



Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 23-Apr-2022 | Report No: PIDA32359

**BASIC INFORMATION****A. Basic Project Data**

Country Tajikistan	Project ID P175356	Project Name Tajikistan Strengthening Water and Irrigation Management Project	Parent Project ID (if any)
Region EUROPE AND CENTRAL ASIA	Estimated Appraisal Date 27-Apr-2022	Estimated Board Date 09-Jun-2022	Practice Area (Lead) Water
Financing Instrument Investment Project Financing	Borrower(s) Ministry of Finance (MoF)	Implementing Agency Ministry of Energy and Water Resources (MEWR), Agency for Land Reclamation and Irrigation (ALRI), FVWRMP PMU under the ALRI	

Proposed Development Objective(s)

The project development objective is to: (i) strengthen capacity for water resources planning and irrigation management in Tajikistan and (ii) improve performance of selected irrigation schemes in the Vakhsh and Zarafshon river basins.

Components

Water Sector Reform and Institutional Strengthening
Irrigation Scheme Improvements
Project Management
CERC

PROJECT FINANCING DATA (US\$, Millions)**SUMMARY**

Total Project Cost	48.10
Total Financing	48.10
of which IBRD/IDA	30.00
Financing Gap	0.00



DETAILS

World Bank Group Financing

International Development Association (IDA)	30.00
IDA Grant	30.00

Non-World Bank Group Financing

Trust Funds	18.10
European Commission Development Fund - TF	18.10

Environmental and Social Risk Classification

Substantial

Decision

The review did authorize the team to appraise and negotiate

Other Decision (as needed)

B. Introduction and Context

Country Context

- Despite two decades of poverty reduction and steady economic growth**, Tajikistan remains the poorest country in the Europe and Central Asia (ECA) region¹. Officially reported real annual GDP growth averaged 6.9 percent during 2011–21, benefiting from solid remittance inflows and externally financed public investments. Despite strong economic performance, Tajikistan struggles to achieve food security and overcome structural bottlenecks to create jobs. This reflects inefficient governance of state-owned enterprises, imprudent management of public finances, weak institutional capacity, and a business environment that is not conducive to private investment². While poverty rates are falling overall, the urban-rural poverty gap is widening with about 2.2 million (nearly a quarter of national population) living below the national poverty line in rural areas.
- In 2020, COVID-19 caused a major economic slowdown in Tajikistan, disproportionately impacting the poor.** Reduced foreign earnings greatly curtailed household consumption and fiscal revenue. Lowered revenue protections led to cuts in planned government expenditure and the fiscal deficit increased to 3.1 percent of GDP. Development finance, however, enabled a budget adjustment with the equivalent of 2.8 percent of GDP allocated for COVID-related expenditure. The government's pandemic response included action plans for Country Preparedness and Response³ and for Preventing and

¹ World Bank. [World Development Indicators](#)

² World Bank (2021). [Tajikistan Macroeconomic and Poverty Outlook](#)

³ Republic of Tajikistan (2020). [Tajikistan COVID-19 Country Preparedness and Response Plan](#). Dushanbe, Tajikistan.



Reducing the National Economy's Exposure. These earmarked significant additional funding for healthcare, social assistance, private sector tax relief, and public sector wages and pensions, and postponed power and water tariff increases. By late 2020, two-thirds of households reported reduced income and one fifth were unable to buy food or essential supplies⁴; migrant remittances fell drastically because of travel restrictions and the economic downturn in Russia.

3. **In 2021 the economy rebounded, growing at an annual rate of 8.7 percent in the first half of the year.** Resumption of flights to Russia saw migrants traveling for work and increasing remittances inflows. By August 2021, 40 percent of households had at least one member working outside the country, compared to 34 percent a year earlier². After the expansionary fiscal policy of 2020 government sought to consolidate the national budget. Increased remittance inflows, a stable exchange rate, and the release of pent-up demand strengthened consumer confidence and capital goods imports. Foreign investment rose by 35 percent (year on year) in the first eight months of 2021. But despite the rebound, public debt is still 43 percent of GDP and there is a high risk of debt distress⁵. An increasing number of households reported reduced expenditure, including on food (33 percent in August 2021 versus 28 percent a year earlier), and poverty rates increased reversing the previous trend⁶. A sharp increase in consumer prices and falling wage incomes reduced food security, particularly for vulnerable households without remittance income². Disposable incomes have fallen, and recovery is expected to be slow.

4. **The Russian invasion of Ukraine in February 2022 created significant new economic uncertainty for Tajikistan.** The collapse of the Russian ruble sent shock waves through Central Asian currency markets and the Tajik somoni lost 35 percent of its value against the ruble in under a week. Currency devaluation and new travel restrictions to and from Russia will likely have huge impacts on remittance flows that have in the past constituted a third of the Tajik economy.

