

PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE

Report No.: AB5509

Project Name	Additional Financing - Ferghana Valley Water Resources Management Project
Region	EUROPE AND CENTRAL ASIA
Sector	Irrigation and drainage (80%);Flood protection (20%)
Project ID	P118430
Borrower(s)	MINISTRY OF FINANCE, TAJIKISTAN
Implementing Agency	Ministry of Melioration and Water Resources Management
Environment Category	<input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> FI <input type="checkbox"/> TBD (to be determined)
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1. Country and Sector Background

Successive income shocks are a major threat to both the short and long-term food security of low-income households, a threat that now menaces Tajikistan¹. Following the food security crisis caused by adverse climatic conditions and increased regional food prices in 2008-2009, Tajikistan's rural poor now face another income shock. Remittance income, estimated at 40 percent of the Gross Domestic Product (GDP), fell sharply in 2009 due to the impact of the global financial crisis on the Russian and Kazakh economies. The construction industries in these two countries, which employ a high proportion of Tajikistan's estimated 1 million migrant workers, have contracted with a consequent high loss of employment.

Regional and system characteristics: The Ferghana Valley is an important region of Central Asia with a total population of about 11,34 million people, of whom 70% live in rural areas, spread among Uzbekistan, Kyrgyz Republic and Tajikistan. The Valley contains the Syr Darya which is the main source of water supply in the area. The Sughd Oblast of Tajikistan is situated in the Ferghana Valley which includes some 700,000 ha of agricultural land of which 200,000 ha are irrigated but only 134,000 ha cultivated because of the dilapidation of the systems. After the collapse of the Soviet Union, the irrigation and drainage systems have fallen into disrepair, leading to unreliable supply of irrigation water, drainage and water-logging problems, reduced soil fertility and crop yields and reduction in irrigated area. The valley's principal water control feature is the Kayrakkum 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

¹ Per capita Gross National Income in 2006 was estimated US \$390.

the east), and (iii) a number of tributaries of the Syr Darya river and Kayrakkum reservoir. There are also numerous drainage pumping stations and irrigation/drainage tubewells for evacuating drainage flows and controlling high groundwater levels.

Cross border water management problems. The mountains of Tajikistan and Kyrgyzstan are the main water reserves for the Aral Sea basin and as such have several large dams that need to be recharged during the spring months so as to provide for water for irrigation to their neighbors, Uzbekistan, Turkmenistan, and Kazakhstan to a lesser degree. 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 where each country sees its right to water as unalterable. In addition, to the cross border problems, the systems further suffer from deterioration 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.

Importance of Agriculture for poverty alleviation and economic growth: Tajikistan is an agrarian society and agriculture is critical to poverty reduction and economic growth. Some two thirds of the population is directly dependent for their living on 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 850,000 ha are arable and irrigated, some 800,000 ha of which 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 trading.

Land privatization: Farm 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 services that will make it possible to collect fees and render many of these systems sustainable. The Bank-financed Land Registration and Cadastre System for Sustainable Agriculture Project (LRCSP) is under implementation to provide capacity to the State Land Committee as the body responsible for land records and issuance of title certificates in Tajikistan. One of the project's key achievements includes 4,482 land use rights (LUR) certificates that were issued, of which 3610 were issued to family farms (i.e., farms with no more than 25 shareholders) by September 30, 2009. Part of the LRCSP will cover the area under FVWRMP.

While the progress of long needed structural agricultural reforms in Tajikistan has been slow, the sector is now receiving renewed Government attention, following a recently announced program to write-off cotton debt. Progress has also been made with the "freedom to farm" concept - a series of measures to allow farmers to decide what to produce and where and how to market their output - particularly in cotton areas.

Economic and Financial viability of the Irrigation Sector: 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 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.

1. Project Background and Objectives

The original project was approved by the Board on July 26, 2005 and became effective on January 19, 2006. The original IDA grant amounted to SDR 8.7 million, about US \$13 million equivalent at the time. The original project development objective (PDO) is (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 Kayrakkum Dam and Reservoir, thereby contributing to enhanced water management security and efficiency at the basin level. The PDO is proposed to be modified to reflect more precisely the project's expected results. The revised PDO will be to assist the Recipient in: (i) increasing the coverage of drained and irrigated areas in Bobojon Gafurov and Kannibodom raions, respectively; and (ii) strengthening the early warning system of the Kayrakkum dam as well as in carrying out a geotechnical study for assessing the risks associated with said dam.

