Supplemental Project, Tajikistan	P072760	3.1	IBRD/IDA	22-Feb-2001
Community Agriculture and Watershed Management Project, Tajikistan	P081159	10.8	IBRD/IDA	15-Jun-2004
Poverty Alleviation Project (02), Tajikistan	P008860	13.8	IBRD/IDA	21-May-2002
Structural Adjustment Credit Project (02), Tajikistan	P046047	50	IBRD/IDA	26-Jun-2001
Emergency Drought Assistance Supplemental Project, Tajikistan	P072760	3.1	IBRD/IDA	22-Feb-2001
Rural Infrastructure Rehabilitation Project, Tajikistan	P058898	20	IBRD/IDA	22-Jun-2000
Pamir Private Power Project, Tajikistan	P075256	10	IBRD/IDA	27-Jun-2002
Dushanbe Water Supply Project, Tajikistan	P057883	17	IBRD/IDA	18-Jun-2002
Registration and Cadastre Project, Russia	P078420	130	IBRD/IDA	08-Mar-2005
Farm Privatization, Azerbaijan	P040544	14.7	IBRD/IDA	16-Jan-1997
Registration And Cadastre Project, Bulgaria	P055021	30	IBRD/IDA	21-Jun-2001
Land and Real Estate Registration Project, Kyrgyz Republic	P049719	9.42	IBRD/IDA	06-Jun-2000
Privatization Of Irrigation Project, Turkey	P009072	20	IBRD/IDA	14-Oct-1997
Kyrgyz Agriculture Support Services Project, Kyrgyz Rep.	P040721	14.98	IBRD/IDA	07-May-1998
Monitoring Of Progress On Land Reform In Tajikistan Through Establishment Of A Participatory Monitoring System	OSRO/TAJ/402/CAN	0.39	FAO	01-May-2004
Small Enterprise Fund – Farmer Owned Model			IFC-SECO	
Post-conflict Infrastructure Program	1651	20	ADB	10-Dec.1998
Emergency Flood Rehabilitation	1714	5	ADB	02-Dec.1999
Rural Reconstruction and Development Program Phase I		26	UNDP/UNOP	1996
Rural Reconstruction and Development Program Phase II		16.3	UNDP/UNOP	Nov 2001
Central Asian Mountain Program (e.g. WOCAT, Dom Gor, Dom Vody)		3.0	SDC	01-Jan.2000
Regional Development of Muminabad District (SDC funded)		1.1	Caritas	Ongoing
Village Organizing, Education, and Public Health (SDC funded)		3.7	AKF	On-going
Improving Rural Livelihoods		2.4	AKF	On-going
Private Farmers Support Project (USAID funded)		0.6	CARE	01-Sep.-1996
Community Action Investment Program (USAID funded)		9.8	AKF/MCI/UNDP	July 2001
Peaceful Communities Initiative (USAID funded)		2.1	MCI	Sept 2001
Local Government Initiative Phase II (USAID funded)			Urban Institute	Sept 2002
Pamiri High Mountain Integrated Project (UNESCO funded)		2.4	ACTED	July 2002
Seed & Fertilizer Agricultural Rehabilitation Project (EC funded)		3.3	GAA	Sept 1999
Technical Assistance for CIS Countries-Water Resources Management Project (WRMP)			EU	1995-1997

Annex 3: Results Framework and Monitoring
TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT
PROJECT

Results Framework

PDO	Outcome Indicators	Use of Outcome Information
<ul style="list-style-type: none"> • to improve the capacity for increased irrigated agriculture productivity in the Ferghana Valley by improving land and water management, and • to improve safety and regulation of the Kayrakkum Dam and Reservoir, thereby contributing to enhanced water management security and efficiency at the basin level 	<ul style="list-style-type: none"> • 70% reduction of flooded and waterlogged land areas within project perimeters near levees • 30% improvement in timely water availability in irrigated areas under the project. • WUA established and functioning adequately in Western Kanibodom • 80% collection of billed water fees from WUAs established for more than a year under the project, for O&M of I&D gravity and pumped systems, particularly tubewell systems. • 10% increase in crop yields • dam safety management and emergency action plan in place • forecast accuracy for available reservoir storage volumes and inflow /outflow volumes improved to 70% accuracy level. 	<ul style="list-style-type: none"> • Gauge real effect on water logging from extraction of water from tube wells. • Gauge effect of reduced flooding on improved health due to better sanitation • Estimate of effect of water extraction to bring back arable land into effective crop production under project area. • Gauge sustainability of O&M of newly installed and rehabilitated infrastructure. • Gauge effect of improved water management on farmer incomes • Gauge effect of improved reservoir management on overall water availability downstream.

Intermediate Results One per Component	Results Indicators for Each Component	Use of Results Monitoring
<p>Component One: <u>Irrigation and Drainage System Rehabilitation and Improvements</u></p> <ul style="list-style-type: none"> • Irrigation and drainage infrastructure systems brought back to operational condition as per requirement for the command areas served by the systems 	<p>Component One:</p> <ul style="list-style-type: none"> • Lengths of main irrigation canals repaired and lined (km) • Lengths of drains rehabilitated (# km of main, inter-farm and on-farm drains) • No. of I&D pumping stations and tubewell systems rehabilitated and renovated (No.) • Area with improved inter-farm I&D systems (ha) 	<p>Component One:</p> <ul style="list-style-type: none"> • Yr3 to Yr5: To determine improvement in operational efficiency of rehabilitated systems. • Yr1 to Yr5: To determine performance of contractors and, quality and timeliness of progress with works.
<p>Component Two : <u>Strengthening Kayrakum Reservoir Dykes and Improvement of Kayrakum Dam Safety and Reservoir Operation</u></p> <ul style="list-style-type: none"> • Reservoir dykes rehabilitated and dam and reservoir safety and operational performance improved 	<p>Component Two :</p> <ul style="list-style-type: none"> • Lengths of reservoir side dykes strengthened (km) • Urgent dam safety measures defined and taken • Reservoir volumes determined and inflow/outflow gauging systems installed and operational • Yearly reservoir storage and flow assessments, real-time operational application of measured parameters, and dam safety monitoring and emergency action plan activities 	<p>Component Two :</p> <ul style="list-style-type: none"> • Yr3 to Yr5: To determine improvement in operational efficiency of rehabilitated systems. • Yr1 to Yr5: To determine performance of contractors and, quality and timeliness of progress with works. • Yr3 to Yr5: To determine needed improvement in regional-level forecasting of water resources availability, demand and management
<p>Component Three: <u>Institutional Development and Technical Assistance</u></p> <ul style="list-style-type: none"> • Functional and capable Institutions for effective management of I&D systems, strong support for achieving high agricultural productivity, and sound environmental monitoring and management 	<p>Component Three :</p> <ul style="list-style-type: none"> • Legally registered and functioning WUA, undertaking O&M, contracting for water services and collecting fees • Demonstrations held and improved types/areas of crops grown, yields obtained and agricultural practices adopted • Ongoing satisfactory environmental monitoring and management, including soil/water sample reporting 	<p>Component Three:</p> <ul style="list-style-type: none"> • Yr2 and Yr4: To determine effectiveness of TA and assistance in establishing viable WUAs • Yr2, Yr4, Yr5: To determine increased adoption of farmers of new crops and technologies to improve productivity.
<p>Component Four: <u>Project Management</u></p> <ul style="list-style-type: none"> • Effective, efficient and transparent project implementation • Adequate and effective M&E 	<p>Component Four:</p> <ul style="list-style-type: none"> • Timely and accurate project status reports • Satisfactory financial and procurement records with timely audits • Good reputation of project management among stakeholders • Satisfactory M&E database and reports 	<p>Component Four:</p> <ul style="list-style-type: none"> • Yr1 through Yr5: To gauge implementation progress and quality of project administration • Yr3 and Yr5: To gauge project results and development impacts

Arrangements for results monitoring

Outcome Indicators	Baseline	Target Values					Data Collection and Reporting		Responsibility for Data Collection
		YR1	YR2	YR3	YR4	YR5	Frequency and Reports	Data Collection Instruments	
<ul style="list-style-type: none"> • % reduction of number of days and areas flooded and waterlogged within project perimeters • % cost recovery on O&M of tubewell systems established under the project, • % improvement in timely water availability in irrigated areas under project • crop yields and variety increased • forecast accuracy for available reservoir storage volumes and inflow /outflow volumes improved • dam safety management and emergency action plan in place 	NA	-	30%	-	70%	Semi-annual M&E reports beginning in the third year	Site surveys made by PMU and records from SLC	PMU, MMWRM	
	None	-	40%	60	80%	Semi-annual M&E reports beginning in the third year	Site surveys and feedback from WUAs	PMU, MMWRM	
		-	10%	-	20%	Yearly irrigation reports starting in the third project year	Accounts of WUAs	PMU, MMWRM	
		-	2	3%	5%	Crop reports beginning with third year	Site surveys made by PMU and Jamoat records	MMWRM, PMU	
		-	50%	60%	70%	Semi-annual M&E reports beginning in the third year	Agricultural statistics	MoA/FIAS and PMU	
		-	yes	yes	yes	yes	Water supply reports of MMWRM	PMU and MMWRM	
	yes	yes	yes	yes	yes	Semi-annual M&E reports beginning in the third year Yearly irrigation reports starting third project year Yearly practice run results, and plan updates	MMWRM safety plan and simulation reports	MMWRM	

Results Indicators for Each Component	Baseline (Totals)	YR1	YR2	YR3	YR4	YR5	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Component One : <ul style="list-style-type: none"> Lengths of main irrigation canals repaired/line(km) Lengths of main and secondary drains rehabilitated (km) I&D pumping station systems rehabilitated (No.) I&D tube-wells Area with improved inter-farm and on-farm I&D systems (ha) 	29	-	5	10	10	4	<ul style="list-style-type: none"> Quarterly supervision reports and quarterly status of works report compared with project schedule 	<ul style="list-style-type: none"> Bank supervision reports and implementation status reports 	<ul style="list-style-type: none"> Bank supervision mission and PMU/PIU
	415	15	100	100	100	100			
	16	-	4	5	5	2			
	200	-	25	100	50	25			
	4000	-	1000	1000	2000	-			
Component Two : <ul style="list-style-type: none"> Lengths (km) of reservoir side embankments rehabilitated Urgent dam safety measures defined and taken, reservoir volumes determined, and inflow/outflow gauging systems installed and operational Yearly reservoir storage and flow assessments, and real-time application of measurements in reservoir operations 	38	8	15	15	-	-	<ul style="list-style-type: none"> Semi-annual reports On-site visits Yearly reservoir assessment and dam safety inspection reports 	<ul style="list-style-type: none"> Bank supervision reports and project implementation status reports MMWRM reservoir storage and water flow reports 	<ul style="list-style-type: none"> PMU/PIU, Bank supervision mission MMWRM PMU/PIU
	4	-	1	1	1	1			
		50%	50%	-	-	-	-		
Component Three: <ul style="list-style-type: none"> Demonstration held (No.) and new cultivation or cropping technologies adopted Legally registered and functioning WUA operating system Routine soil/water sample report 	10	-	2	3	3	1	<ul style="list-style-type: none"> Yearly crop reports form the statistical office and MOA Semi-annual reports Scheduled routine soil and water sampling reports 	<ul style="list-style-type: none"> Official statistics, and MOA and SLC records Bank supervision reports and project implementation status reports 	<ul style="list-style-type: none"> MOA/FIAS and PMU/PIU PMU/PIU, Bank supervision mission SCNP
	1	-	1	-	-	-			
	5	1	1	1	1	1	1		
Component Four: <ul style="list-style-type: none"> Bank supervision ratings and reputation for integrity as perceived by project clients and public opinion surveys 	2	2	2	2	2	2	<ul style="list-style-type: none"> Quarterly implementation progress reports and Bank supervision reports 	<ul style="list-style-type: none"> Bank supervision reports, Procurement plan and work schedules 	<ul style="list-style-type: none"> PMU, Bank staff

Annex 4: Detailed Project Description

TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

A. Technical Background

The Ferghana Valley in northern Tajikistan covers about 700,000 ha, of which about 220,000 ha are suitable for irrigation. The actual irrigated area in 2002 was only about 134,000 ha, due largely to the deteriorating irrigation infrastructure and poor water management. The decline has affected the livelihood of about 2.0 million people living in Tajikistan's portion of the Ferghana Valley, of which about 65% are in the rural areas, and has led to reduced agricultural income and an increased incidence of poverty.