5. **Vulnerability of rural settlements to natural disasters and climate change exacerbate poverty.** Exposure to floods and mudflows is high, with major impacts on rural livelihoods, particularly on farming activities, and particularly in the more mountainous upper basins⁷. Extreme rainfall in mid-2021 resulted in floods and mudflows that caused damage in the densely populated central and southwestern parts of Tajikistan⁸, affecting more than 2500 households and 2,700 ha of irrigated land⁹ and with major impacts on transport and water infrastructure. Socio-economic development, inadequate infrastructure, and a high dependency on climate-sensitive sectors (agriculture and hydropower) make Tajikistan extremely vulnerable to climate change more broadly. Climate change risks include increased rainfall intensity leading to an increased incidence of floods and mudslides, as well as increased variability and changed timing of reservoir inflows. Water and energy demands are expected to increase because of climate warming (exacerbated by population and economic growth), and disruption to economic production and livelihoods, especially in rural areas. Events like those of mid-2021 are expected to increase in frequency with climate change⁷. Crop water demands will increase significantly, leading to more frequency water stress, even in irrigated areas, affecting irrigation productivity, and thus rural livelihoods.

6. **To increase economic resilience, Tajikistan is pursuing a green economy.** The National Development Strategy 2015-2030 prioritizes a transition to a green economy with a medium-term focus on achievement of the Sustainable Development Goals and on climate adaptation. Forestry and

⁴ IFC (2020). COVID-19 Impact Assessment Survey. Tajikistan and Kyrgyz Republic

⁵ World Bank (2021). [Tajikistan Country Economic Update \(Summer 2021\)](#)

⁶ World Bank (2020). Tajikistan: Economic Slowdown Amid the Pandemic. Country Economic Update Fall 2020.

⁷ <https://climateknowledgeportal.worldbank.org/country/tajikistan>

⁸ World Bank (2021). [Assessment of contributing factors of the May 2021 disasters in Tajikistan](#)

⁹ UNICEF (2021). *Emergency WASH Assessment in response to the May 2021 disasters in Tajikistan*



agriculture are key sectors for this transition, and efficient economic management, careful use of natural resources, and civil society engagement in monitoring, control, and use of natural resources will be critical¹⁰. The National Strategy for Adaptation to Climate Change to 2030 commits Tajikistan to reducing the impacts of climate shocks and has three goals¹¹: (i) reducing the vulnerability of the most vulnerable populations, priority sectors, and cross-cutting areas to climate change and extreme climate events; (ii) prioritizing climate adaptation investments that can be financed through sectoral investment plans and budgets, private sector investment, multilateral and bilateral development partners; and (iii) designing, implementing, monitoring, and assessing climate risk management and adaptation measures needed to reduce current and future vulnerability to climate change and extreme weather events.

7. **Tajikistan is however, projected to become a hotspot for climate change driven migration** with 1.7 million (2.4 percent of the population) climate migrants by 2050 under an optimistic scenario¹². Under this scenario, climate migrants would represent 20 percent of the internal migrants in the region. Southern Tajikistan (including Dushanbe) is projected to become in-migration hotspot, while the Ferghana Valley in Tajikistan is projected to become an out-migration hotspot, given decreases in water availability and crop productivity.¹²

Sectoral and Institutional Context

8. **Water security is key to Tajikistan's economic growth; and food security and poverty reduction are core government priorities.** Tajikistan is pursuing agricultural, energy and water reforms and these are reflected in the pillars of the National Development Strategy 2015-2030: (i) increase agricultural efficiency and develop capacity for processing agricultural products targeting exports beyond Central Asia; (ii) increase electricity generation and export to neighboring countries; and (iii) increase productive human capital. Water is critical to each of these pillars, through irrigation improvement, hydropower development, and universal access to safe and secure water and sanitation services as a foundation for human capital development. The National Strategy for Adaptation to Climate Change to 2030 also commits the country to reducing the vulnerability of the population and priority sectors to climate change and extreme weather events. This builds on Tajikistan's Third National Communication under the United Nations Framework Convention on Climate Change (UNFCCC), which identified priority measures to enhance resilience to climate change and the impacts of extreme hydro-meteorological events.

9. **Irrigated agriculture could underpin economic growth with improved performance.** Agriculture contributes 24 percent of national GDP (2020) and 45 percent of national employment (2019). 85 percent of cultivated land is irrigated, and this delivers over 90 percent of the total value of crop production¹³. However, since independence, the condition and performance of irrigation infrastructure has declined because of severe underfinancing. Poor performing infrastructure includes many high-lift, high volume pumping stations – more than 40 percent of irrigated areas in Tajikistan are dependent on pumping (the highest dependency in Central Asia). Pumping is inefficient at around 0.28 kWh/m³ and this represents around 20 percent of total national electricity use¹⁴. The economic productivity of irrigation is amongst the lowest 5 percent of countries in the world at around 0.21 \$/m¹⁵ because of high water losses, a predominance of low value crops, and low yields. Wheat yields, while more than double the largely rainfed

¹⁰ *National Review Towards a Green Economy in Tajikistan*

<https://sustainabledevelopment.un.org/content/documents/1021tajikistan.pdf>

¹¹ GoRT (2019). *National Strategy for Adaptation to Climate Change of the Republic of Tajikistan for the Period up to 2030*, Order No. 482, Dushanbe.

¹² Clement, V et al. (2021). *Groundswell Part 2: Acting on Internal Climate Migration*. World Bank, Washington, DC.