2. Additional Financing _ Ferghana Valley Water Resources Management Project

The proposed additional grant would help finance a cost overrun due to increased cost of works and goods and complete additional works identified in detailed designs during project implementation, and expanded activities to increase the capacity of raivodkhoses and water user associations (WUA). The proposed changes include: (i) revisions to the Project Development Objective; (ii) adjustments to the Results Framework; and (iii) a two-year extension of the Closing Date.

3. Rationale for Bank Involvement

The World Bank assistance in the country's agriculture and irrigation sectors has been important over the last decade. The World Bank has led the policy and institutional development dialogue with the Government in these sectors and has a strong portfolio of investment operations. In addition to the Ferghana Valley Water Resources Management Project, the World Bank recently completed Rural Infrastructure Rehabilitation Project and is currently implementing the Community Agriculture & Watershed Management Project and Cotton Sector Recovery Project. The lessons learned from these projects will be useful and will be applied during the implementation of this proposed Additional Financing.

Furthermore, this project is fully consistent with the CAS by providing the potential to improve agriculture, which remains the primary employment in Tajikistan and remains the major

instrument to tackle rural poverty. The work on the dam will also help preserve an important capital asset in power generation for the country. A new Country Partnership Strategy is currently being developed for 2010-2013; it is not expected to dramatically deviate from the objectives of the 2006-2009 CAS.

Rationale for Additional Financing: On January 29, 2009, the Government requested additional financing of US\$10 million from the Bank to meet a financial shortfall caused by a combination of factors as follows:

- The project suffered from costs overruns due to significant price increases in the past three years on most works and goods.
- During implementation, a cost overrun emerged when the detailed designs and final bills of quantities were developed by the design consultant. Several structures that also needed rehabilitation--including the structures on the main irrigation canal (BFC) such as bridges, siphons, gates, settling basins, cross-regulators and outlets that would need to be repaired after the rehabilitation of the canal--were not identified during project preparation. Similarly, the need for the observation wells to monitor groundwater levels to ensure sustainable land management for crop production had not been included in the original design.
- The original construction of the reservoir embankments was under-designed hence substantial yearly budget allocations were required for their maintenance. The project initially envisaged the rehabilitation of the embankments based on simpler but improved designs. However, the detailed designs revealed that more extensive work was needed, including the addition of filtering layers to ensure the integrity of the rehabilitated embankments.
- Although a study on the Kayrakkum dam and its reservoir has been carried out, additional information is needed on the dam's risk profile. Monitoring and warning equipment have been purchased, but installation is not complete. The equipment has been identified by the Panel of Experts (PoE) as first-level priority activities identified by the Panel of Experts (PoE) to help clarify the dam's risk profile.
- Finally, to strengthen project sustainability, the AF will also finance limited capacity building of the raivodkhozes (district Water Departments) for Operation and Maintenance (O&M) of the primary and secondary infrastructure after the works are completed, and further development of WUAs.

4. Description

Additional Financing:

The project activities under the first-level restructuring and additional financing will remain substantially the same as in the original project design. They will continue to focus on improving I&D and helping local farmers with access to irrigation water and reduce flooding in spring while undertaking minimal investments to improve the knowledge of the dam's risk profile.

In addition, the AF will also involve capacity building of the raivodkhozes (district Water Departments) for Operation and Maintenance (O&M) of the primary and secondary infrastructure after the works are completed and further development of WUAs. An institutional analysis to assess the present capacity of raivodkhozes has been done as well an assessment of the pilot WUA as part of the original project and to prepare for the AF.

Restructuring

Rationale for Restructuring.

Project activities would remain focused on the rehabilitation of irrigation and drainage infrastructures benefiting Tajikistan's irrigated lands alongside the Southern embankments of the reservoir. In parallel, the project will implement selected activities on the dam in line with OP/BP 4.37 to improve the knowledge and operations, and improve the ability of the population below the dam to cope with an unlikely but possible dam failure. The revision to the project PDO, requiring the need for level one restructuring, was done to ensure consistency between the project activities and the outcome.