The principal water control structure in the Tajikistan portion of the Ferghana Valley is the Kayrakum Dam, located on the Syr Darya River near .Khujand The maximum dam height is 32 m, the total reservoir design storage capacity is 4,200 million m³, and the reservoir surface area at full supply level is 513 km². The dam is operated primarily for irrigation releases to downstream (western) agricultural areas in Uzbekistan, and also for hydropower generation for Tajikistan (installed capacity 126 MW).

The reservoir and inflowing river is also a source of water for local valley irrigation. Water is lifted by large pumping stations to serve adjacent (northern and southern) Ferghana Valley lands in Tajikistan as well as higher elevation (southern) Ferghana Valley lands in the Kyrgyz Republic. In addition, gravity irrigation flows are provided to the Ferghana Valley in Tajikistan from a number of tributaries of the Syr Darya River and Kayrakum Reservoir, and also from two gravity contour canals that enter the area from Uzbekistan in the east. These are the North Ferghana Canal (NFC) on the right (northern) bank of the Syr Darya river, and the Big Ferghana Canal (BFC) on the left (southern) bank of the Kayrakum Reservoir. There are also numerous drainage pumping stations and irrigation/drainage tubewells for evacuating drainage flows and controlling high groundwater levels. Various flooding, waterlogging and high groundwater level problems originate in part from the region's water control developments themselves.

All of the water resources infrastructure system components have both physical and operational problems associated with them that significantly impede effective management of the water resources. In addition, the agriculture sector and land ownership policies and practices place further significant constraints on irrigated agriculture production and socio-economic wellbeing in the region.

B. Project Area

The principal focus of FVWRMP interventions is the Ferghana Valley I&D areas and systems located south of the Kayrakum Reservoir. More specifically, three project subareas and corresponding major water infrastructure systems are defined in this regard, covering a total net

area of about 30,000 ha and serving a rural population of about 250,000. These are, from upstream to downstream,

- (a) the upper BFC, lower Isfara river and related systems and command areas in eastern Kanibodom raion (denoted Upper BFC / Lower Isfara, net area about 19,000 ha), extending from the border with Uzbekistan in the east, and the Isfara river flow delivery points in the south-east, to their points of conjunction with the Makhran and related pumping station systems and command areas in the west;
- (b) the BFC, Makhran and related pumping station systems and command areas mostly in western Kanibodom raion (denoted BFC / Makhran, net area about 4,000 ha), extending from their points of conjunction with the upper BFC and related systems and command areas in the east to those with the Khodjabaqirgan pumping station systems and command areas of southern Bobojon Gafurov raion in the west; and
- (c) the BFC, Khodjabaqirgan and related pumping station systems and command areas mostly in southern Bobojon Gafurov raion (denoted BFC / Khodjabaqirgan), extending from their points of conjunction with the BFC / Makhran systems and command areas in the east to the ends of the systems and command areas in the west. An improvement project supported by the Asian Development Bank (ADB) is ongoing for these areas and systems, but complementary interventions under the FVWRMP are also being called for. In this case, only the command area and systems bounded by the BFC in the south and the reservoir and river in the north are defined as a project subarea and project infrastructure system (net area about 7,000 ha).

C. Project Objectives

Project interventions are intended to help the GoT to address the identified I&D deficiencies in the project areas and to improve the overall state of water management and irrigated agriculture in the region. More specifically, the defined overall project objectives are (i) to improve the capacity for increased irrigated agriculture productivity in the Ferghana Valley by improving land and water management, and (ii) to improve Kayrakum Dam and Reservoir safety and regulation thereby contributing to enhanced water management security and efficiency at the basin level.

D. Project Description by Component

1) Irrigation and Drainage System Rehabilitation and Improvements (US\$ 9.02 million).

This component will finance design and works for rehabilitation of pumped and gravity I&D systems serving the 30,000 ha of project area farm land in the Kanibodom and Bobojon Gafurov raions, including (i) reforming and cleaning of main and secondary off-farm collector drains, and rehabilitation of associated drainage pumping stations, (ii) renovation of I&D tubewell systems, (iii) rehabilitation of selected major irrigation pumping station systems, (iv) repairs and lining of selected sections of the BFC, and (v) improvements to selected inter-farm and on-farm surface

and subsurface I&D systems. The works under this component are to be implemented on the basis of project subarea systems, and the defined subcomponents are as follows:

- ***Upper BFC / Lower Isfara (Eastern Kanibodom Raion) Subarea Systems*** – Activities to be carried out include (i) reforming/cleaning of 256 km of reservoir related parallel main and secondary off-farm collector drains and rehabilitation of 7 associated drainage pumping stations, and renovation of 65 vertical I&D tubewells, including substations and dedicated power lines, and needed reinstatement of observation wells.
- ***BFC / Makhran (Western Kanibodom Raion) Subarea Systems*** – This covers (i) reforming/cleaning of 50 km of main and secondary collector drains, and rehabilitation of 2 associated drainage pumping stations, (ii) renovation of 15 vertical I&D tubewells, including substations and dedicated power lines, and needed reinstatement of observation wells, (iii) rehabilitation of the Makhram 0, 1 and 2 irrigation pumping station systems and of other reservoir-based low-lift pumping irrigation systems serving the subarea, (iv) lining and repairs of 25 km of the BFC between Makhran and Khodjabaqirgan, and (v) improvements to inter-farm and on-farm surface and subsurface I&D systems serving 4,000 ha.
- ***BFC / Khodjabaqirgan (Southern Bobojon Gafurov Raion) Subarea Systems*** – This includes (i) reforming/cleaning of 100 km of main and secondary off-farm collector drains, and rehabilitation of 2 associated drainage pumping stations, and (ii) renovation of 120 vertical I&D tubewells, including substations and dedicated power lines and needed reinstatement of observation wells.
- ***Works and Installations Detail Design and Supervision*** – This covers detail design and supervision of implementation of the works and installations included under the proceeding subcomponents.

2) ***Strengthening Kayrakum Reservoir Dykes and Improvement of Kayrakum Dam and Reservoir Safety and Operation (US\$ 3.03 million)***. This component will finance (i) design and works related to rehabilitation of the Kayrakum Reservoir dykes in Kanibodom and Bobojon Gufarov raions, and (ii) technical studies, dredging and other equipment and installations, and minor works, to increase operational performance and improve management of the Kayrakum Dam and Reservoir, to improve dam safety, and to develop dam and reservoir emergency procedures. The defined subcomponents are as follows:

- ***Kayrakum Reservoir Side Embankments***- This covers repairs and strengthening of 27 km of Kayrakum Reservoir side embankments in various sections in Kanibadam raion and of 11 km of reservoir side embankments in one section in Bobojon Gafurov raion.
- ***Kayrakum Dam and Reservoir Safety and Operational Improvements***- Because of the project's national as opposed to regional orientation, needed region-level interventions such as basin-wide system operation assessments are to be pursued through separate arrangements. Similarly, because of the potentially large scope and

scale of needed dam safety improvements, as well as their regional impact, it is intended to formulate separate support provisions to affect these. However, a number of project interventions to effect urgent and important initial Kayrakum Dam and Reservoir safety and operational improvements are provided for under this subcomponent. These cover (i) implementation of initial dam safety and emergency planning actions that will have been identified as critical and/or urgent following pre-project consultancy studies and investigations, (ii) reservoir storage and sedimentation studies, including volume quantifications through a bathymetric and topographic survey, assessments of future changes, and formulation of physical and/or operational improvement options, (iii) procurement of a set of dredging equipment for maintaining reservoir pumping station intake channels, (iv) reservoir inflow and outflow gauging station system improvements, (v) dam monitoring system improvements, (vi) preparation and implementation of annual dam and reservoir inspection procedures, and (vii) preparation and implementation of a dam and reservoir operations model.

- ***Works and Installations Detail Design and Supervision-*** This covers detail design and supervision of implementation of the works and installations included under the preceding subcomponents.

3) ***Institutional Development and TA (US\$ 1.37 million).*** This component will fund the necessary institutional capacity building for (i) establishment of WUAs, (ii) improving agricultural productivity and achieving more efficient water use patterns, and (iii) ensuring proper environmental impact mitigating measures. Activities will include training and demonstration programs as well as information dissemination exercises and TA from international and local specialists. The defined subcomponents are as follows:

- ***Establishment of Water Users Associations-*** This sub-component covers the projected institutional development, at local system and community levels, of WUAs that would (i) assume full responsibilities for water management, and for O&M of I&D systems, at the on-farm (tertiary and below) and inter-farm (secondary) levels, and (ii) contribute to, and participate jointly in, higher-level systems water management and O&M with the MMWRM departments at raion and oblast level. This is all to be based on formal and legal organization of the WUAs and on I&D service contracts to be instituted between the WUAs and the local MMWRM departments. Needed technical assistance, training and equipment are to be provided for the establishment and capacitating of WUAs, and for the corresponding adjusted responsibilities and roles of the local MMWRM departments. During project implementation, the activities under this component are to relate predominantly to areas where land reform has been meaningfully effected, particularly the 4,000-ha BFC/Makhran subarea. They are also to be closely linked and carefully meshed area- and schedule-wise with those of the corresponding infrastructure system improvements under Component 1 and the agricultural development programs under Component 3, in accordance with the integrated approach to implementation of improvements that has been formulated. Lessons will be drawn from FPSP and RIRP WUA development experiences in Zafarabad and Matcho raions of Soghd oblast.

- ***Agricultural Development Support-*** This sub-component will help secure the agricultural production and farmer income increases that are projected to result from the project's infrastructural and institutional development investments. The focus of interventions is to be on farm-level irrigated agriculture improvements, and they include (i) introduction and demonstration of modern soil and land improvement methods, cropping practices and irrigation technologies that have been well proven through previous applied research, (ii) relevant training for farming communities in land and water management, and in agricultural production and marketing, and (iii) well-directed support for irrigation and agricultural extension and information services. The first two agricultural development activities described above (demonstrations and training) are to be directed towards farming communities in areas where farm land reform has been meaningfully effected, particularly the 4,000-ha BFC/Makhran subarea. All of these activities will take place in close collaboration with local government agriculture and water agencies, or alternative service providers, in Kanibadam and Bobojon Gafurov raions. They will also be closely coordinated with the FIAS, established at the Ministry of Agriculture and the Agriculture Academy that has extensive experience with setting demonstrations as well as providing training to farmers, including extension services. There is also to be exchange of information and participation on these topics with the FPSP and RIRP PIUs established in Zafarabad and Matcho raions of Soghd oblast.
- ***Environmental Impact Mitigation-*** Under this sub-component, support is to be provided to the GoT for prescribed environmental impact mitigation activities. These include (i) execution of a mitigation plan comprising the necessary preventive actions and mitigation measures to address potential adverse impacts from construction and operational management changes, (ii) implementation of a monitoring plan covering the monitoring and evaluation of preventive actions and mitigation measures, and of key ecological and social indicators, and (iii) institutional strengthening, including capacity building for environmental management, through training and study tours, provision of equipment, technical assistance, special studies and public awareness campaigns.

4) ***Project Management (US\$ 0.75 million).*** Needed assistance to the GoT for project implementation is to be provided under this component. Items to be covered include (i) establishment and support of the central PMU in Dushanbe within the MMWRM, and the regional PIU in Khujand, (ii) local and international TA for managerial, technical, financial and administrative supervision of implementation activities, (iii) setup and operation of a project M&E system, and (iv) a supportive institutional strengthening program including relevant training and study tours.

Annex 5: Project Costs

TAJKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

Project Cost By Component and/or Activity	Local US Smillion	Foreign US Smillion	Total US Smillion
Component 1 – Irrigation and Drainage System Rehabilitation and Improvements			8.21
Component 2 - Strengthening Kayrakum Reservoir Dykes and Improvement of Kayrakum Dam and Reservoir Safety and Operation			2.52
Component 3 – Institutional Development and Technical Assistance			1.15
Component 4 – Project Management			0.65
Total Baseline Cost			12.53
Physical Contingencies			1.04
Price Contingencies			0.60
Total Project Costs			14.17
Total Financing Required			14.17

Annex 6: Implementation Arrangements

TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

Institutional and Implementation Arrangements

The FVWRMP will involve several structures that will facilitate the implementation of the project. At the top, the project will have a Central Project Steering Committee (CPSC) in Dushanbe that will have the ultimate policy and regulatory responsibility towards this project. It will further intervene whenever disagreements arise between the various Ministries that have a stake in the project. It is therefore composed of top level representatives of the various Ministries that are affected by the project including, MMWRM, MoF, MoA, SCEPF, MoE, SLC and MoH and would be chaired by the Deputy Prime Minister in charge of agriculture sector. It is expected to meet on a semi-annual basis to review the implementation status reports and take decisions for appropriate measures to correct whatever deficiency implementation may encounter. It may be requested to meet in emergency session in case a dispute across ministries emerges and resolution at the ministerial level cannot be achieved.