¹³ FAO Aquastat

¹⁴ Based on GoT data for irrigation water withdrawals and electricity consumption in 2017

¹⁵ Based on latest values of GDP, agriculture share of the economy, and annual irrigation withdrawals from data.worldbank.org



yields in Kazakhstan, are nearly 30 percent below irrigated yields in Uzbekistan. Irrigation is often unreliable with poor water delivery control – some areas are under-irrigated while others are over-irrigated. But withdrawals are high because the irrigation system is very leaky overall. The most common irrigation methods are gravity furrow irrigation (80%) and basin irrigation (20%), with water withdrawals varying from 1,200 to 8,000 m³ per hectare for different crops. Aging and poorly maintained infrastructure and poor system management mean low-quality irrigation services, which contribute to low productivity, low rural incomes, food insecurity, and environmental stress. In overall, the irrigation infrastructure was not designed to account for climate change. Due to low investments in drainage infrastructure, inadequate maintenance and poor water management, and harmful irrigation practices some irrigated areas are affected by salinization and waterlogging. Population growth continues to increase food demands, with wheat imports steadily rising over recent years. In the absence of adaptation, climate change will negatively impact production. Rising temperatures will increase crop water demands and water supply reliability will decline, leading to more severe and more frequent water stress. Floods and mudflows will become more frequent, damaging infrastructure and disrupting production. In the absence of reform, investment, and adaptation, irrigation performance will further decline, with knock-on impacts on economic growth and poverty reduction.

10. **Recognizing the importance of water to its development agenda Tajikistan has committed to comprehensive reforms.** The National Water Sector Reform Program 2016–25 stresses water as a valuable resource and calls for broad adoption of Integrated Water Resources Management on a river basin basis. It sets out national principles for water resources management including (i) separation of policy and operational functions; (ii) aligning water resources management to hydrological boundaries; and (iii) decentralization of service functions. Key recent reforms include new laws on Water User Associations (WUAs) and on Drinking Water Supply & Wastewater, and the adoption of a revised National Water Code.¹⁶ In 2019, Tajikistan drafted a National Water Strategy to 2030 targeting: (i) full restoration of previously irrigated lands, (ii) irrigation expansion of 2000 ha/yr, and (iii) expansion of the area under water-efficient irrigation of 6000 ha/yr. The strategy aims to support achievement of water-related Sustainable Development Goals and implementation of the National Development Strategy. A focus on performance improvement and modernization rather than expansion is required, and achievement of these targets will require greatly increased investment.

11. **The institutional arrangements for irrigation and water resources management are being reformed but are currently suboptimal.** In 2013 the former Ministry of Land Reclamation and Water Resources was restructured with a new Ministry of Energy and Water Resources (MEWR) responsible for water sector policy and regulation and a new Agency for Land Reclamation and Irrigation (ALRI) responsible for implementation of the state policy in the irrigation and land reclamation sector, irrigation service delivery and system maintenance. The governance arrangements set out in the Water Code have been only partially implemented and are only partially effective; as the progress has been heavily reliant on development partner support. A National Water Council (NWC), described in the Water Code as a supervisory and coordinating body for the water sector, is yet to be established. Experience suggests strategic intersectoral thinking is required for improved water resources planning and management based on exchange of information and dialogue across energy, agriculture, environment sectors, and economy overall. The NWC could provide such a national platform. Progress was made in establishing river basin organizations (RBO) as “structural units of authorized state body for regulation and management of water resources”. These organizations are legally mandated as coordinating bodies for the activities of River Basin Councils (RBC). RBOs however, are yet to become fully effective in performing their mandate given

¹⁶ Republic of Tajikistan (2019, 2020) Resolutions #1633, #1668 and #1688



issues of low capacity, insufficient financing, and lack of empowerment. There is a serious under-representation of women in the current institutional arrangements for both water resources planning and irrigation management. For example, there are no women in the water wing of MEWR and only 12 percent of ALRI staff are women, and these are concentrated in administrative support roles.

12. Tajikistan lacks a national irrigation strategy but efforts to establish sub-basin-level irrigation service providers have been launched in the Zarafshon, Panj and Kofarnihon basins, with partial success.

At present, ALRI does not have a medium-term investment program for the construction and rehabilitation of water management facilities or a long-term strategy aligned with the agriculture sector development vision. Minimum required O&M spending on irrigation infrastructure in Tajikistan is estimated at about US\$35 million per year. Established ALRI sub-entities still do not fully embrace a service-oriented scheme-based approach to irrigation management, lack control of planning and financing of their operations, as they remain reliant on national ALRI. The new WUAs Law further reconfirmed respective areas of responsibility between WUAs and ALRI, and made clear provision for ALRI to act as a support and coordination entity for the WUAs. Nearly 400 WUAs have been established since 2006 with WUAs assigned with responsibility over maintaining state-owned on-farm irrigation and drainage infrastructure. However, WUAs should not be seen as irrigation sector entities fully deprived of state support, given their role in provision of public goods. Such support is partially channeled through the WUAs unit of ALRI, unfortunately the unit does not have sufficient funding and capacity to properly carry out its mission. WUAs can be also seen as intermediaries in providing extension and advisory services for water management and improved agricultural practices.

13. Hydrologic monitoring systems are improving but are incomplete. Data for the major water intakes on the tributaries of transboundary rivers (Panj, Kofarnihon, Vakhsh and Syrdarya) are collected manually by the BWO “Amudarya” and BWO “Syrdarya” and reported to the MEWR and the regional BWOs twice daily. Flow measurements are made at major irrigation headworks and WUA boundaries in the Zarafshon and Lower Kofarnihon basins to determine water delivery volumes as the basis of irrigation service fees to be paid by WUAs. Data from irrigation headworks is transmitted to an Irrigation Management Information System (IMIS), but challenges in operation and maintenance of installed measurement devices persist. River flow monitoring is conducted by the Hydromet agency but is not routinely provided to MEWR and RBOs. The database of withdrawal permits maintained by the Committee for Environmental Protection is not digitalized or linked to the WIS, making effective water allocation planning difficult.

