

# Project Administration Manual

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Republic of Tajikistan: Water Resources  
Management in Pyanj River Basin Project  
(Additional Financing)

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### **Project Administration Manual Purpose and Process**

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with Government and Asian Development Bank (ADB) policies and procedures. The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Agency for Land Reclamation and Irrigation, the Ministry of Energy and Water Resources, and the State Agency for Hydrometeorology, the three executing agencies, are wholly responsible for the implementation of ADB financed project, as agreed jointly between the borrower and ADB, and in accordance with Government and ADB's policies and procedures. ADB staff is responsible to support implementation including compliance by executing agencies of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At Loan and Grant Negotiations the borrower and ADB shall agree to the PAM and ensure consistency with the legal and grant agreements.<sup>1</sup> Such agreements shall be reflected in the minutes of the Loan and Grant Negotiations. In the event of any discrepancy or contradiction between the PAM and the Loan and Grant Agreements, the provisions of the Loan and Grant Agreements shall prevail.

After ADB Board approval of the project's report and recommendations of the President (RRP), changes in implementation arrangements are subject to agreement and approval pursuant to relevant Government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval they will be subsequently incorporated in the PAM.

<sup>1</sup> These include the loan, grant, and TA agreements, and the Project Agreement.

## ABBREVIATIONS

ADB	–	Asian Development Bank
ALRI	–	Agency of Land Reclamation and Irrigation
CCO	–	Chubek Canal Organization
CIS	–	Chubek Irrigation system
cm	–	Centimeter
CMCHR	–	Chubek Main Canal Head Regulator
EA	–	Executing Agency
GOT	–	Government of Tajikistan
HR	–	Human Resources
Hydromet	–	State Agency for Hydrometeorology of Tajikistan
I&D	–	irrigation and drainage
IRP	–	Irrigation Rehabilitation Project
ISF	–	irrigation service fee
JFPR	–	Japan Fund for Poverty Reduction
m	–	meter
M&E	–	monitoring and evaluation
M&R	–	modernization and rehabilitation
MEWR	–	Ministry of Energy and Water Resources
MLRWR	–	Ministry of Land Reclamation and Water Resources
NGO	–	nongovernment organization
O&M	–	Operation & maintenance
PFM	–	Public Finance Management
PIG	–	Project Implementation Group
PIO	–	Project Implementation Office
PIG	–	Project Implementation Group
PMO	–	Project Management Office
PS	–	pump station
RM	–	Resident Mission (ADB)
SCADA	–	System Control and Data Acquisition
TA	–	technical assistance
WUASU	–	Water Users' Association Support Unit
WB	–	World Bank
WUA	–	water users' association

## I. PROJECT DESCRIPTION

1. The project will address irrigated agriculture and water resources management (WRM) issues in Pyanj River basin (PRB), in the southern part of Tajikistan. The PRB is the largest of five principal basins (Kafernigan, Pyanj, Syr Darya, Vakhsh, and Zerevshan) in the country. PRB's WRM will influence the country's economy and food security as the basin includes the majority of Khatlon province which has the largest population (2.7 million) and agriculture production (e.g., 774,000 tons cereal), and is the country's poorest river basin (55% in poor population).<sup>1</sup> The PRB also includes the most food insecure zones, comprising the Eastern Pamir Plateau Livestock Zone, due to its poor access to food products, and the Southern Khatlon Cotton, Vegetable and Wheat Zone, among irrigated areas.<sup>2</sup>

2. Tajikistan is a country highly prone to climate-related extreme weather events, notably flooding, which has caused roughly 80% of disaster mortalities in the country in the period 1990-2016.<sup>3</sup> Climate change is expected to exacerbate these adverse events and their impacts. Higher temperatures and changes in precipitation patterns are expected to cause earlier and faster snowmelt and recession of glaciers and a decline in overall water availability. Water stress conditions are likely to become more common, and flooding and landslides are likely to become more frequent and damaging.<sup>4</sup> Climate vulnerability is particularly acute in the districts along the PRB, the primary tributary to the Amu River in the south of the country, which are among the country's poorest and comprise a wide range of geographical and climatic conditions. The PRB is also vulnerable to climate change. Gradual shift in the river flow seasonal distribution and increase of crop water deliveries requirements in irrigation systems are predicted as climate change impacts.