Since the MMWRM is the main agency concerned with this project, it will have under its roof a central PMU that will be responsible for the administration and implementation of the project. Its main functions will be the management of contracts, procurement and finances and to function as a secretariat for the CPSC, implementing its decisions. The PMU will be under the direct responsibility of the CPSC who will appoint the PMU Director. It will be responsible for all the hiring of specialists as staff and consultants that will be working with this project. While housed at the MMWRM, the PMU will be an off-budget entity funded through project resources. In its daily operation, the PMU will extensively consult with the MMWRM in its decision making.

Because the project activities are undertaken away from Dushanbe the project will need to establish a PIU in Khujand. This body's function will be mostly to provide the technical expertise needed to get the project moving forward. It will be the PMU's eyes and ears on the ground and undertake daily troubleshooting to ensure implementation will move forward. The PIU will not have any financial or contracting authority; these responsibilities will remain with the PMU. The PMU is expected to consult with the oblast and raion level authorities to identify priorities and foster participation at this level in the implementation of activities in which the respective ministries may be stakeholders. Although it will have to be responsive to local needs and priorities, its primary mission is the successful implementation of the project as the representative of the PMU on the ground.

While these entities are directly responsible for implementation, structures that have been established under other projects will support the PMU and PIU in the implementation of this project. The agricultural development support programs will rely heavily on the expertise and equipment of the Farm Information and Advisory Service (FIAS) that has been established under the MoA under the FPSP project. Similarly the SCEPF will play a key role in the implementation of the activities related to environmental impact mitigation.

Component Implementation Responsibility

1. Irrigation and Drainage System Rehabilitation and Improvements. This component's implementation is mainly concerned with execution of design and works contracts. As such, the PMU will as a first step hire international consultants or a firm that may be supported by the local irrigation systems design institute to undertake detailed designs for the rehabilitation of water management infrastructure. The consultant design institute will closely consult the local communities and farmers, and concerned Jamoats as to the priorities of the rehabilitation works. The PMU will then identify competent contractors by means of a competitive bidding process to undertake the necessary works and installation required under this component at the most effective cost at required quality standards. In this process, it will consult with the PMU of the FPSPS and RIRP that has been able to identify and train several competent local contractors. Details on contracting are demonstrated in Annex 8. The PIU will ensure quality control of the design and works, and provide technical backstopping of the contractors during the implementation of the works. Completion of a works contract will have to be signed off by a works inspection committee composed of representatives of the MMWRM, from the center and the Regional and Local offices as well as users of facilities, i.e. representatives of the WUAs.

2. Strengthening Kayrakum Reservoir Dykes and Improvement of Kayrakum Dam and Reservoir Safety and Operation. Implementation of the studies, designs and works under this component will be subject to the same arrangements and responsibilities as component 1. Although the component is implemented by the PIU there is much in the way of institutional capacity building that needs to be properly grounded within the procedures and daily operations of the dam and reservoir operators, e.g. MMWRM. It will be imperative that TA needs and provisions be closely coordinated with the operators at all times. The PIU will make a rapid assessment of needs together with the operator and provide a program of needs to the PMU who will request bids from specialists and firms that will be qualified for providing the needed services.

3. Institutional Development and Technical Assistance. Implementation arrangements for the three subcomponents are as follows:

- **Establishment of Water Users Associations.** This sub-component is essentially a socio-institutional mobilization and training activity. The PMU with specialist TA support will coordinate and manage the implementation of this subcomponent with technical input from FIAS that together with the PMU of FPSP have established some 30 WUAs in the country. FIAS will provide services against payment. FIAS and the PMU of FPSP will provide training materials and trained specialists to help establish capacity for this activity. The Project will liaise closely with the efforts undertaken under the Water User Association Support program funded under USAID that is expected to develop model entities for replication.
- **Agricultural Development Support.** This sub-component is mostly a farm-level irrigated agriculture extension services delivery program. To ensure sustainability beyond the project lifecycle it is proposed that the PMU and PIU work closely with the ongoing efforts of FIAS established under the Ministry of Agriculture for the purpose of providing practical and first hand agricultural information dissemination.

FIAS has developed a number of training materials in conjunction with the Agricultural Academy of the University. Material and programs are available in Russian and Tajik with the PIUs of Macho and Zafarabad that have both successfully implemented demonstrations and farmer training under the FPSP. The PIU support from TA specialist will lead the program and identify training needed, coordinate efforts with the oblast and raion office of the MoA and collaborate with FIAS in providing information to farmers.

- ***Environment Impact Mitigation.*** This component is concerned with ensuring not only that the proper environmental impact mitigation measures are taken during project implementation but also that longer term effects of the project on soil and water resources are monitored. This component will be implemented in close collaboration with the SCNP that has a similar role under other rural projects in Tajikistan. The FVWRM will provide some basic equipment necessary to the local offices of the SCNP to ensure that proper sampling and testing of soil and water can be maintained. Similarly, through the SCNP documentation will be made available to contractors that define their responsibilities in regards to environmental mitigation measures that need to be undertaken during the course of works and for proper cleanup upon completing works.

4. Project Management, This component will finance the necessary capacity building needed at the PMU and PIU level to ensure satisfactory implementation of the project include proper procurement, contracting and financial management procedures. The PMU, based in Dushanbe, will manage and coordinate the overall project and have the following responsibilities:

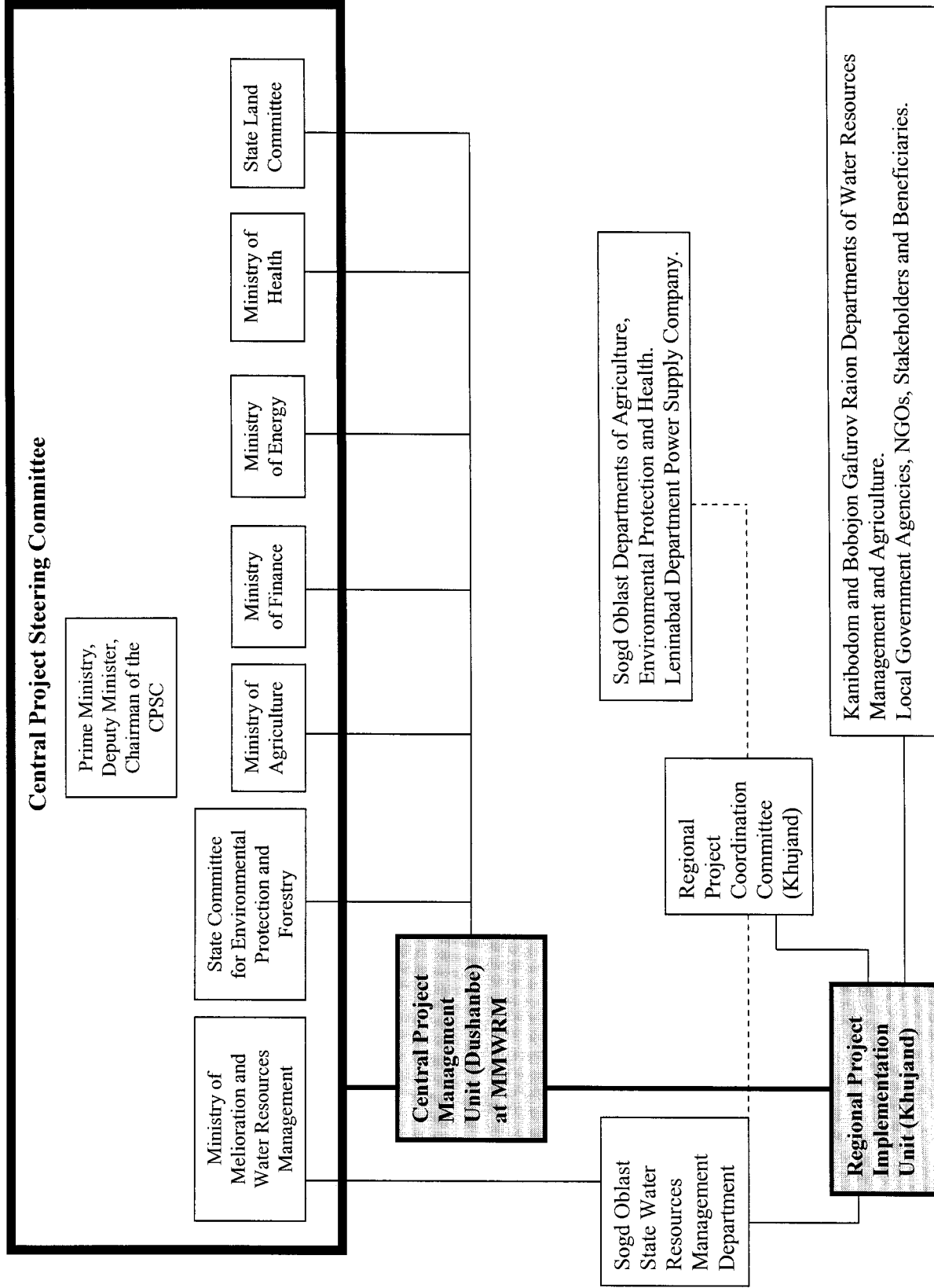
- be the overall project coordination body (including preparation of work plans, budgets, implementation schedules, monitoring and progress reports, and evaluation studies);
- act as a secretariat and executive of the CPSC (including the preparation of meeting agenda and minutes);
- hire staff at PIU level, and contract specialists, advisors, and studies in close consultation with the Bank Team;
- procure all goods, works, and services (including training) required under the project;
- handle all financial management requirements of the project;
- provide basic information and guidance to all project stakeholders, and exchange information on experiences with other similar programs, both nationally and internationally;
- facilitate inter-ministerial coordination.

The PIU, based in Khujand, will direct, coordinate and expedite project implementation on location, and will have the following responsibilities:

- be the project's technical implementing agency, reporting the PMU;
- liaise with oblast- and raion-level agencies of the concerned ministries through a Regional Project Coordination Committee (RPCC);
- manage and supervise the technical assistance consultants and works contractors;

- liaise and consult with the local stakeholders, communities and project beneficiaries to facilitate all project interventions and to ensure that their concerns are noted and accounted for during project implementation; and
- provide or facilitate access to the essential local expertise and knowledge needed to successfully execute the project.

Project Implementation Organizational Diagram



Annex 7: Financial Management and Disbursement Arrangements
TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT
PROJECT

Financial Management

Assessment. The Project Preparation Unit (PPU), established within the Ministry of Melioration and Water Resources Management, will at the end of its mandate be converted into the PMU that will become the main implementing agency of the project. In addition there will be a regional project implementing unit (PIU), but this unit will be dealing mainly with technical issues, with financial management functions being centralized at the PMU in Dushanbe. An assessment of the financial management arrangements of the PPU was undertaken during the months of January and April 2005 to determine whether the financial management arrangements in place are acceptable to the Bank. These financial management arrangements include systems of budgeting, accounting, internal control, financial reporting, and auditing, appropriately documented in a manual of financial procedures.

Conclusion. The PPU is currently implementing the PHRD Grant-financed preparation phase, and has installed a project accounting system that is capable of recording all transactions and balances, supporting the preparation of regular financial statements, and safeguarding the assets of the project. An experienced financial manager, fluent in English, has been hired and has, with help of the FMS and input from other Bank staff, drafted a financial management procedures manual. This manual describes the accounting system for monitoring resources and expenditures of the project. The PPU/PMU has also acquired computers and installed the 1C software that will support preparation of quarterly Financial Monitoring Reports (FMR) The financial management system established by the PPU is satisfactory to the Bank. However, staff will require additional training in the use of the accounting software, and gain further experience with the financial management requirements of the World Bank, and the Government.