14. Irrigation is heavily subsidized but also underfunded leading to fiscal constraints and perverse incentives. Irrigation is financed by direct transfers for electricity bills, government subsidies for pumping station staff costs, revenue from irrigation service fees, WUA membership fees (for on-farm O&M), and donor investments. More than 60 percent of irrigation CAPEX (including flood protection) is donor-financed, and low O&M spending is eroding the economic value of irrigation assets and increasing long-term costs. A CAWEP-financed Public Expenditure Review for the sector that commenced in 2021 will provide comprehensive analysis of budget efficiency. Water sector reforms include introduction of volumetric billing of irrigation water to improve cost recovery of irrigation services. However, volumetric billing is not yet widespread, and even where adopted, collection rates are only around 60 percent. Parallel area-based tariff systems lead to resistance to the introduction of volumetric billing. The target for ALRI to be financially self-sufficient by 2019 was not achieved and remains difficult, because of minimal efforts to determine the actual cost of irrigation and initiate a discussion on raising water tariffs. Staff capacity is a constraint for the whole water sector, as it is rapidly losing its expertise. Average age of the irrigation engineers hired at district-level water management departments is above 50. Water authorities need more young and trained staff, especially the water resources and irrigation specialists.



15. **Electricity costs are a large fraction of ALRI's budget.** While debts to the national electricity utility have been written off on several occasions (most recently in 2014), they had accumulated to US\$25M by 2020¹⁷ despite tariff payment levels increasing from ~10 percent (2014–2017) to more than 30 percent (2018–2020). Since 2018, ALRI has not received direct electricity subsidies, but electricity bills have been paid via direct transfers from the Ministry of Finance to the ALRI. This has reduced the incentive to improve irrigation energy efficiency. While the annual cost of irrigation inefficiency has been estimated at US\$11M (US\$44/ha)¹⁸, there has been no sector audit of energy use and there is no realistic roadmap to transition to financial sustainability.

16. **The WSRP has been supported by multiple development partners and continued assistance to furthering the process is critical.** The state budget resources are limited to fund policy and legislative reform or capacity building of water resources and irrigation institutions. Past and ongoing support from development partners has thus been critical to WSRP implementation and has been largely delivered on a river basin basis. World Bank support pre-dates WSRP and commenced with emergency projects focused on irrigation expansion for rural livelihoods firstly FVWRMP in the Ferghana Valley of Syr Darya Basin and then the first Public Employment for Sustainable Agriculture & Water Management Project (PAMP-I, P119690) in the Lower Kofarnihon Basin. Subsequently the focus shifted towards institutional strengthening and sector reforms under PAMP-II (P133327) also in the Lower Kofarnihon and under the Zarafshon Irrigation Rehabilitation and Management Improvement Project (ZIRMIP, P158576) in the Zarafshon Basin. PAMP-II retained the PAMP-I design but tackled a larger geographic area over a longer implementation period. Less emphasis was put on temporary employment and more on infrastructure rehabilitation. ZIRMIP shifted the focus towards reforms and institutional strengthening but continued with rehabilitation of critical infrastructure.

17. **Coordination of activities with other development partners is ensured through defined geographical focus of projects on target river basins,** and synergies created at the national level across the four key pillars: (i) Water Governance; (ii) Information and Knowledge Sharing; (iii) Capacity Building; and (iv) Infrastructure Investment. The new project responds to a government request to accelerate national reforms and to improve both water resources policy and planning and irrigation management, especially in the Vakhsh Basin, which is the heartland of irrigation in Tajikistan. The Vakhsh is a large basin with multiple and complex water sector challenges. In 2020 the World Bank completed a sector needs assessment for the lower Vakhsh basin, which informed design of the infrastructure aspects of new project. In addition to supporting the ongoing reform process both nationally and in the Vakhsh and Zarafshon basins, the new project adopts a more strategic approach to infrastructure investments. Firstly, the project will move the national irrigation infrastructure agenda from “rehabilitation” to “modernization” and service delivery for large schemes. This will improve not just the not condition of irrigation systems but the performance of selected systems in terms of efficiency, productivity, and environmental and financial sustainability. It will help to break the build-neglect-rehabilitate cycle. Secondly, the project will improve the resilience of smaller irrigation systems that are frequently impacted by floods and mudflows – disruptions that will become more frequent with climate change in the absence of adaptation. This approach is fully consistent with the World Bank's Green, Resilient, Inclusive Development Approach.

¹⁷ OECD (2018) [Policy Perspectives for irrigation Sector Reform in Tajikistan – A Paper for Decision Makers](#).

¹⁸ World Bank (2017) [The Costs of Irrigation Inefficiency in Tajikistan](#). World Bank, Washington, DC.



C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

The project development objective is to: (i) strengthen capacity for water resources planning and irrigation management in Tajikistan and (ii) improve performance of selected irrigation schemes in the Vakhsh and Zarafshon river basins.