3. However, insufficient availability of hydrometeorological information<sup>5</sup> and accurate and timely warnings of severe weather and flood<sup>6</sup> is a limiting factor to water resources management in Tajikistan, as well as disaster risk reduction (DRR) and climate resilience more broadly. The responsible agency, the State Agency for Hydrometeorology (Hydromet) has limited forecasting capacity, suffers from poor building infrastructure, a degraded monitoring network, poor staff retention, and insufficient operation and maintenance (O&M) budget.

4. For efficient WRM, increase of food security, and reduction of poverty in the PRB, the project will adopt a comprehensive approach to implement appropriate measures at (i) overall basin level; (ii) water supplier level; and (iii) water user level. Additional financing will expand the scope of the original project by supporting Hydromet's development to a sustainable and well-resourced national institution that produces timely and accurate forecasting and warning services. In doing so, the project will address key underlying institutional weaknesses, and thereby develop a strong foundation upon Hydromet may continue to develop.

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<sup>1</sup> World Bank. 2013. *Tajikistan-Reinvigorating Growth in the Khatlon Oblast*. Washington, DC.

<sup>2</sup> World Food Program. 2013. *Food Security Classification Overview* – June 2013. Dushanbe.

<sup>3</sup> The OFDA/CRED. International Disaster Database. [http://emdat.be/emdat\\_db/](http://emdat.be/emdat_db/).

<sup>4</sup> Punkari et al. 2014. *Climate Change and Sustainable Water Management in Central Asia*. ADB Central and West Asia Working Paper Series No. 5. Asian Development Bank. Manila.

<sup>5</sup> ADB. 2014. *Technical Assistance to the Republic of Tajikistan for Building Capacity for Climate Resilience*. Manila (TA 8090-TAJ). — *Climate and Impact Modeling Advisory Group. Climate Change and Impact Modeling Experts' Report*; World Bank. 2009. *Improving weather, climate and hydrological services delivery in Central Asia*. [https://www.gfdr.org/sites/gfdr.org/files/Improving\\_Weather\\_Climate\\_HydrologyDelivery\\_CentralAsia.pdf](https://www.gfdr.org/sites/gfdr.org/files/Improving_Weather_Climate_HydrologyDelivery_CentralAsia.pdf).

<sup>6</sup> ADB, 2016. *Tajikistan: Agency of Hydrometeorology Transformation – institutional restructuring scenarios report. Consultant's Report*. Manila.

5. At overall basin level, the project will support the country's ongoing water sector reform. Some required actions to reform water sector have been undertaken by the Government. The Ministry of Land Reclamation and Water Resources (MLRWR) was abolished in November 2013 and its responsibilities were reassigned to the newly formed Ministry of Energy and Water Resources (MEWR) for the policy and regulations on WRM; and to the Agency of Land Reclamation and Irrigation (ALRI), for development and management of WRM infrastructure. Further reforms include (i) the change from administrative to hydrological areas; and (ii) the establishment of (a) river basin management plans (RBMPs) to clarify and monitor water allocations, and (b) water governance institutions such as river basin organizations (RBOs) and river basin councils, in line with principles of integrated WRM. The project will implement reforms in the PRB as highlighted in items (i) and (ii).<sup>7</sup>

6. Given that more than 40% of the PRB covers the territory of Afghanistan and serious flood disasters occurred frequently, both governments of Afghanistan and Tajikistan signed a bilateral agreement for joint hydrological monitoring of Pyanj River in 2010. A road map to establish a joint PRB commission (JPRBC) was drafted in 2013 with ADB's assistance to implement the bilateral agreement. The project will also support required activities to implement the road map through a capacity development delegated technical assistance (TA).

7. For water supply, the project aims at fully operationalizing major WRM infrastructure with modernization and climate-proofing. Among the irrigation systems covering about 120,000 hectares (ha) in the PRB, the Chubek Irrigation System (CIS) is the largest located in Khatlon Oblast on the right bank of the Pyanj River. Water from the Pyanj River is diverted by gravity without any regulator across the river. The Chubek Main Canal, with original capacity of about 150 cubic meter per second (m<sup>3</sup>/sec), was constructed in 1950 while the distribution system was constructed during 1950–1987 during Soviet times, to supply water to command areas located in Farkhor, Hamadoni, Kulob, and Vose districts. Water is supplied by a combination of gravity and 20 pump units. Some areas require multistage pumping. The total pumping head required for various irrigation areas varies from 8.5 meters (m) to 177.5 m. The CIS commands a total designed area of 50,163 ha; 35,819 ha (71%) is fed by gravity and 14,344 ha (29%) by pumps. Vose District has the highest proportion (57%) while Kulob has only 2% of the command area.