Country Financial Management Issues. A Country Financial Accountability Assessment (CFAA) for Tajikistan was completed in 2003 and was disseminated to Government authorities in October 2003. The CFAA concluded that the country's fiduciary environment is extremely weak and the risk to public funds is high. The findings included, among other things, that systems of public accountability function poorly and public sector transparency is still a problem at all levels of government. Most project implementing entities use the cash basis of accounting, which is not in accordance with IAS, but which in many cases is sufficient for proper accounting of project resources and expenditures. Internal audit is not a common practice; and external audit is practiced by individuals and a small number of audit firms. Audits required by IDA have been performed by audit firms pre-qualified by the Bank to audit Bank-financed projects. Currently audit of the IDA portfolio is conducted by a firm based in Bishkek, Kyrgyz Republic. To minimize financial risk, there has been the need to "ring fence" financial resources in Bank projects in order to provide the appropriate fiduciary safeguards.

Strengths and Weaknesses. The primary strength of the PMU financial management system will be derived from its continuity from the PPU, and thus will have personnel with a minimum of understanding of Bank financial management requirements. The PPU has established a financial management system that is capable of monitoring resources and expenditures of the

project and generate reports such as the Financial Monitoring Reports. A suitably qualified and experienced financial manager has been appointed, and has been participating in the establishment of a financial management system for the project. A draft manual of financial procedures has been prepared, and reviewed by the Bank. The financial manager recently attended a seminar on financial management and disbursement procedures in World Bank-financed projects. However, the financial manager and other financial unit staff to be hired lack experience with Bank procedures and will require additional training during implementation.

Implementing Entity. A Central Project Management Unit (PMU) is being established within the Ministry of Melioration and Water Resources Management. The PMU will carry out the day-to-day activities of the Project which will include: procurement; project accounting and financial reporting; monitoring and evaluation of activities of Water User Associations; administer special accounts and withdrawal applications for disbursements; and coordinate external audit arrangements. Many operating procedures and processing mechanism will be adapted from the existing PMU implementing FPSPS and RIRP, including accounting software as well as inventory log books and other procedural records and mechanism needed to ensure safe and transparent recording of transactions and procurement.

Staffing. The PMU will consist of a project coordinator, financial manager, procurement specialist, technical specialists, accountant/disbursement specialist and support staff. The PPU has hired a qualified and experienced Financial Manager to take charge of financial management responsibilities during preparation and implementation of the FVWRMP. In addition, the PMU will hire an accountant/disbursement specialist to support the Financial Manager with data entry, local accounting requirements, and maintaining project accounts. Qualifications of each individual staff will be demonstrated with strong working knowledge of financial management and disbursement requirements; and proficiency in the use of computerized accounting systems. The financial manager will be responsible for overall project financial management, maintenance of books and accounts for the project, preparation and dissemination of financial statements and FMR, and timely audits of the project financial statements. The financial manager will also manage an effective system of internal control, ensuring adherence to established financial procedures, and safeguarding the resources and assets of the project. It is envisaged that staff will need training on World Bank financial management and disbursement requirements.

Accounting Policies and Procedures. The PMU will maintain appropriate financial records and accounts in accordance with procedures established during preparation phase of the project. These accounts and records will reflect the progress of the project and identify its resources, operations and expenditures. The project accounts will reflect all financial transactions during the project period separately for the IDA Grant, and other resources, where applicable, by project component and by expenditure categories. The project accounts will be maintained independently from any routine budget account or other externally funded project account. Accounts and records for the project will be maintained during implementation by the PMU that will operate and maintain a financial management system (FMS) capable of generating Financial Monitoring Reports (FMR) in accordance with formats agreed with the World Bank. Books of accounts for the project will be maintained by the PMU based on generally accepted accounting principles and practices.

Reporting and Monitoring. Project management-oriented Financial Monitoring Reports (FMR's) will be used for project monitoring and supervision. These reports will include financial statements, comprising mainly of (a) Project Sources and Uses of Funds, and (b) Uses of Funds

by Project Activity; physical progress reports (Output Monitoring Reports), in tables and narrative form; and procurement reports, in formats acceptable to the Bank. The reports will be system generated and submitted to the Bank within 45 days of the end of each quarter. The first quarterly FMR will be submitted after the end of the first full quarter after disbursements commence. Formats of the annual financial statements and the FMR have been agreed with IDA and will be incorporated in the financial procedures manual. The project accounting software will generate FMR, incorporating all components, categories and performance indicators which are acceptable to the World Bank.

Information Systems. The “1C” Accounting Software, a Russian accounting program commonly used by World Bank funded projects in Tajikistan, has been installed by the PPU. The software includes, inter alia, a customizable chart of accounts, foreign and local currency, English and Russian language, Excel and Word exporting, and integrated FMRs. The software is being customized to respond to the Project components and categories, and will be able to produce routine reports required for project monitoring and management (FMR), and annual reports required by the World Bank. The system will generate quarterly Financial Monitoring Reports in accordance with formats agreed with the Bank.

Planning and Budgeting. The PMU will prepare annual budgets in line with the Procurement Plans, and these budgets will form the basis for spending and requesting funds from the government for counterpart contribution, where applicable. These budgets, prepared in accordance with the FMR format (disbursement categories, components and activities, financial sources, account codes, and by quarter), will establish physical targets to ensure linkage between expenditures and physical progress, and proper comparison between actual and budgeted performance. Review of actual results against the budget will be a key managerial tool for monitoring financial performance of the project. The financial procedures manual will prescribe the appropriate manner for preparing budgets to satisfy the government and World Bank requirements. A detailed budget for the first full year of project implementation, broken down by quarter, will be prepared before the grant becomes effective.

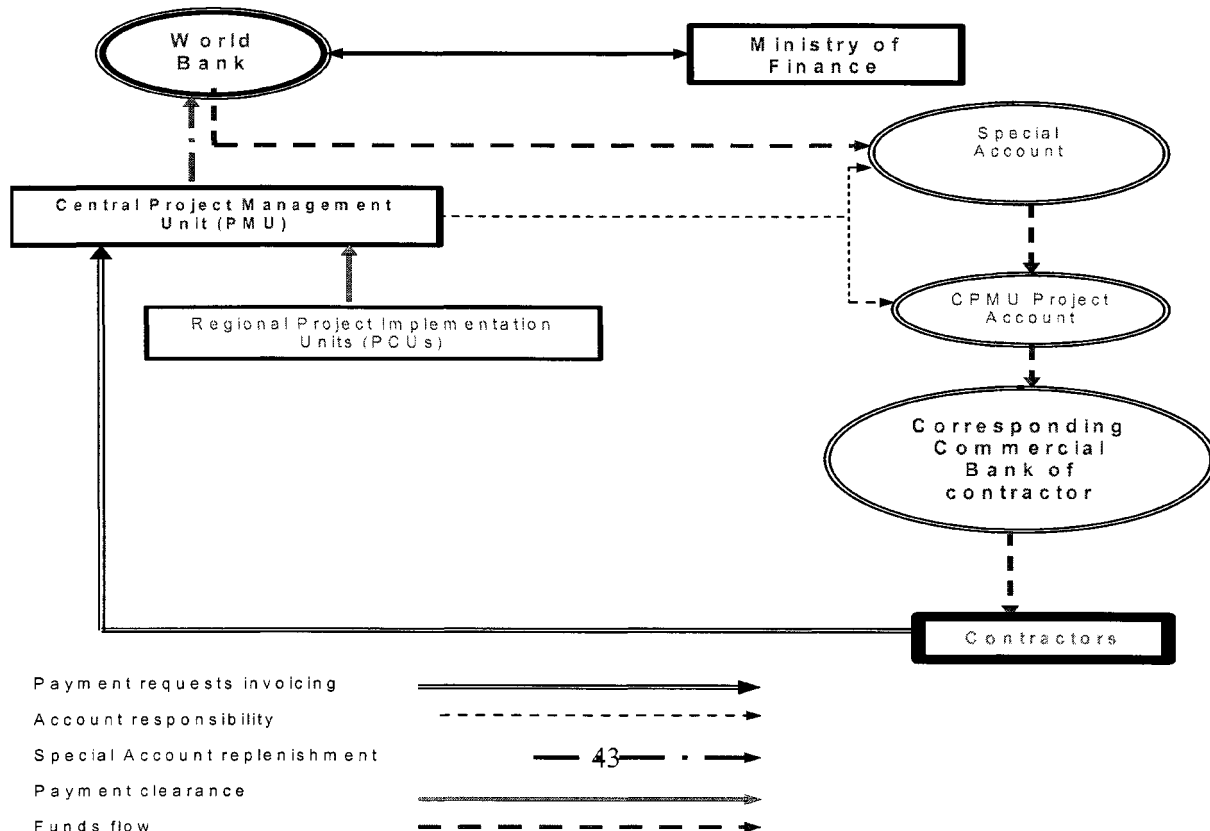
Audit Arrangements. There will be annual audits of the project financial statements, covering all aspects of the project, including all funds irrespective of source. The audits will be performed by independent private sector auditors acceptable to the World Bank, and in accordance with International Standards on Auditing (ISA), and the World Bank’s guidelines on auditing as stated in the guidelines: *Annual Financial Reporting and Auditing for World Bank-financed Activities* (June 2003), and other guidance that might be provided by the World Bank from time to time. The auditors' terms of reference (TORs) will be prepared by the PMU and cleared by the Bank before the engagement of the auditor. They will include both the audit of financial transactions and an assessment of the operation of the financial management system (FMS), including a review of the internal control mechanisms. The annual audit reports will be in a format in accordance with ISA and World Bank guidelines, and they will include a single opinion on the financial statements of the project, incorporating the project financial statements, including Special Account Reconciliation, and SOE Withdrawal Schedule; as well as a Management Letter. The audit reports will be submitted to the Bank not later than six months after the end of the fiscal year to which they relate. The cost of the audits will be eligible for financing from the Grant. The PMU will provide the auditor with full access to project-related documents and records and with the information required for the purpose of the audit. Sample TORs for project audit have been agreed and included in the financial procedures manual.

Disbursement/Flow of Funds Arrangements. The proceeds of the grant will be disbursed over a period of five years, or for such longer period as will be agreed with IDA. Grant funds will initially flow to the project via disbursements to a Special Account (SA) opened by the Recipient under terms and conditions acceptable to the Bank. Disbursements will follow transaction-based method, i.e., the traditional Bank procedures (reimbursements with full documentation, Statements of Expenditure (SOEs), direct payments and special commitments), as report-based (disbursements based on quarterly FMR) is not considered feasible in the Tajikistan portfolio. During implementation withdrawals from the Grant Account will be requested in accordance with the guidance provided in the Disbursement Letter. Withdrawal applications may be signed by an authorized representative of the Recipient, or a designate, with written delegated authority. The financial manager will ensure completeness and accuracy of all withdrawal applications and will append her/his signature as part of the internal control procedures. The Special Account will be maintained at a commercial bank acceptable to the World Bank. A project account will also be opened by the PMU (in a local commercial bank) to facilitate payment for local project expenditures financed from Government counterpart funds, if any. The PMU will manage the Special Account, including preparing withdrawal applications and supporting documentation, replenishment and timely reconciliation of the Special Account.

Funds Flow. The project funds will be disbursed through a Special Account and directly to supplier and consultants, within the limits of minimum application size. The authorized allocation for the special account will be US\$400,000. The chart below represents the diagrammatic flow of funds from the Grant Account to the project

Statements of Expenditures (SOEs) will be used for: (i) works contracts, except the first NCB and minor works contracts; (ii) goods contracts estimated to cost less than US\$100,000

FLOW of Funds and Disbursement Requests



equivalent each; (iii) services of consulting firms contracts costing less than US\$100,000 equivalent each; (iv) services of individual consultants contracts costing less than US\$20,000 equivalent each; (V) training, and (vi) operating costs. The project will retain the relevant documents and make them readily available for inspection and review by supervision missions and the auditors.

Disbursement Accounts and Rules. The disbursement accounts and the financing rules (exclusive of taxes) adopted for each of the disbursement accounts are summarized in Table 1.

Table 1: Allocation of IDA Proceeds

Grant Expenditure Category	Amount in US\$ million	Financing Percentage
Works	6,590,000	86%
Goods	3,145,000	100%
Consulting Services & Training	2,050,000	100%
Operating Costs	230,000	100%
Unallocated	985,000	
Total	13,000,000	

Financial Management Supervision Plan. The Bank will conduct risk-based financial management supervision, at appropriate intervals, to monitor progress of project implementation. The financial management supervision will pay particular attention to: (i) project accounting and internal control systems; (ii) budgeting and financial planning arrangements; (ii) review of project's financial monitoring reports; (iii) review audit reports, including financial statements and remedial actions recommended in the auditor's Management Letters; and (iv) disbursement management and financial flows, including counterpart funds, where applicable.