Key Results

18. **Indicators for the two PDO outcomes** are as follows: Outcome 1 (*Strengthen capacity...*) (i) national and basin-level water planning institutions established, resourced, and effective, (ii) irrigation service provider effectively managing targeted major schemes; Outcome 2 (*Improve performance...*): (i) area with improved water delivery in targeted large schemes, (ii) energy intensity of water delivered in targeted large schemes, (iii) value of irrigated production in targeted large schemes.



D. Project Description

19. **The project will accelerate national water reforms, improve water resource management, and contribute to improving rural livelihoods and food security.** It will combine support to improving water resources policy and planning and irrigation management at national and basin levels, with infrastructure modernization to improve the performance of selected irrigation schemes. Institutional components will restructure and strengthen water resource and irrigation management institutions (including national agencies, basin organizations, district irrigation agencies, and water user associations), and help develop sector strategies and the systems for setting, tracking, and reporting on sector performance targets. Infrastructure components will enhance resilience by reducing the energy intensity of irrigation, increasing the efficiency of water delivery, and reducing the vulnerability of irrigation schemes to floods and mudflows.

20. **The project has four components:** (i) Water sector reform and institutional strengthening, (ii) Irrigation scheme improvements, (iii) Project management; and (iv) Contingent Emergency Response Component. This aligns with the structure of the WSRP action plan, with WSRP actions on “Legislative and Regulatory Frameworks” and “Institutional Development” progressed under Component 1, and WSRP actions on “Infrastructure Rehabilitation” addressed under Component 2. Component 1 is subdivided into firstly, strengthening national and basin-level water resources policy and planning, and secondly, improving irrigation planning and management. Component 2 is subdivided into firstly, improving large-scale irrigation schemes, and secondly, improving small- and medium-scale irrigation schemes.

Component 1: Water Sector Reform and Institutional Strengthening

21. **Subcomponent 1.1: Strengthening national and basin-level water resources policy and planning.** This subcomponent will be implemented by a Project Implementation Unit that will be established in MEWR. The subcomponent will support establishment of a National Water Council (NWC) and support MEWR and RBOs in the planning, management, and monitoring of water resources, at national and river basin levels. At the national level, support will be provided for NWC dialogues, MEWR capacity building, and for the development, institutionalization, and use of the national Water Information System (WIS). NWC functions and responsibilities are set out in the National Water Code and include approval of river basin plans, such as the Vakhsh Basin Plan to be developed under this subcomponent. River basin planning will be critical for enabling an adaptive approach to addressing projected climate change impacts on water resources. The subcomponent will support NWC establishment through drafting by-laws and regulatory documents, dialogues and study-tours, and capacity building for guiding planning, regulation, and management of water resources. It will design and deliver tailored trainings (covering at least three full non-duplicative modules) for MEWR, RBO staff, and RBC members, and support at least two intra-basin study tours for knowledge and experience exchanges. Delivery of the trainings will be phased starting from the second year of the project implementation and shall target at least 10 percent female participants. The component will strengthen MEWR capacity for regulation of water resources use, including in implementation of the Water Information System. Prior support for the WIS focused on system design and development, and on the coding of hydrological “objects”. Under this project the focus will shift towards ensuring (a) digitalization of all historical relevant meteorological, hydrological, and water resources data sets, (b) developing technical and user documentation, (c) enhancing/developing arrangements for inter-agency data exchange, (d) remote monitoring tools such as drone applications and remote sensing, (e) expansion of the data visualization functionalities of the WIS, and (f) development and dissemination of information products. Specifically, MEWR will be supported to institutionalize preparation and publication of an annual national water



assessment report (or water cadaster report), indicated the status and use of all water resources, including through the strengthened link with the Main Department of Geology (on underground water resources) and Committee for Environmental Protection. At the basin level, support will be provided for building physical, technical, and human capacity of the RBO and RBC in the Vakhsh River Basin, including (i) design, supply, installation and commissioning of water flow measurement devices for identified key gauging stations, (ii) construction of Vakhsh RBO office in Bokhtar and rehabilitation of the Rasht sub-office, (iii) provision of office furniture, IT equipment, laboratory equipment, and vehicles, (iv) developing the WIS and the basin plan for the Vakhsh; and (v) development and delivery of tailored trainings to the water sector professionals, including on climate change-informed decision tools for river basin planning.