8. The gravity irrigation distribution system consists of 1 kilometer (km) lead channel with a capacity of about 400 m<sup>3</sup>/sec, a complex of head regulator and sediment escape structure at the end of the lead channel, about 17.2 km long Chubek Main Canal, about 400 km of inter-farm canals including main canal, and about 500 structures.

9. The CIS was designed to serve primarily the areas by gravity. Pumps were installed wherever required to irrigate the adjoining high areas. This is evident from the profile of the existing canal which is very close to the natural ground level to minimize cost by keeping the cut and fill at minimum. The canals have a number of falls to keep the profile close to natural ground level instead of keeping the head to minimize pumping for high lands.

10. Maintenance of the CIS has suffered after disintegration of the Soviet Union due to inadequate funding for operation and maintenance (O&M) resulting in accelerated deterioration of canals, drains and pumping stations. Most structures are in very poor condition. The degraded state of irrigation and drainage (I&D) infrastructure including pumping stations combined with poor water management practices, have resulted in low irrigation conveyance efficiency, low energy

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<sup>7</sup> MEWR. 2015. Water Sector Reforms Programme for 2016-2025. Dushanbe.

efficiency, and consequently reduced agricultural productivity and decreased irrigation area to 43,210 ha. Heavy sediment inflow and deposition from the Pyanj River without proper O&M is exacerbating the condition of I&D and agricultural productivity.

11. Modernization of the main, inter-farm and on-farm canals, including proper sediment removal together with climate proofing, is required to improve system efficiencies that would lead to restoration of decreased command area and reduce vulnerability to climate changes and O&M requirement. Replacement of the existing dilapidated and low efficiency pumps and modernization of associated equipment and facilities will improve both water conveyance and energy efficiency.

12. For water use, the project aims to improve capacity of water users associations (WUAs) that are responsible for O&M of on-farm I&D, possibly reorganize WUAs to align them based on hydrological boundaries, increase WUAs' coverage areas in CIS (83% at present) and collection rate of water service fee from water users (46% at present), and increase farmers' water use skills (50% of field application efficiency at present), to increase sustainable O&M and efficient WRM of CIS. Coupled with these measures, introduction of high value crops and production of high-quality seeds will improve the profitability of farm management.

13. The additional financing will comprise four components, which will expand the of two of the original project's outputs. The project will support the modernization of the new Hydromet headquarters operations center including main office building, ancillary buildings, and two mixed-use buildings. The project will support legal and organizational transformation into a government entity with increased flexibility to seek and retain additional entrepreneurial income to supplement core government support. The modernization of the Hydromet operations center and legal transformation underpins the project's contribution to the World Meteorological Organization (WMO) Strategy for Service Delivery and Global Framework for Climate Services pillars and achievement of the project objective of a sustainable and well-resourced Hydromet.

14. The project will support capacity building to improve forecasting and warning of extreme weather events. The project will develop Hydromet's capacity for flood forecasting and local flood alerts to support improvements in the water resources management and disaster risk reduction in the PRB area. The project will provide flood awareness and preparedness training for local stakeholders. The project will develop and implement of a viable business model for the marketing and sale of fee-based services. A system and platform for the sale of information and forecasting products will be developed, and at least one new weather information product will be marketed among key stakeholders in the PRB to support agricultural production and water resource management.

#### **A. Impact and Outcome**

15. The overall project is aligned with the following impacts: improved climate resilience of agriculture and water resources sectors.<sup>8</sup> The outcome of the overall project will be increased agricultural productivity and efficiency of forecasting services in the PRB.

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<sup>8</sup> Government of Tajikistan. 2015. *Intended Nationally Determined Contribution (INDC) towards the achievement of the global goal of the UN Framework Convention on Climate Change (UNFCCC) by the Republic of Tajikistan*. Dushanbe.