Annex 8: Procurement Arrangements

TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

A. General

Procurement for the proposed project would be carried out in accordance with the World Bank's "Guidelines: Procurement under the IBRD Loans and IDA Credits" dated May 2004; and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004 and the provisions stipulated in the Legal Agreement. The various items under different expenditure categories are described in general below. For each contract to be financed by the Grant, the Procurement Plan indicates the procurement methods or consultant selection methods, estimated costs, prior review requirements and time frame agreed between the Recipient and the Bank. The Procurement Plan will be updated annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

(i) **Goods and Equipment:** Goods and equipment estimated to cost US\$100,000 and more would be procured through International Competitive Bidding. Readily available off-the-shelf goods estimated to cost less than US\$100,000 each may be procured through Shopping procedures on the basis of three written quotations obtained from qualified suppliers. In the procurement of IT hardware and software by Shopping, the firms operating in Tajikistan registered to the Bank's Web site and authorized by the main IT manufacturers should be solicited.

(ii) **Civil Works:** Civil works estimated to cost US\$1,000,000 and more would be procured through International Competitive Bidding. Contracts estimated to cost less than US\$1,000,000 would be procured through National Competitive Bidding. Smaller works estimated to cost less than US\$50,000 each may be procured through Shopping procedures on the basis of three written price quotations and the contract awarded to the lowest priced quotation that has the necessary experience and financial resources to complete the works successfully.

(iii) **Consultant Services:** Consultant's services would include Quality and Cost Based Selections (QCBS), Fixed Budget Selection (FBS), Consultant Qualifications (CQ), Least Cost Selection (LCS), and Individual Consultants (IC). QCBS selection over US\$100,000 would be advertised in UN Development Business on line version and DG-market (Gateway) and in local media (one newspaper of national circulation or the official gazette) from which a short list of six firms would be established. For contracts estimated to cost less than US\$100,000, short lists may be based solely on national firms unless qualified international firms expressed interest. Contracts estimated at less than US\$200,000 would be procured following the CQ method. Individual consultants would be selected in accordance with Part V of the Consultants Guidelines.

(iv) **Training:** Training for the PMU staff would be conducted in accordance with a biannual training program that the PMU would submit to the Bank for its agreement before implementation.

(v) **Incremental Operating Costs:** The Grant would finance the incremental operations costs of the PMU. These would be incurred in accordance to an annual budget that the PIU would prepare and submit to the Bank for its approval before any expenditures are incurred. Incremental operation costs are operating costs incurred by the PMU on account of Project implementation for communications, utilities, office supplies and maintenance, fuel and vehicle operation and its maintenance, salaries of support staff, excluding those who are civil servants, and other reasonable and necessary activities directly related to Project implementation, management and monitoring as may be agreed upon by the Bank.

B. Assessment of the Agency's Capacity to Implement Procurement

The project will be implemented by a central Project Management Unit (PMU) and a regional Project Implementation Unit (PIU) to be established under the Ministry of Melioration and Water Resources Management (MMWRM). The PMU will have technical and fiduciary responsibilities for the implementation of the Project. The PIU will be responsible for technical supervision of the project.

An assessment of the capacity of the implementing agency to implement procurement actions for the project has been carried out by the Bank. The key issues and risks concerning procurement for implementation of the project have been identified and include the following:

- (i) Government officials, who would be involved in project procurement through Tender Committees, may not be familiar with procurement procedures;
- (ii) The bureaucratic system creates opportunities for informal interference in procurement process by senior officials; and
- (iii) Suppliers and contractors, and goods and works required for the project, especially in remote region may not be available.

The Bank finalized the Country Procurement Assessment Review (CPAR) for the Tajik Republic in December 2002. As a result of the findings of this assessment, from the public procurement point of view the Tajik Republic has been ranked as a high risk category country. Given the current lack of transparency in the public procurement environment and lack of experience of the PMU, this project for procurement is also rated high risk.

The corrective measures which have been agreed are the following:

- Procurement Specialist should receive training in international procurement. He should attend regional procurement seminars that will be organized by the CAPT.
- The Bank should organize a one day project launch workshop for the PMU, PIU and for representatives from the agencies that will be involved in implementation of the project to address the procurement principles of the project implementation to be followed.
- The Bank may organize a half-day seminar for senior officials to make them aware of Bank procurement requirements.

- For all procurement, at the central and regional levels, a simple but a detailed operational manual should be prepared. The manual should include procurement methods to be used in the project along with their step by step explanation as well as the standard or sample documents to be used for each method.
- The PMU should prepare an inventory of suppliers of the required goods, construction contractors and consultants (firms and individuals, as well as an inventory of the available goods in the remote regions). This will help to determine the extent, to which procurement will be extended to other areas.
- The Bank staff will review the efficiency of procurement under the project, especially in the remote areas, after one year of the credit effectiveness.

The overall project risk for procurement is "high risk".

C. Procurement Plan

The Borrower, at appraisal, developed a procurement plan for project implementation which provides the basis for the procurement methods. This plan has been agreed between the Borrower and the Bank Project Team on March 17, 2005 and is available in the offices of MMWRM in Dushanbe. It will also be available in the project's database and in the Bank's external website. The Procurement Plan will be updated in agreement with the Bank Project Team for signature at the completion of negotiation. It will be also updated annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

D. Frequency of Procurement Supervision

In addition to the prior review supervision to be carried out from Bank offices, the capacity assessment of the Implementing agency has recommended every 6 months supervision missions to visit the field to carry out post review of procurement actions.

E. Details of the Procurement Arrangements Involving International Competition

1. Goods, Works and Non-Consulting Services

(a) List of contract packages to be procured following ICB and direct contracting:

Ref. No.	Contract (Description)	Procurement Method	Domestic Preference (yes/no)	Review by Bank (Prior / Post)
1	Irrigation pumping stations	ICB	Yes	Prior
2	Drainage pumping stations	ICB	Yes	Prior
3	I&D Tubewells	ICB	Yes	Prior
4	Dredging machine for Kayrakum Reservoir	ICB	Yes	Prior
5	Kayrakum Reservoir inflow and outflow gauging system	ICB	Yes	Prior
6	Monitoring equipment for dam safety	ICB	Yes	Prior

(b) All ICB contract for goods and works, all direct contracting and NCB contracts for works estimated to cost above \$1,000,000 per contract will be subject to prior review by the Bank.

2. Consulting Services

(a) List of consulting assignments with short-list of international firms.

Ref. No.	Description of Assignment	Selection Method	Reviewby Bank (Prior / Post)
1	Consultants for WUAs	Individuals	Prior
2	Consultants for Design and supervision	QCBS	Prior
3	TA for the PMU	Individuals	Prior
4	Consultant for implementation of Environmental Management Plan	Individuals	Prior
5	Consultants for Agricultural Component	Individuals	Prior
6	Reservoir Storage and Sedimentation study	QCBS	Prior
7	Annual inspection and reporting	Individuals	Prior
8	Kayrakum Dam operation model	CQ	Prior

(b) Consultancy services estimated to cost above \$100,000 per contract and all single source selection of consultants (firms) will be subject to prior review by the Bank.

(c) Short lists composed entirely of national consultants: Short lists of consultants for services estimated to cost less than \$100,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

Annex 9: Economic and Financial Analysis
TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT
PROJECT

1. Introduction

For determining efficiency measures and performance indicators several data sources were used. The different analyses are based on:

- Monitoring results of the Farmer Ownership Model Project , Khujand
- Interviews with farmers and Oblast staff of SOSBR and DoA.
- Studies prepared by the Scientific-Information Center of Interstate Water Coordination Commission of Central Asia, Tashkent.

The project interventions are concentrated on the Kanibodom and Bobojon Gafurov raions, with an irrigated area of 30,000 ha and a population of 250,000 in rural areas. The water resource infrastructure system in these raions has both physical as well as operational problems. The result is an unsatisfactory utilization of the water resources and low productivity at farm level, as well as high ground water levels and flooding of residential areas.

The objectives of the project are (i) to improve the capacity for increased productivity of irrigated agriculture by improving land and water management, and (ii) to improve safety and regulation of the Kayrakum Dam and Reservoir, thereby contributing to enhanced water management security and efficiency at the basin level. The benefits from the project will arise from: (i) improvements of the capacity of surface and subsurface I&D system, (ii) development and support to water user communities, (iii) support to agricultural development, (iv) Dam and Reservoir operational and safety improvements, and (v) mitigation of environmental impact.

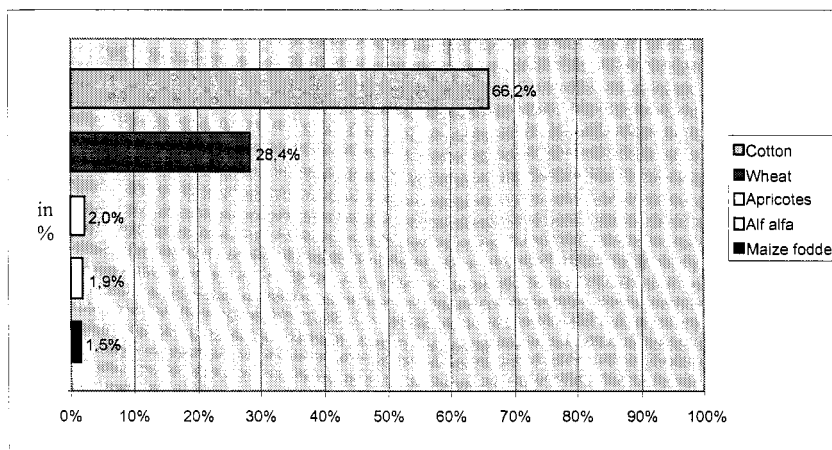
2. Financial and economic analysis

2.1 Main assumptions

Project area and cropping pattern The project covers an irrigated area of 30,000 ha, of which 7,000 ha are in the Bobojon Gafurov raion and 23,000 ha in the Kanibodom raion. There is no significant difference between the present cropping patterns in both regions. The dominating crop is cotton with 66.2% of the total area. This is followed by wheat with 28.4%. Fruit trees and fodder production are of lesser importance. Apricots are produced on 2% of the irrigated land and fodder crops (alfalfa, maize) on 1,149 ha of land used to partially feed some 2,400 cows. Under the current land ownership regime, it is expected that project interventions would not lead to any major changes of the cropping pattern existing regulations on crop because of pattern restrictions. When land privatization occurs, the cropping patterns may change in favor of grain and horticultural crops. However, experience in privatized areas show that 2/3 of the area presently under cotton cultivation is unlikely to change, in the absence of proper markets for horticultural outputs.

Project impacts on farm level. The various project components will result in improved production conditions at the farm level. This will mean an improved irrigation water delivery and a reduction of the problems caused by flooding and high groundwater levels. In addition, the establishment of an agricultural extension service and a farm management information system is expected to increase management know-how on irrigated farms.

Table 1: Cropping pattern (with project interventions)



The project is expected to lower groundwater levels which will reduce the problem of soil salinity. This will enable a considerable increase in the harvesting quantities of apricots. An improvement of the drainage collection system will particularly raise the profitability of irrigated farming in the area close by the Kayrakkum Reservoir in the Kanibodom raion. A better water supply is expected to result in higher harvesting quantities for all crops.

A higher production level of maize and alfalfa will allow a higher milk yield from forage in dairy production. Additionally, the value of by-products (cull, manure, calves) will increase and the cost of one unit of nutrient (MJNEL) in the fodder production will decrease. The requirements for this, however, are a better feeding regime and dairy cows with a higher genetic potential.

Agricultural extension services, proposed as an activity of the project, will provide technical consultancies to farmers in areas of technological irrigation schemes, irrigation rates and schedules, land cultivation, fertilizer applications and pest control measures. This will result in a better use of farm inputs (water, fertilizer etc.) and the production factors (water, labor and capital), will reduce environmental problems and raise the farm income.