22. **Subcomponent 1.2: Improving irrigation planning and management.** This subcomponent, implemented by the PMU under ALRI, will support improved irrigation management at agency (national and “sub-basin” ALRI) and WUA levels. The activities under this subcomponent are (i) preparation of a national irrigation strategy, and (ii) development and adoption of an irrigation management information system (IMIS), (iii) restructuring of currently sub-optimal irrigation institutional framework in the target area for improved irrigation scheme-level management, and (iv) ongoing strengthening of WUAs. Drawing on international expertise, the national strategy will establish a ten-fifteen year roadmap for sector reforms and investment in the context of climate change and national economic development, along with the mid-term irrigation sector reform programme for 2025-2030. The overarching strategy objective is to guide the transition of the sector to financial and environmental sustainability, and to far higher level of economic productivity. Two important studies to lay the foundation for the national strategy will be conducted: (i) an irrigation sector energy audit, and (ii) a systematic review of irrigation tariffs and subsidies. For the IMIS, a dedicated support unit will be established in ALRI. IMIS development will include conceptualizing and developing the national IMIS framework and establish performance-based irrigation management of target large schemes using the IMIS. The IMIS at the national level will include coding of all irrigation “objects” and have the following basic modules: (i) historical irrigation data on scheme configurations and withdrawals; (ii) asset management component based on the GIS-referenced inventory of assets; (iii) financial and commercial; (iv) irrigation management and service delivery (with the in-built feedback mechanism for WUAs and farmers); and (v) WUAs module. The IMIS will incorporate remotely sensed data for the Vakhsh basin focused on: (i) supporting regular data exchange with ARLI and the Ministry of Agriculture to guide agricultural land use/planting decisions, (ii) assessing climate impacts on irrigation delivery and agricultural production, and (iii) building irrigation management capacity at scheme and WUA level for improved irrigation planning and service delivery. Introduction of the IMIS is expected to significantly strengthen ALRI’s ability to identify and prepare for droughts or floods and their impact on I&D infrastructure. Restructuring of ALRI management structure in Lower Vakhsh basin and Upper Kofarnihon (limited to the service area of the Big Hissar Canal only) will follow the guidance of the national Water Sector Reform Program to move from an administrative to a hydraulic basis for irrigation management but will also consider economies of scale and the constraints and synergies of irrigation scheme configurations to ensure the agencies reorganized as part of the restructuring process are optimal for scheme-level management and service delivery to WUAs. Capacity development for new ARLI management structures will include development of irrigation asset management plans for targeted schemes (underpinned by GIS inventories of hydraulic infrastructure) and training on financial and operational management and monitoring. At the national level, support to WUAs will include capacity development for the ALRI WUA Support Unit, and development of a national WUA database integrated into the IMIS and aligned with the performance-based irrigation management. The WUA Support Unit will be supported in development, facilitation, and administration of an WUA



incentives program for targeted major schemes. For targeted large schemes, the project will introduce volume-based management of main canal flows and water delivery and the associated accounting and commercial software for tariff collection. Other differentiated support to WUAs in the selected irrigation schemes within upper Kofarnihon, Zarafshon the Vakhsh basins, will be provided, but focused on the 45 WUAs in the targeted major schemes in the Lower Vakhsh. This support will include (i) WUA training to enable provision of agronomic and irrigation advisory services to WUA members, covering not less than 30 percent of female participants (training modules to be developed in coordination with the research institutes of the Ministry of Agriculture), (ii) demonstration pilots of innovative irrigation techniques (managed by WUAs and monitored by ALRI and MoA), including on the territory of three demonstration plots under the jurisdiction of the MoA research institutes and TajiNigim, (iii) performance-based grants to WUAs within the targeted irrigation schemes, and (iv) development of feasibility studies and asset management plans. At the farm level, the WUAs will be engaged in promoting climate-smart irrigation practices and resource utilization through (i) improved on-farm water management practices, (ii) deep ripping, and (iii) laser land levelling. This will address the rising impact of drought, high temperature and extreme heat risks related to climate change on crop yields and agricultural production. The project will prioritize capacity building of female farmers to improve their technical, leadership, and communication skills to build their confidence and increase their voice and role in WUA decision-making bodies. The WUAs will also receive a training on performance-based indicators and will be working within their service area on introducing and expanding self-administered citizen-engagement surveys. These surveys will be integrated in the IMIS to track satisfaction of WUAs and WUA members with the irrigation delivery. Administration of the WUA grants will follow a Grant Manual that will be developed by the PMU. The performance of WUAs supported by the project will be assessed annually; the PSC will approve WUA grants based on these assessments, prioritizing those WUA demonstrating the most significant improvements in performance, as outlined in the WUA manual. WUA grants will be capped at US\$20,000 and will require a 5 percent beneficiary cash contribution or 10 percent in-kind contribution. National (sectoral) and project-level grievance redress mechanisms will be established under this subcomponent.

Component 2. Irrigation Scheme Improvements

23. **Subcomponent 2.1: Improving large-scale irrigation schemes.** This subcomponent will focus on the large Vakhsh and Shurabad schemes that span six districts of the southern Khatlon region in the lower Vakhsh basin. These were identified via a selection and prioritization process in consultation with ALRI and MEWR. These two schemes encompass 128,000 ha and 45 Water WUAs. They are currently managed by seven district-level ALRI units, separate state management department for VMC and three pump irrigation management units under the Khatlon regional ALRI Department, and. These ALRI arrangements will be restructured under subcomponent 1.2. The subcomponent will finance rehabilitation and reconstruction of key infrastructure in these schemes taking a build-back-better approach to strengthen climate change resilience by mitigating the impacts of projected increases in irrigated crop water stress. The subcomponent will finance rehabilitation of irrigation headworks and primary and secondary canals. Performance indicators and pre-feasibility studies have been used to identify intake structures, headworks, control gates, main canals, collector and drainage networks, and pump stations, to be repaired or modernized. These works will improve hydraulic efficiency and water delivery control and reduce the energy intensity of irrigation. Final selection of modernization works will be based on detailed engineering studies to be conducted for each of these two schemes. Pump station modernization will include replacement or rehabilitation of pumps and electric motors and equipping workshops for routine maintenance of pumps and motors. Selection of pump stations for investment will consider energy efficiency improvements and efficiency of water delivery and prioritize stations that



cannot be cost-effectively converted to gravity irrigation. Heavy machinery for maintenance of these schemes will be procured for ALRI. The sub-component will also finance emergency works for the Danghara diversion tunnel and the Beshkent distribution point in Kofarnihon Basin.