Project components

The components, activities and sites listed below were all part of the overall design at the project appraisal stage, but were then specifically identified as priorities at the detailed design stage. One additional Water Users Associations will also be established and supported under the Additional Financing.

Component 1 - Irrigation and Drainage System Rehabilitation and Improvements (base cost US\$ 5.6 million)

- *Rehabilitation of drainage pumping stations* – Of a total of originally 16 pump stations along the reservoir embankment, the ongoing project is expected to complete an estimated 4. The additional financing will rehabilitate an additional 5 thus bringing the total number of pump stations rehabilitated to 9 units, in accordance of the priorities defined at detailed design stage and addressing the most critical areas affected by spring flooding.
- *Rehabilitation of inter-farm and on-farm surface and subsurface I&D systems* - The project will prioritize the rehabilitation of “Mirzomalik” WUA-managed irrigation and drainage infrastructure which are blocked with silt and vegetation, and replace broken pre-cast concrete “canalettes”. These works will directly impact the newly formed WUA by improving its ability to deliver contracted water and help its credibility with farmers, and its sustainability.
- *Rehabilitation of BFC and KCC* – Of some 29km of canals in need for work, the original project will conclude some 6.4 km, additional financing will increase that figure to 11km as agreed with priorities defined at detailed design. However, a substantial portion of the AF will address the completion of the selective repairs to the 160 structures on the canal composed of settling basins, cross-regulators and outlets, bridges and siphons, that had been omitted at project inception.
- *Rehabilitation of main and secondary off-farm collector drains* – Of some 415km of primary and secondary drainage canals the original project will complete some 7.5 km. AF will expand that figures to 61km as agreed with priorities defined at detailed design including the cross-structures such as culverts and bridges.

Component 2 - Strengthening Kayrakkum Reservoir Embankments and Improvement of Kayrakkum Dam and Reservoir Safety and Operation (base cost US\$ 2.95 million).

- *Kayrakkum Reservoir Embankments sections (Sections Yakaterak and Gorizontalnaya* – Of an originally envisaged 38km of embankments needing work, the detailed design identified 10.2km as top priority. The ongoing project will conclude some 3.2 km, while additional financing will permit the completion of another 7km. Works include layering of the material and building of filters in addition to raising the height of the dikes to provide an adequate above the design flood level; protect the face of the embankment at vulnerable locations with machine and hand-placed rip-rap, and plant trees on the berms for wave protection.
- *Kayrakkum Dam and Reservoir Safety and Operational Improvements* – The PoE’s report based on the knowledge accumulated from the studies completed so far involves 3 categories of priorities. Given the limited resources available under the project, the inability to undertake in depth works on the dam without agreement from riparians, the project limits itself to implement first level of priorities (category I) that involves the more in depth geotechnical study, further investigations of the dam stability with the design of any relevant remediation works and implementation of an effective warning system complemented by suitable emergency procedures for mitigation of the losses in case of dam failure. The project will not undertake the substantial works involving the strengthening of the upstream face of the dam with materials since this would involve lowering of water levels, replacement of materials and the risks involved with more in depth works on a dam of which the structure is uncertain, and would require concurrence from riparian countries. If the more in- depth study confirms the need for further works, a more comprehensive approach would need to be taken to address the structural deficiencies of the dam structure under the scope of a comprehensive dam safety project involving all beneficiary countries. Finally, the project will only undertake the study of rehabilitation of the Hydro Electric Power Plant (category II), with possible small works to repair some drainage pumps and structures of some peripheral facilities, possibly the rehabilitation of some of the fixed equipment on site depending on justification. However, no substantial structural aspects of these peripheral facilities would be touched under the AF and no investments will be made in category III.

Component 3 - Institutional Development and TA (base cost US\$ 0.8 million) - This component will fund the necessary institutional capacity-building for (i) establishment of 1 additional WUAs, (ii) strengthening *O&M through Performance Contracts* – on pilot basis through multi-year (three years) contract awarded to the private sector; (iii) improving agricultural productivity and achieving more efficient water-use patterns, and (iv) ensuring proper environmental impact mitigating measures. Support would also be provided to raivodkhoz with office furniture, IT and training equipment, vehicles, and tools to facilitate operation and maintenance of the drainage system. This sub-component would also include the costs of vehicles/motorbikes, computer equipment and software, staff training, and incremental staff and operating costs to assist in the planning and implementation of irrigation and drainage asset management and transfer of the irrigation and drainage infrastructure process.