In Table 2, the impacts of all project interventions with regard to incremental yields, gross output and costs are summarized for relevant crops. Crop budgets were calculated for 5 major crops (including fodder production), as well as an activity budget for dairy cows. Current crop yields are low and reflect the very low use of purchased farm inputs and insufficient management knowledge of the farmer. It is estimated that with project interventions, harvesting quantities will increase as follows: apricots 22%, cotton and wheat 10%, forage between 13 and 17% and dairy production 47%. The highest incremental gross output will be achieved with apricots, followed by cotton. However, since the highest share of the irrigated land is cultivated with cotton, it will provide the largest contribution to the project benefit.

Table 2: Project interventions and incremental harvesting quantities, gross output and costs

	Increment			
	Yield		Gross margin	Production cost
	kg	%	\$	\$
Crops				
Cotton	84	10	84	29
Wheat	312	10	49.4	43
Wheat	160	8	3.2	
Apricot	930	22	186	100.7
Alfalfa	4,500	17		29.4
Maize	2,500	13		41,3
Livestock				
Mil	800	47	72	50
Cull	3.6	10	1.12	

The various project components would also result in an additional demand of working capital at farm level. This comes mainly from higher fertilizer requirements, higher usage of expensive chemicals, use of high yield varieties and extra costs for consultancy services. In addition, the labor requirements of the various farm enterprises increase. In the case of additional hired labor, the wages must be taken into consideration and for additional family labor the opportunity costs have been calculated.

It is expected that with the different project activities the water demand on farm level will be reduced by approximately 10% and 25% resulting in lower costs. At present there is no detailed technical and economic information available on water inputs. For this reason the economic effects cannot be analyzed at the moment for changes in water usage levels. However, since the costs of irrigation water for cotton amount to only 4% of the variable cost, no great project benefit is expected from reduced water demand. Table 2 shows lower additional production costs compared to the incremental gross output for all crops with complete data availability. The highest economic gains are for apricots followed by cotton.

Input and output prices. Input and output prices are expressed in constant 2004 values (US\$). Financial prices are based on actual market prices paid by or to the farmers. For the economic analysis, costs and benefits are adjusted to reflect the real value in the economy. In this context product prices of wheat and cotton, government taxes and labor cost are most important.

Border prices are estimated for the main tradable crops (cotton and wheat) derived from the farm gate prices. Fodder crops were valued via their output of meat and milk. Since maize and alfalfa are intermediate goods transformed into milk and meat within the farm, its specific value does not affect the overall results. Meat, milk and fruits are considered to be non-tradable and their financial prices are used as economic prices. Since in the various farm enterprises family labor as well as hired labor will be employed, family labor must be valued in the economic analysis. The share of family labor for cotton amounts to 10%, for wheat 70% and for dairy production and fodder crops 80%. It is expected that the opportunity costs of family labor are equivalent to the market price of hired labor. Hired labor is valued at an economic price of US\$ 0.6 per hour.

2.2 Financial and economic results

The cost and benefits streams and the cash flow calculations were completed based on the above mentioned assumptions. Table 3 shows the results of the financial and economic analysis.

Table 3: Results of financial and economic analysis

Performance indicator	ERR/FRR	NPV
Economic analysis	20.0%	US\$ 6.1 million
Financial analysis	18.2%	US\$ 4.7 million

The economic viability of the project has been tested through estimation of the economic rate of return (ERR) and the financial rate of return (FRR). The estimated ERR of the project is 20.0%, means that the Tajik economy would realizes a 20% rate of return from implementing the project, which is well in excess of the opportunity cost of capital (OCC), taken at the discount rate of 12%. The net present value (NPV) at 12% discount rate and a project period of 20 years is estimated at US\$ 6.1 million.

The FRR is calculated without price adjustments for wheat and cotton (calculations are based on farm gate prices), government taxes and the valuation of family labour. The result is an NPV of US\$ 4.7 million and FRR of 18.2% assuming that financial benefits would go exclusively to farmers.

3. Sensitivity analysis

Sensitivity analyses have been carried out for various risks that the project may face in order to evaluate the effect on the project ERR and NPV. Table 4 gives a summary of the results.

Table 4: Results of sensitivity analysis

Scenario/Performance indicator	ERR	NPV
Cost increase + 48.3%	12%	US\$ 0 million
Decrease in product prices		
cotton + wheat - 5%	18.7%	US\$ 5.2 million
cotton + wheat - 10%	17.6%	US\$ 4.4 million

The ERR is robust and insensitive to variations in project costs or benefits. For the project as a whole, the total cost of the project would have to increase by 49% to reduce the ERR to the opportunity cost of capital. In addition, the ERR was tested against changes in the assumptions regarding cotton and wheat prices. If the crop prices are 5% less than assumed, the ERR would still be 18.7%. A fall in prices of 10% results in an ERR of 17.6%.

Annex 10: Safeguard Policy Issues

TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

The main social issues include the following:

Incomes: The Kholkozes and Sovkhozes of Tajikistan that are involved in cotton growing are often highly indebted. The cause of the debt is that, with the collapse of the centralized input distribution and state procurement of cotton production, a few well connected traders have captured the sector. They control the channels for credit, agricultural inputs and are often majority shareholders in the gins and processing of cotton. Due to this situation, much of the benefits that accrue from cotton production fall into the hands of these few traders as well as the various agencies involved in taxation, grading and regulation as well as processing of the cotton. Farm workers in the region are very poor as a consequence; although on a payroll, salaries are rarely paid on time if at all and the great majority of the people living in these farms live in abject poverty ever since the subsidies that were lost with independence from Russia were cut.

Land and Farming: One of the important findings of the SA is that most of the land privatization reform in the project area has not substantially impacted rural farmer's standards of living and incomes. There is strictly speaking no private land in Tajikistan – land cannot be bought and sold on an open market. Some land can only be inherited.. Only some farms lands have deeds which specify the precise locations and boundaries of the land (Independent Dehkan Farms). Other than State-controlled and owned farms (former “Kolkhoz”) the most prevalent form is the Collective Dehkan Farm (CDF), which does not differ in its structure from the state farms from the perspective of workers. The workers are basically paid wage laborers with very little ability to determine farms inputs and outputs. The consequence for the SA is that improving irrigation to the majority of farms, will only indirectly and uncertainly improve incomes for farm workers.

By linking this project with the LRCSP, capacity for privatization and land registration of individual family plots will be built, eliminating some of the most perverse constraints. Farmers will be able to choose the type of crops they wish to produce and will derive most of the benefits from these crops for their families. As long as the current situation persists, and taxation and fee regimes are not improved to allow more of the benefits from growing cotton to fall into the farmer's pocket, cotton yields and productivity will almost certainly fall. However, as the cotton sector is modernized and benefits are better distributed, cotton production could gradually recover.

Irrigation water: The high ground water level is the major problem in Gafurov raion because of the deteriorating system of vertical drainage pumps. This affects private home garden plots, critical for subsistence agriculture as a source of food, as well as cash. The importance of drainage pumps became clear for the social assessment team in the course of focus groups and site visits. The results of the survey reflect this in both districts: In response to the question: “What should be done to improve the current irrigation situation?” almost 98% of respondents in Bobojon Gafurov and 66% in Kanibodom raions named “repair the wells and pumps” as the number one priority with 38% in Bobojon Gafurov raion and 65% in Kanibodom raion choosing “repair the canal” as the second choice. Although multiple social issues exists that need to be kept in mind as the project goes forward, perhaps the most critical issue from residents' point of

view was the need to solve the problem of water-logged land. High water levels create a vicious circle: very low and sporadic/seasonal income from farm labor leads to poverty for households; households turn to house gardens as one of the main sources of food for subsistence and for cash, since surpluses (dried fruit from fruit trees and dairy products) can be sold. Cash is required for medicines when a family member is sick. In both regions, most of the population work as day laborers on state farms – the benefits to them from improved irrigation for these farms are important but more indirect. For this reason, residents (especially in Bobojon Gafurov raion) see high water levels as more critical and a priority issue than irrigation water for farms.

As we note above, lack of irrigation water in Kanibadom raion is the second major problem, often due to distance of farms from Ferghana Canal. The more “privatized” lands are further away from the Canal, which is one of the main sources of irrigation water.

Health: In nearly half of all families, somebody experiences serious illness. In almost all cases the illnesses had a negative impact on the family’s economic well-being. Many families had to pay for medical service, although it was supposed to be for free. Majority traced high rate of illnesses to poor quality of drinking water.

Stakeholders: Key stakeholders include the following: 1. Households/Residents; 2. Daily wage workers; 3. Neighborhood associations – “Mohalla” and the Head of the Mohalla; 4. Jamoat (Municipal District Government); Types of Farm: 4. Independent Dehkan Farm (IDF) and IDF Association; 5. Collective Dehkan Farm, 6. Joint Stock Company (formerly Kolkhoz), 7. Vodkhoz (State Water Department), 8. Riasat Agricultural Center, 9. Hukumat Raion (Regional Government), 10. Ministry of Melioration and Water Resources Management.

The willingness of these actors to support more locally based water management approaches (such as the Water User Associations) varied. However, the recognized need on the part of government bodies, especially the State Water Boards, for Bank assistance to repair the canals and pumps, suggests that they would be willing to entertain innovations in governance structures that would permit greater participation from local residents and farmers.

Governance: A large number of people erroneously believe the Jamoat (community government office) is responsible for solving the problems of I&D. This is not surprising given that the Jamoat is viewed as the lowest level within the (central) governmental structure. Given the long history of communist, top-down government responsibility for the delivery of services (such as water), as well the high costs associated with I&D repairs, it is also not surprising that most people expect the central government to solve problems. On the other hand, one third of the survey respondents believed that “the best way to improve the current irrigation situation” was through “greater control of distribution by ourselves”. In combination with the very high willingness to join and pay a fee for a WUA, this forms a reasonably good base to be optimistic about the potential for a WUA to be an effective instrument of local water management.

Participatory Approach: How are key stakeholders participating in the project? The views of all the stakeholders listed above were consulted as key informants and/or in focus groups. Most were invited to participate and provide their feedback in the workshop in Khujand in December 2004, where the project was described and explained and their views were solicited. The design of WUAs will draw on (a) residents, households and small farmers as potential members and users and (b) government and official actors as necessary legal administrators.

How does the project involve consultations or collaboration with NGOs or other civil society organizations? Members of local neighborhood, community and small farmer organizations were invited to share their views on both the key social and economic problems that need to be addressed by the project and the best means of achieving these objectives. These actors provided input on how local communities can be strengthened and how WUAs can be established to become a vital part of the water management system.

What institutional arrangements have been provided to ensure the project achieves its social development outcomes? The project has sought to establish the support of government offices for WUAs. It has identified the local farmers' willingness to join and financially support local participation in water management through WUAs. The main formal organizations relevant to this project are: at the central level the Ministry of Melioration and Water Resource Management; at the local level, the Raivodkhoz and Jamoat, and Association of IDF and Neighborhood Associations. Collaboration of these key actors and the transfer of some responsibility to community organizations and WUAs should create a better and more efficient as well as more transparent water management system. Nine WUAs have been established under FPSP which function reasonably well and it is essentially their success in managing the water distribution that has pushed demand by farmers for WUAs. While many WUAs have been established by government spontaneously, they lack the key ingredient of member participation in order to be successful, without ownership of land and directly benefiting from the fruit of his labor. The farm worker has no incentive to actively participate. There are no legal obstacles to the establishment of WUA's, but there will no doubt be some organizational issues that will need to be addressed, such as the widely different incentive structure for large and small farms to cooperate within a single organization.

How will the project monitor project performance in terms of social development outcomes? The rapid social assessment has identified several variables (see section 6.1) such as incomes, access to irrigation, extent of private land holdings, ability to sell agricultural products in the open market, and health problems as key variables to be monitored during on-going evaluations at mid-term and at the end of the project. The current local research team is fully trained in the concept and objectives of the SA, including methodology and Bank approach.

Environment

The environmental assessment (EA) confirmed the Category "B" designation for the proposed project, finding no significant, irreversible, cumulative or long-term adverse impacts. In fact, the EA identified a number of positive impacts of the proposed project, including improved agricultural productivity, increased farm income and poverty alleviation, improved public health, reduced water losses and enhanced soil fertility. It identified only minor negative impacts, such as infrastructure construction impacts, impacts on water quality and soil fertility, and threats to biodiversity and habitat, which could be effectively prevented or reduced through application of appropriate preventive actions, mitigation measures and monitoring. The EA also confirmed the application of two other safeguard policies (i.e. projects on international waterways and safety of dams) and examined but rejected application of the safeguard policy for pest management. Finally, the EA determined that the project, as currently proposed, does not trigger any of the remaining safeguard policies involving forestry, natural habitat, cultural property, indigenous peoples, involuntary resettlement or projects in disputed areas.