24. **Subcomponent 2.2: Improving small- and medium-scale irrigation schemes.** Pre-feasibility studies for irrigation schemes in the upper Vakhsh basin have been completed. For priority schemes in the Zarafshon and Lower Vakhsh, rehabilitation or replacement of selected works will be undertaken. Feasibility studies for identified priority schemes will be conducted early during project implementation. For identified priority districts in the upper Vakhsh (Rasht, Tojkobod, and Lahsh) small-scale investments will be identified early during implementation based on consultations with local communities and local ALRI and the Vakhsh RBO. In the upper Vakhsh, consideration of flood/mudflow exposure (including under future climate change), cost-benefit analysis, and number of beneficiaries will guide investment selection. Investments will be coordinated with concurrent development projects and will be implemented using local/community labor. The subcomponent will finance the design, reinforcement, replacement, and protection of critical infrastructure at significant risk from extreme climate events. Civil works will focus on ensuring climate resilient infrastructure to increase resilience to floods and mudflows. Works may include slope protection and riverbank stabilization works adjacent to intake structures, canals, and pumping stations. The subcomponent will target off-farm infrastructure that is primarily the responsibility of ALRI. Capacity building for ALRI and TajikGiprovodhoz (design institute) will be undertaken at national and district levels for the design, construction, and maintenance of such works, and for conducting climate risk assessments and hazard reduction planning. Specialized machinery will be procured for the upper Vakhsh improve emergency response and infrastructure maintenance.

Component 3: Project Management

25. The project will be implemented by MEWR and ALRI with separate responsibilities to be defined in the Project Operational Manual (POM). This component will support incremental operating costs for project execution, including project administration and management, management of social and environmental issues, financial management (FM), procurement, contract administration, project reporting, and monitoring and evaluation (M&E). It will finance consultancy services (individual and firm) hired to complement capacity of the implementation units (MEWR PIU and ALRI PMU) including for coordination with other activities under the EU-financed program, baseline and project completion surveys, preparation of assessments and data collection, annual project audits. A Project Coordination Unit will be established in Bokhtar to support the scope of activities in the lower Vakhsh in the lower Vakhsh. Additionally, project implementation support consultants will be hired for day-to-day coordination of project activities in Upper Vakhsh and Zarafshon. The component will cover retroactive finance payments for work on feasibility studies, detailed designs, and project preparation from September 24, 2021, until signing the Financing Agreement, limited to eligible expenditures approved by the World Bank on December 4, 2021. Finally, this component includes professional development and other interventions to promote gender diversity in MEWR and ALRI. For example, the project will support, among others, review of human resources policies on recruitment, promotion and retention in water sector entities, development of guidelines for a safe and comfortable work environment including sexual harassment reporting mechanism.

Component 4: Contingent Emergency Response Component

26. This component would support government emergency responses in the event of an eligible



emergency¹⁹. This component with provisional “zero” allocation allows the Government to request the World Bank to recategorize and reallocate uncommitted financing from other project components to cover emergency response and recovery costs, but also to channel additional funds to fully or partially replenish funds reallocated to the CERC should they become available as a result of an eligible emergency²⁰. The CERC will be established and managed in accordance with the provisions of the World Bank Policy and World Bank Directive on Investment Project Financing. The CERC, if activated, will be able to finance eligible activities included in the positive list, stipulated in the POM (dedicated CERC annex).

Project Financing

The project will be financed by a US\$30M IDA grant and a EUR15.96M grant from the European Union (EU) under the EU Rural Development Programme II (RDP-II). Total RDP-II financing is EUR17.5M and includes a Bank-executed grant for project preparation, implementation support, additional assessments, monitoring and evaluation, preparation of the implementation completion report and an Administration Fee. The EU financing will be administered under a stand-alone administrative agreement between the World Bank and the European Commission – as part of the World Bank Partnership Program for Europe and Central Asia Part III (EEPP Part III) program. EEPP Part III structure allows each Trust Fund to receive its own Trustee account and Administrative Agreement (AA), with tailored End Disbursement Dates (EDD) specific to each Trust Fund. The lending instrument is an Investment Project Financing (IPF) to be implemented over a five-year period.

27. **Project beneficiaries include:** (i) ALRI and MEWR, (ii) RBO and RBC for Vakhsh river basin, (iii) regional and district irrigation authorities, (iv) community institutions including WUAs, (v) farmers and rural households, including female-headed households. The project will benefit 38 WUAs in the Vakhsh schemes area, 6 in the Shurabad scheme area, 14 in the Zarafshon basin and 7 in the targeted area of Big Hissar Canal in the upper Kofarnihon basin through a set of differentiated activities. Most of the project focus and investments will be channeled to the two major schemes in Lower Vakhsh Basin. There are around 16000 farmers within the command area of these two schemes that are expected to benefit from improved irrigation services. About 40 percent of farmers in the project area will additionally benefit from extension and training services on modern irrigation techniques and support services for agriculture production. Component 2 activities are designed to ensure proactive engagement of women and women’s group, ensuring equal benefit.

¹⁹ To compensate for the absence of a fast-disbursing instrument for IDA countries, the World Bank encourages the introduction of a Contingent Emergency Response Component (CERC) in all IDA operations. A CERC is a financing mechanism to strengthen a borrower’s country response and recovery capacity by allowing World Bank investment project funds to be quickly reallocated to emergency recovery activities after an eligible emergency has occurred or is about to occur. This financing mechanism averts the need for time-consuming project restructuring because the budget line is already there.