Component 4 - Project Management (base cost US\$ 0.3 million) - This component would continue to finance project management functions in Dushanbe and Khujand. It would also fund monitoring and evaluation of project impact and outcome and auditing of project expenditures.

5. Financing

Source:	(\$m.)
BORROWER/RECIPIENT	0
International Development Association (IDA) Grant	10.00
Total	10.00

6. Implementation

The project management set up of the original Ferghana Valley Water Management Project will be retained for the implementation of the additional financing. The Project Management Unit at Ministry of Melioration and Water Resources Management (MMWRM) in Dushanbe remains responsible for overall coordination and monitoring of project activities as well as financial management and procurement. In its functions, the PMU will be supported by a Project Implementation Unit (PIU) at the field level in Bobojon Gafurov on the territories of which most of the works are being implemented. Both units acquired significant management capacity for project implementation over the past three years. Under the PMU, financial management has been satisfactory throughout the project implementation and financial audits have been unproblematic and largely unqualified, while procurement reviews have identified a few minor irregularities that are to be attributed more to a lack of understanding of the processes and contract management rather than attempts to misuse funds. In order to improve the quality control of goods and works it was already agreed as part of the original project that the PMU would hire a quality control consultant who will clear receipt of goods and installations under the project. The PMU is the main liaison with the Ministry of Finance (MoF) and other ministries and concerned State committee and government. The Project Implementation Unit (PIU) is responsible for the day to day implementation of the works and to supervise the implementation of the task by different agencies and stakeholders, and for the coordination of training activities and technical assistance.

The present arrangement is also expected to be shared with the newly upcoming Public Employment for Sustainable Agriculture and Water Management Project (PAMP) project that is presently being prepared and will undertake the rehabilitation of infrastructure in the Kathlon Oblast in the South of the country. In this case as well, the PMU will also manage the main fiduciary responsibilities.

7. 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. Farm Privatization Support Project (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 is being 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.

8. Lessons Learned from Past Operations in the Country/Sector

The conceptualization and design of the project draws on Bank experiences with similar projects implemented in ex-Soviet countries and internationally. The particularly relevant lessons learned and reflected are outlined below.

- *Integrated and all-inclusive approach:* Development interventions that improve only physical infrastructure systems have been shown to be generally unsustainable over the long term. The potential for long-term sustainability is improved by also attending to key associated social, environmental, institutional and financial development aspects. The project addresses this issue through an approach that covers both physical and non-physical improvements to the irrigated agriculture sector in an integrated manner.
- *Flooding, waterlogging and high groundwater levels:* For water source security reasons, rehabilitation of Kayrakkum reservoir pumping stations for improved irrigation water delivery capacities is a high priority for the GOT. However, much of the project area is adversely affected by flooding, waterlogging and high groundwater levels. International experience shows that irrigation and drainage problems need to be resolved jointly. Water and environmental management factors, and economic considerations, also dictate that water abstraction and disposal volumes should be minimized. In addition to physical system interventions there are to be studies and initial implementation activities relating to non-physical water management improvements.
- *Power systems:* It has been a common finding in ex-Soviet countries that both power and water infrastructure systems are greatly deteriorated. Because both the irrigation and the drainage systems are heavily dependent on power systems for their adequate functioning, it follows that a program for their rehabilitation needs to also address power system deficiencies, to provide the conditions for proper long-term operation. The project

therefore includes support for securing needed reliable power supplies for the electromechanical installations to be rehabilitated.