The EA nevertheless recommended the following preventive actions and mitigation measures, supported by ecological and social monitoring, to address the few potential negative impacts identified: (i) environmental management guidelines and appropriate site management plans to minimize any damage caused by contractors during construction activities and ensure proper disposal of excavated sediment and construction waste; (ii) training in proper agricultural and water management practices and water quality/quantity monitoring to address the potential threats to water quality in receiving waters; (iii) installation of fish protection devices at pumping stations to prevent damage to fish and other aquatic life; (iv) rehabilitation of marginal agricultural lands to natural habitat for biodiversity and (v) studies, information dissemination and small-scale investments to address public health concerns from drinking water problems and water-related diseases.

The Environmental Management Plan (EMP) recommends (i) a mitigation plan comprising the necessary preventive actions and mitigation measures to address potential adverse impacts, (ii) a monitoring plan comprising the monitoring of key ecological and social indicators and (iii) institutional strengthening, including capacity building, training and study tours, equipment, special studies and public awareness campaigns. The EMP includes a schedule for PIU implementation of these measures and a budget for an estimated US\$ 200,000 over the life of the project.

The Environmental Management Plan (EMP) report has been translated into Russian and is publicly available in MMWRM, in Dushanbe and Khujand. Following a formal letter from MMWRM dated March 15, 2005, the EA report was submitted to the InfoShop. The State Environment Committee performed its required Environmental Expertise for the project. The official written letter approving the EA report and EMP was received on March 23, 2005.

The EMP team began the process of consulting the relevant stakeholders and beneficiaries of the project during its initial screening mission in November 2004. The team met with various national and local officials of MMWRM, SEC, MOA, etc. in Dushanbe, Khujand, Kanibodom raion and Bobojon Gafurov raion, as well as with representatives of national and local environmental and social NGOs. The team also visited a number of sites in the proposed project area during its field assessment in order to view conditions and to meet with farmers and other beneficiaries of the proposed project in the field. The EMP team continued its consultations during the project workshop in Khujand in December 2004, exchanging initial findings on the technical, social and environmental aspects of the project with local officials, international experts and members of cooperatives. The EMP team held formal, publicly announced consultations in the project area in February and early March 2005.

As noted above, the PIU will be charged with administering and coordinating the monitoring plan for the ecological and social indicators identified in the EA's analysis of preventive actions and mitigation measures. The EMP includes a detailed and fully costed monitoring plan. Monitoring these indicators should allow the PIU to determine the direct and indirect environmental and social impacts of project activities and, where necessary, take appropriate actions or make corrections to project activities in order to prevent or lessen any adverse impacts detected.

Safeguard Policies

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP/GP 4.01)	[X]	[]
Natural Habitats (OP/BP 4.04)	[]	[X]
Pest Management (OP 4.09)	[]	[?]
Cultural Property (OPN 11.03, being revised as OP 4.11)	[]	[X]
Involuntary Resettlement (OP/BP 4.12)	[]	[X]
Indigenous Peoples (OD 4.20, being revised as OP 4.10)	[]	[X]
Forests (OP/BP 4.36)	[]	[X]
Safety of Dams (OP/BP 4.37)	[X]	[]
Projects in Disputed Areas (OP/BP/GP 7.60)	[]	[X]
Projects on International Waterways (OP/BP/GP 7.50)	[X]	[]

Environmental Assessment: A draft EA has been prepared in late January 2005 and has been reviewed by the safeguards team. IDA received the final drafts of the EIA and EMP reports on March 15, 2005, and submitted the final EIA to the InfoShop on March 16, 2005. The overall impact of the project will have a positive impact upon the environment due to better control of water flows and reduction in water pollution as yearly floods in residential areas will be greatly reduced. The EIA and EMP reports have been translated in Russian and are publicly available in the MMWRM and State Committee on Nature Protection.

Safety of Dams: While this OP is automatically triggered by the works to be undertaken on the levies and dykes along the reservoir, general dam safety and the flood risk from breaches in the levies will be diminished by the rehabilitation works and improved operating procedures. Furthermore, the team has been consulting a dam safety specialist on actions related to dam safety issues. The planned project activities include updating the dam safety studies; providing provisional funds to deal with critical issues of dam safety; establishing a panel consisting of local and international experts in the country to conduct yearly inspection and monitoring of the dam, all of which are deemed satisfactory to fulfill the requirements of OP/BP4.37.

Projects on International Waterways: The Syr Darya and Isfara Rivers and the Kayrakum Reservoir, which provide most of the water to the irrigation systems to be addressed by the project, are international waterways and thus trigger this safeguard policy. The EA examined the potential impacts of the project on these waterways and concluded that, as currently designed, will not increase water withdrawals from these waterways beyond the country allocations. As such, the project would not have any impact on the quantity or quality of water flowing through these waterways, and thus have no adverse effect on the rights of the other riparian states. Therefore, given the rehabilitation nature of the activities under the project, it has been decided that no notification to other riparian states is required under the Bank policy.

Annex 11: Project Preparation and Supervision
TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

	Planned	Actual
PCN review	03/16/04	03/16/04
Initial PID to PIC	03/22/04	03/22/04
Initial ISDS to PIC	03/19/04	03/19/04
Appraisal	03/07/05	03/16/05
Negotiations	03/15/05	04/11/05
Board/RVP approval	05/31/05	07/26/05
Planned date of effectiveness	09/30/05	
Planned date of mid-term review	03/01/08	
Planned closing date	03/11/11	

Key institutions responsible for preparation of the project: Ministry of Melioration and Water Resources Management, Ministry of Agriculture, Food and Agriculture Organization

Bank staff and consultants who worked on the project included:

Name	Title	Unit
Usaid El Hanbali	Senior Irrigation Engineer	ECSSD
Masood Ahmad	Senior Irrigation Engineer	ECSSD
Helen Shahriari	Senior Social Scientist	ECSSD
Nikolai Soubotin	Senior Legal Counsel	LEGEC
Hannah Koilpillai	Finance Officer	LOAG1
Naushad Khan	Lead Procurement Specialist	ECSPS
Jyldyz Wood	Junior Professional Associate	ECSSD
Mahwash Wasiq	Operational Analyst	ECSSD
Bobojon Yatimov	Rural Development Specialist	ECSSD
Kathy Sharrow	Program Assistant	ECSSD
Yurie Tanamichi	Economist	LC SER
Fasliddin Rakhimov	Procurement Analyst	ECCUZ
John Otieno Ogallo	Sr. Financial Management Specialist	ECSPS
Salah Dargouth	Adviser, ARD	ARD
Daniel Gerber	Consultant – Institutional Sp.	ECSSD
Vahid Alavian	Lead Water Resources Sp.	WBIEN
Anna O'Donnell	Consultant-Community Develop.	ECSSD
Michael Sandoz	Consultant – Civil Engineer	ECSSD
Walter Klemm	Team Leader	FAO
Bernhard Noerr	Economist	FAO
David Colbert	Environmental Specialist	FAO

Bank funds expended to date on project preparation:

1. Bank resources: 295,000
2. Trust funds: 220,000
3. Total: 515,000

Estimated Approval and Supervision costs:

Estimated annual supervision cost: US\$ 80,000

Annex 12: Documents in the Project File
TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT
PROJECT

- Updated Project Concept Note
- Minutes of PCN
- QER review Minutes
- Environmental Assessment
- Economic & Financial Analysis Working Paper
- Social Assessment
- COSTAB and Detailed Cost Tables
- FAO/CP report
- Consultative Workshops Proceedings

Annex 13: Statement of Loans and Credits

TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

Project ID	FY	Purpose	Original Amount in US\$ Millions				Cancel.	Undisb.	Difference between expected and actual disbursements	
			IBRD	IDA	SF	GEF			Orig.	Frm. Rev'd
P077454	2004	COMMTY AGRIC & WATERSHED MGMT	0.00	5.00	0.00	0.00	0.00	10.73	0.00	0.00
P081159	2004	COMMTY AGRIC & WATERSHED MGMT (GEF)	0.00	0.00	0.00	4.50	0.00	4.50	0.00	0.00
P069055	2003	EDUC MOD	0.00	13.00	0.00	0.00	0.00	20.71	-0.80	0.00
P075256	2002	PAMIR PRIV POWER	0.00	10.00	0.00	0.00	0.00	7.14	-4.46	0.00
P008860	2002	POV ALLV 2	0.00	13.80	0.00	0.00	0.00	12.22	2.10	0.00
P057883	2002	DUSHANBE WS	0.00	17.00	0.00	0.00	0.00	17.42	6.00	0.00
P049894	2000	PRIM HEALTH CARE	0.00	5.40	0.00	0.00	0.00	1.01	0.99	-0.26
P067610	2000	LAKE SAREZ RISK MITIGATION	0.00	0.47	0.00	0.00	0.00	0.37	0.27	0.09
P058898	2000	RURAL INFRA REHAB	0.00	20.00	0.00	0.00	0.00	12.21	5.25	-2.21
P059755	1999	IBTA 2	0.00	6.70	0.00	0.00	0.00	0.64	0.42	-0.41
P049718	1999	FARM PRIV SUPPORT	0.00	20.00	0.00	0.00	0.00	3.39	-0.16	0.27
Total:			0.00	11.37	0.00	4.50	0.00	90.34	9.61	- 2.52

TAJKISTAN
STATEMENT OF IFC's
Held and Disbursed Portfolio
In Millions of US Dollars

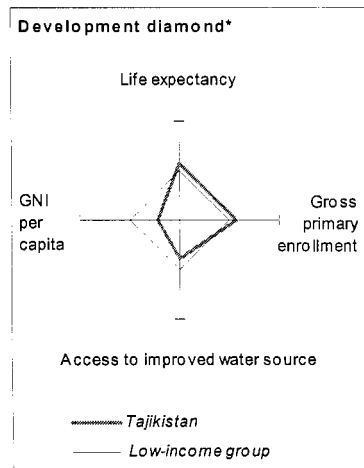
FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
2003	Giavoni	0.00	3.00	0.00	0.00	0.00	3.00	0.00	0.00
2002	Pamir Energy	4.50	3.50	0.00	0.00	0.00	3.50	0.00	0.00
2002/04	SEF FOM	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000	SEF Holland	0.08	0.00	0.00	0.00	0.08	0.00	0.00	0.00
2002	SEF Telecom Tech	0.25	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Total portfolio:		5.33	6.50	0.00	0.00	0.33	6.50	0.00	0.00

FY Approval	Company	Approvals Pending Commitment			
		Loan	Equity	Quasi	Partic.
Total pending commitment:		0.00	0.00	0.00	0.00

Annex 14: Country at a Glance

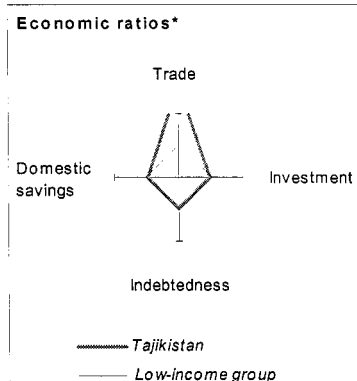
TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

POVERTY and SOCIAL	Europe & Central Asia		
	Tajikistan	Low-income	Low-income
2003			
Population, mid-year (millions)	6.3	473	2,310
GNI per capita (Atlas method, US\$)	200	2,570	450
GNI (Atlas method, US\$ billions)	13	127	1,038
Average annual growth, 1997-03			
Population (%)	0.8	0.0	19
Labor force (%)	2.1	0.2	2.3
Most recent estimate (latest year available, 1997-03)			
Poverty (% of population below national poverty line)	..	..	..
Urban population (% of total population)	25	63	30
Life expectancy at birth (years)	67	69	58
Infant mortality (per 1,000 live births)	90	31	82
Child malnutrition (% of children under 5)	..	..	44
Access to an improved water source (% of population)	60	91	75
Illiteracy (% of population age 15+)	1	3	39
Gross primary enrollment (% of school-age population)	107	103	92
Male	109	104	99
Female	104	102	85