²⁰ Once the requirements for activating it are met, uncommitted funds from the project are reallocated to the CERC and made available for crisis or emergency response. To facilitate a rapid response, a formal project restructuring is deferred to within six months after the CERC is activated.



Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Areas OP 7.60	No

Summary of Assessment of Environmental and Social Risks and Impacts

Both environmental and social risk rating is Substantial making the overall ESF risk rating of Substantial. These risks are covered by ESS 1, ESS 2, ESS 3, ESS 4, ESS5, ESS 6, and ESS 10.

The project's environmental risk is based on: the scale of the project over three river basins in remote areas of Tajikistan; risks involved with infrastructure rehabilitation including waste management; risks related to indirect disturbance of existing ecosystem in natural habitats and possible pollution of water and soil; potential risks related to pest management for expanded and renewed agricultural systems; and the lack of familiarity among PMU staff to the Bank's ESF.

Social risks could result in respect of the planned investments related to: water sector reforming and institutional changes resulting in increased operational costs and restructured water tariffs; implementation of farmer-led small-scale irrigation infrastructure rehabilitation grants; and rehabilitation of large-scale irrigation schemes in the lower Vakhsh and Zarafshon basins.

Environmental and social risk screening procedures and mitigation actions will be part of the ESMF and RPF, which will provide the next steps on preparing and implementing site specific plans. The project will provide access to information and opportunities for farmers, especially vulnerable farmer groups to increase their participation. A SEP will be developed to outline the activities, budget, and responsibilities (local and project-level) for continuous information-sharing and engagement and processing of feedback from project-affected and other interested parties, including rural population in the target areas. The labor management procedures (LMP) to be developed will set out details for project workers' labor terms and working conditions, including roles and responsibilities to comply with OHS requirements.

E. Implementation

Institutional and Implementation Arrangements

28. **Implementing agencies (IAs).** The project will be implemented by the ALRI and MWER. ALRI is the central government authority responsible for development and implementation of the national irrigation and drainage policy, operation and maintenance of irrigation and drainage infrastructure, and flood protection planning and works. ALRI has more than 40 staff (including management) at the central level and more than 800 staff across the regional offices in Zarafshon basin, management areas of the target irrigation schemes within the Upper Kofarnihon and Lower Vakhsh basins²¹. MEWR is the central government authority responsible for development, management, and regulation of water resources. In

²¹ ALRI data (2021)



2020, River Basin Organizations (with 7-13 staff each) were established under the Water Resources Department of MEWR for each of the five basins of the country (Syr-Darya, Zarafshon, Panj, Kofarnihon, and Vakhsh). MEWR has around about 88 technical staff centrally, (but 14 assigned to the Ministry's water wing), and around 40 staff across RBOs²².

29. **Implementation arrangements.** The ALRI PMU will implement most of the project including subcomponent 1.2 and all of Component 2. A MEWR Project Implementation Unit (PIU) will implement subcomponent 1.1. The PMU will manage a separate project Designated Account in a financial institution acceptable to the Association and be responsible for reporting to the World Bank. Although the PMU Director reports to the head of ALRI, he is appointed by the Government of Tajikistan and is financed out of the project proceeds. All the PMU staff, including the PMU Director, will be hired against the approved organizational structure and ToRs endorsed by the World Bank, as a financier. Project staffing within the ALRI will include nominated staff of the WUA Support Unit (at central and scheme levels) and the IMIS Unit. These units will be supported by the project financed consultants and specialists. The MEWR PIU will manage a separate project Designated Account in a financial institution acceptable to the Association and will be responsible for reporting to the World Bank. The PIU will be headed by a Project Director nominated from top MEWR management and will include an externally hired Project Coordinator/Technical Advisor, nominated MEWR staff (from departments for Energy and Water Policy, Water Resources, Investments, Accounting), the (externally funded) WIS Unit, as well as a field coordinator, engineer, and staff of the Vakhsh RBO. The PIU will include procurement, FM, M&E, technical, environmental, and social/ communication and gender specialists. The PIU will engage TajikNigim staff and external partners for delivery of training.

30. **Project Steering Committee and Grant Committee.** A PSC has been established by MEWR for project preparation that includes representatives of the ALRI, Ministry of Finance, State Investments and State Property Management Committee, Anti-Monopoly Agency, Agency on Construction and Architecture, Ministry of Economic Development and Trade, and Ministry of Agriculture. For project implementation the PSC will be upgraded and chaired by the Deputy Prime Minister responsible for water, agriculture and land use issues, to ensure cross-sectoral oversight, coordination, and guidance to the project. The committee will be a forum for (a) reviewing PIU annual work plans, (b) providing strategic and policy guidance, (c) reviewing progress against performance indicators, and d) ensuring there is a continued policy dialogue among the involved entities. A Grant Committee will be established no later than six months after Effectiveness, with representatives of relevant ministries, agencies, and local government (including the RBOs and RBCs). The Grant Committee will review and approve grants to WUAs, to be managed by the WUAs support unit of ALRI with procedures documented in a Grant Manual. Details of PSC and GC arrangements will be documented in the POM.

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²² MEWR data (2021)



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