- *WUAs*: Much experience has been gained internationally on the instituting of water user organizations for the management of irrigation and drainage systems by the beneficiary farmers and rural communities. This is to be applied for the development of such organizations under the project. Two particular lessons learnt that are to be followed are that (i), for successful democratic functioning, individual WUA members need to be system users who are owners, or who have secure and long-term tenancy of the lands being serviced, and (ii), for sustainable viability in terms of financial self-reliance, WUAs would normally need to be of a certain minimum size, assumed to be in the order of 3,000 to 6,000 ha. Land privatization is being addressed under a Bank project that is expected to be effective by the time activities under FVWRM project will be implemented.
- *Agricultural production and socio-economic conditions*: The ultimate determinants of sustainability of the irrigation and drainage systems to be managed in part by WUAs are the levels of agricultural output and farm incomes that can be achieved, since the resources for proper systems O&M are to originate largely from these. Therefore, as in the case of many similar development projects elsewhere, suitable agricultural enhancement, training and extension programs are to be carried out and supported under the project.

9. Safeguard Policies (including public consultation)

Safeguard Policies Triggered by the Project Yes No

	Yes	No
Environmental Assessment (OP/BP/GP 4.01)	[X]	[]
Natural Habitats (OP/BP 4.04)	[]	[X]
Pest Management (OP 4.09)	[]	[X]
Cultural Property (draft OP 4.11 - OPN 11.03-)	[]	[X]
Involuntary Resettlement (OP/BP 4.12)	[]	[X]
Indigenous Peoples (OD 4.20)	[]	[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]	[]

In accordance with the Bank’s safeguard policies and procedures, the project AF is qualified as category B since the supported activities are the continuation of the on-going activities under the FVWRMP which was identified as category B. The activities under AF are not expected to generate significant environmental and social impacts. As the nature of the works to be financed under the AF will not change, the existing Environmental Assessment and Management Plan (EAMP) for the initial project will also apply for AF.

The environmental effects of the project will be minor and indirect. The civil works consist mostly of earth moving, concrete works, laying of underground pipes, rehabilitation of existing canal structures, all of which are fairly small scale works, for which environmental mitigation measures will be part of the contractor quality manual that will be part of each contract award. Adequate measures will be taken to ensure minimum dust generation and soil losses as well as ensuring proper regeneration of vegetative cover once works are completed. The improved water management will reduce flooding thus significantly improve water quality for residents themselves as well as for populations residing downstream of the reservoir and who depend on the water from Kayrakkum for irrigation as well as drinking water.

The initial project as well as AF will not trigger OP 4.12, Involuntary Resettlement. None of the activities under AF will result in land acquisition, demolition of structures, and removal of income-producing trees along canals, or other impacts that could adversely affect incomes or livelihoods of local residents. As all proposed activities will be implemented within the existing irrigated lands the project will not have impact on wildlife and natural habitats and thus OP 4.04 “Natural habitats” is not triggered. It is also expected there will be no impacts on physical cultural resources which are not placed in the vicinity of the existing irrigated lands and respectively OP 4.11 “Physical/Cultural Resources” is not triggered.

OP 4.37 was triggered for the original project and continues to be for the AF. The project has and continues to finance investigations of the safety of the dam. In accordance with the OP, a panel consisting of local and international experts was established to conduct yearly inspection and monitoring of the dam. OP 7.50 was also triggered for the original project and will be triggered by the AF since it involves irrigation and drainage works on the Syr Darya River,

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

which is an international waterway. An exemption from the notification requirement was obtained on the basis that the works involve rehabilitation of an existing scheme, with no extension or new construction and that remains the same under the AF. The rehabilitation of irrigation and drainage schemes will not involve any adverse impacts on the quality and quantity of water in the international waters, but rather it will lead to more effective irrigation and drainage of the water, and maximization of the reservoir volume available to riparian countries. Any development in upstream countries' water use regimes will not have adverse effects on the areas to be rehabilitated.

10. List of Factual Technical Documents

- Environmental Assessment (Consultant Report, December 2004 – updated March 2005);
- Rapid Social Assessment (Consultant Report, December 2004 – updated February, 2005)
- Irrigation Technical Report (Consultant Report, September 2004);
- Economic and Financial Cost-Benefit Analysis (FAO Consultant Report, December 2004 – updated February, 2005);
- Dam Safety Report (Consultant Report, September 2008);
- Panel of Experts Mission (Panel of Experts) - To review critical aspects for safe operation of the dam and embankments “Ferghana Valley Water Resources Management Project” (Consultant Report, December 2004)
- Mid – Term Review Report (World Bank Aide Memoire, May 2009)

11. Contact point

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