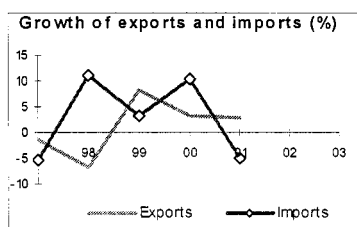
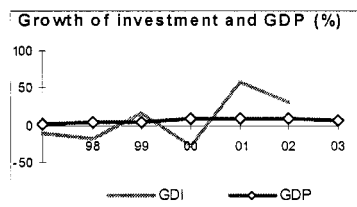
KEY ECONOMIC RATIOS and LONG-TERM TRENDS

	1983	1993	2002	2003	
GDP (US\$ billions)	..	16	12	14	
Gross domestic investment/GDP	..	39.2	20.0	21.1	
Exports of goods and services/GDP	58.4	60.8	
Gross domestic savings/GDP	..	15.1	6.8	17.9	
Gross national savings/GDP	..	16.4	17.2	29.2	
Current account balance/GDP	..	-12.7	-2.8	-4.2	
Interest payments/GDP	..	0.0	12	..	
Total debt/GDP	..	23.4	95.9	89.3	
Total debt service/exports	..	0.2	10.3	9.3	
Present value of debt/GDP	74.1	..	
Present value of debt/exports	16.2	..	
(average annual growth)					
GDP	-5.3	0.3	9.1	6.0	4.0
GDP per capita	-7.8	-0.8	7.5	6.2	-0.4



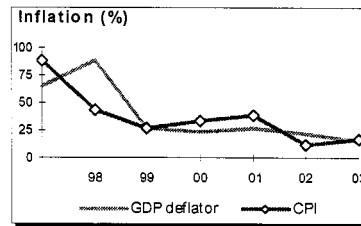
STRUCTURE of the ECONOMY

	1983	1993	2002	2003
(% of GDP)				
Agriculture	..	23.3	24.3	23.4
Industry	..	46.4	24.0	20.2
Manufacturing	..	36.4	21.1	..
Services	..	30.4	51.7	56.4
Private consumption	..	63.0	84.5	73.9
General government consumption	..	21.9	8.7	8.3
Imports of goods and services	..	..	7.16	64.1
(average annual growth)				
Agriculture	-7.2	-0.1	..	..
Industry	-1.1	-6.9	3.6	..
Manufacturing	-1.3	-5.3	..	..
Services	-3.2	6.3	6.7	..
Private consumption	..	5.1	6.4	..
General government consumption	8.2	-12.4	7.8	..
Gross domestic investment	-6.8	-10.7	3.16	..
Imports of goods and services	..	-2.8	..	..



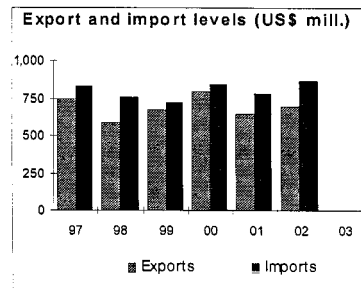
PRICES and GOVERNMENT FINANCE

	1983	1993	2002	2003
Domestic prices				
<i>(% change)</i>				
Consumer prices	..	7,343.7	12.2	16.4
Implicit GDP deflator	..	1,2115	212	14.2
Government finance				
<i>(% of GDP, includes current grants)</i>				
Current revenue	..	33.3	16.7	15.7
Current budget balance	..	-15.2	3.0	2.7
Overall surplus/deficit	..	-20.9	-2.4	-0.4



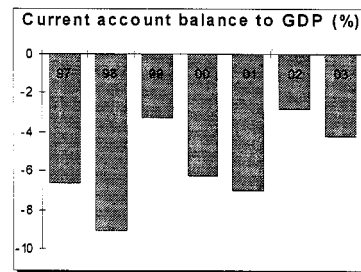
TRADE

	1983	1993	2002	2003
<i>(US\$ millions)</i>				
Total exports (fob)	..	456	696	..
Aluminum	..	230	399	432
Cotton fiber	..	17	128	131
Manufactures
Total imports (cif)	..	660	868	..
Food	..	95	..	..
Fuel and energy	..	127	174	..
Capital goods
Export price index (1995=100)	..	86	..	..
Import price index (1995=100)	..	63	..	..
Terms of trade (1995=100)	..	137	..	..



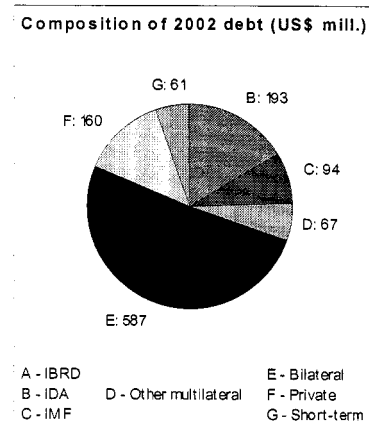
BALANCE of PAYMENTS

	1983	1993	2002	2003
<i>(US\$ millions)</i>				
Exports of goods and services	..	456	708	827
Imports of goods and services	..	686	868	1,040
Resource balance	..	-230	-160	-213
Net income	..	-4	-58	-33
Net current transfers	..	25	184	189
Current account balance	..	-209	-34	-57
Financing items (net)	..	211	35	89
Changes in net reserves	..	-2	-1	-32
Memo:				
Reserves including gold (US\$ millions)	..	2	96	144
Conversion rate (DEC, local/US\$)	..	4.29E-3	2.8	3.0



EXTERNAL DEBT and RESOURCE FLOWS

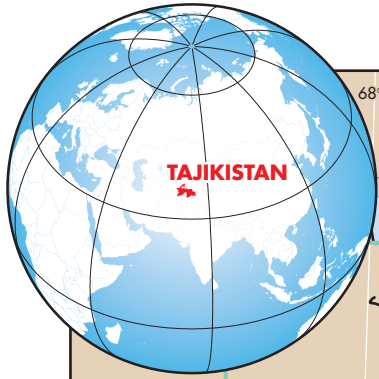
	1983	1993	2002	2003
<i>(US\$ millions)</i>				
Total debt outstanding and disbursed	..	386	1,162	1,225
IBRD	..	0	0	0
IDA	..	0	193	206
Total debt service	..	1	80	98
IBRD	..	0	0	0
IDA	..	0	1	2
Composition of net resource flows				
Official grants	..	11	..	..
Official creditors	..	10	12	26
Private creditors	..	68	-20	-34
Foreign direct investment	..	9	36	..
Portfolio equity	..	0	0	..
World Bank program				
Commitments	..	0	53	20
Disbursements	..	0	10	13
Principal repayments	..	0	0	0



TAJIKISTAN: FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

The following maps are attached to this section:

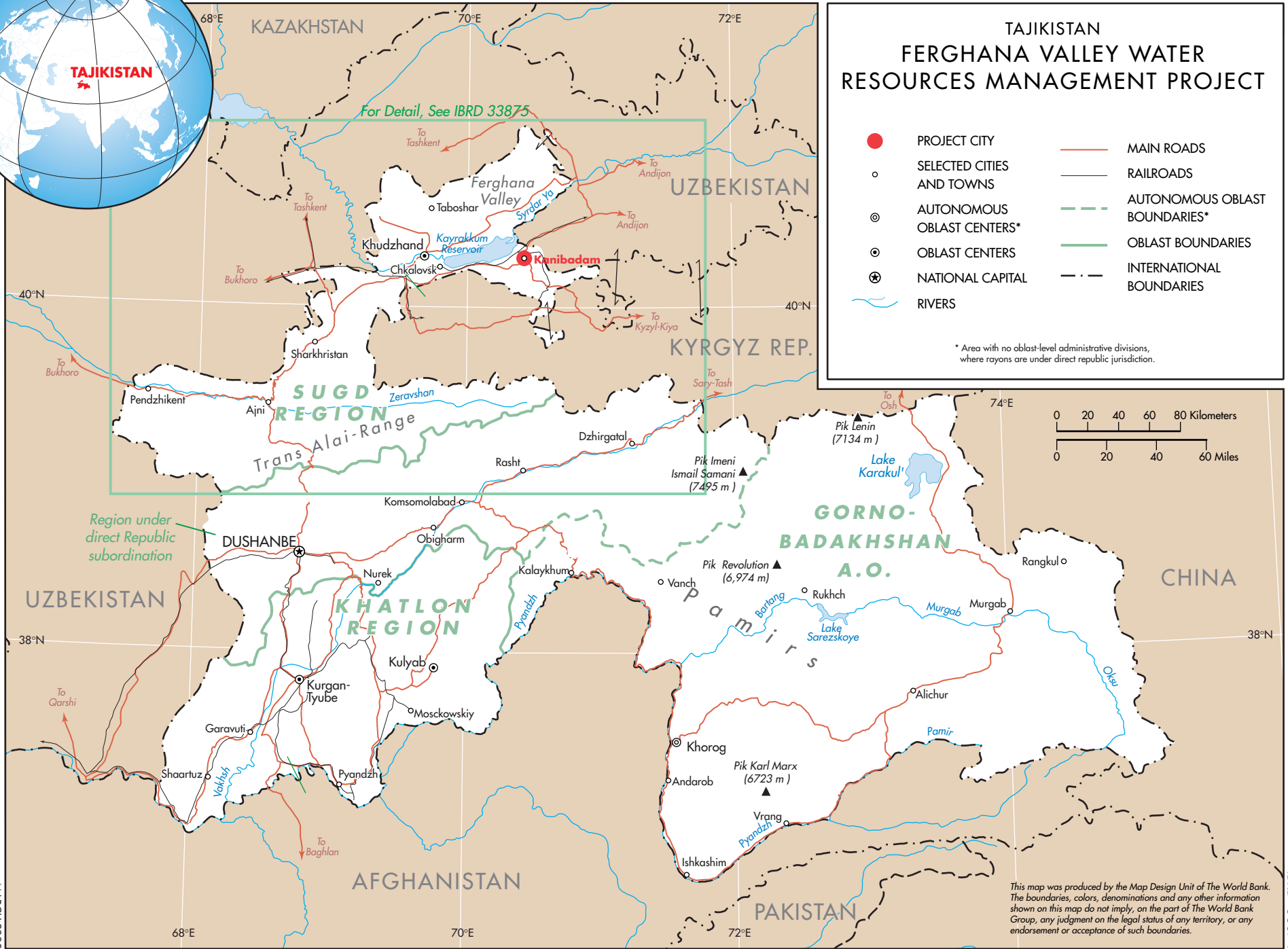
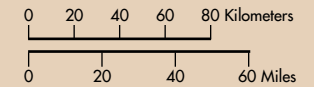
- | | | |
|----|---------------------------|------------|
| 1. | General map of Tajikistan | IBRD 33874 |
| 2. | Project areas map | IBRD 33875 |



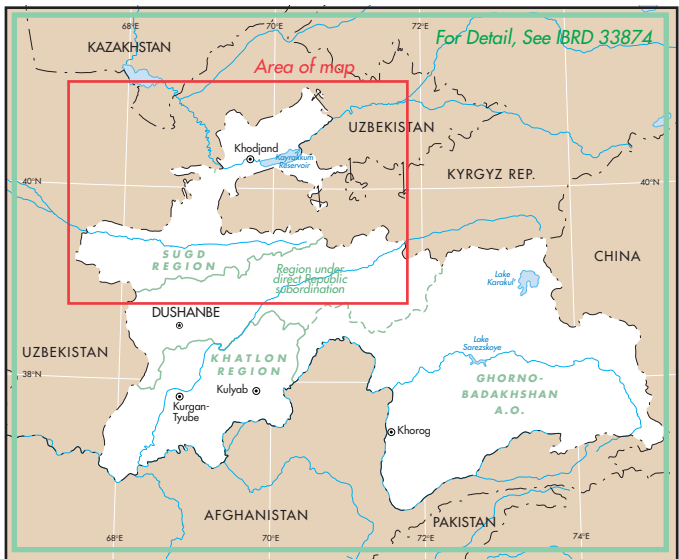
TAJIKISTAN FERGHANA VALLEY WATER RESOURCES MANAGEMENT PROJECT

- PROJECT CITY
- SELECTED CITIES AND TOWNS
- ⊙ AUTONOMOUS OBLAST CENTERS*
- ⊙ OBLAST CENTERS
- ⊙ NATIONAL CAPITAL
- MAIN ROADS
- RAILROADS
- - - AUTONOMOUS OBLAST BOUNDARIES*
- OBLAST BOUNDARIES
- - - INTERNATIONAL BOUNDARIES
- RIVERS

* Area with no oblast-level administrative divisions, where rayons are under direct republic jurisdiction.



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