## **B. Outputs**

### **1. Output 1: Water resources in PRB better managed**

16. This output has three components (i) improving WRM system in the Tajikistan portion of the PRB (original project); (ii) effective joint management of the PRB (original project); and (iii) Institutional development and capacity building for Hydromet (additional financing). The implementation of the original project components [(i) and (ii)] will be fully supported by one of three consulting services to be recruited under the capacity development delegated TA funded by the Japan Fund for Poverty Reduction (JFPR).

#### **a. Improving WRM system in the Tajikistan portion (original project)**

17. The project will support the country's ongoing water sector reform, aiming at integrated WRM in the PRB (footnote 7). This would involve establishment of the RBO at Kulob and its sub-office in Gorno Badakhshan Autonomous Oblast (GBAO) and PRB council(s), their capacity development, and support of RBO operations expenses.

18. In particular, this component will support the (i) drafting of a river basin management plan by the RBO and its sub-office to clarify and monitor water allocations; and (ii) review and approval of the river basin management plan by the PRB council(s) with proper and active participation by different water users and women in the consultation process. The capacity development will also be provided to MEWR's local staff and RBOs' staff for accurate measurement and recording of allocated water flow at key sections along Pyanj River (at present, actual flow of Chubek main canal is 63% of recorded allocation) and for appropriate processing of collected data with development of the database and data processing system.

#### **b. Effective joint PRB management (original project)**

19. The component will support the government to establish and implement Afghanistan-Tajikistan Joint Pyanj River Basin Commission (JPRBC) and it would include (i) establishment of a working group in Tajikistan under the chair of MEWR with participations from other relevant authorities; (ii) working group consultations and bilateral meetings with Afghanistan government as needed, (iii) drafting and finalization of an agreement on the formation of the JPRBC and its institutional structure and implementation plan, and regulations on administrative and technical operational procedures, based on international and national laws, and regional experience; and (iv) preparations of plans for capacity building for JPRBC staff and to implement the agreement and capacity building plans.

20. Bilateral meetings will be facilitated to discuss and finalize the draft agreement. Finally, the agreement and the regulations will be signed by the two countries (sectoral ministries and Ministries of Foreign Affairs). The Afghanistan government side is expected to carry out the above tasks with ADB's facilitation.<sup>9</sup> The institutional structure of the JPRBC proposed under ADB's

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<sup>9</sup> Same approach is expected from Afghanistan side under the investment project (Project Number: 48042-001, Proposed Grant and Administration of Grant: Panj-Amu River Basin Sector Project) currently being prepared by ADB.



supported climate modeling facility and climate data management system and alignment with World Meteorological Organization (WMO) guideline.<sup>13</sup> Upon building completion, the project will support the relocation of Hydromet office to the new building.

23. Ancillary buildings will be constructed comprising a laboratory, conference hall and archive, visitor's information center, and perimeter fencing. The laboratory will be used for Hydromet's environmental testing activities. The conference hall will be used for internal activities and provide a source of revenue through rental of facilities for external engagements. The visitor's information center will be used for Hydromet's public outreach on weather and climate change education and information. Containerized offices will be installed to accommodate staff overflow.

24. Two 11-storey mixed-use buildings will be constructed to provide affordable housing (roughly 40 units per building) for Hydromet staff. The monthly housing rental will be a nominal amount to partly or fully cover building O&M, in line with staff affordability. The housing facilities will be provided to ensure that Hydromet staff can remain near the office during critical extreme weather events, as well as provide an in-kind benefit to supplement staff salaries. The lower floor of the mixed-use buildings will be rented out on a commercial basis for additional revenue for Hydromet. The modern operations center will (i) allow equipment to be safely and securely operated; (ii) provide additional entrepreneurial income through rental of facilities; (iii) improved staff retention with more attractive salary packages through higher salaries and in-kind benefit of affordable housing. Higher staff retention and improved facilities, combined with the project's capacity building on management, marketing, and forecasting services, will help Hydromet improve the quality and relevance of forecasting outputs. This, in turn, will support the sale of fee-based information services and consulting services.

25. Hydromet will be transformed to a state entity with more flexible and autonomous operation including the rights for (i) internal reorganization, setting of staff salaries; (ii) seeking, retaining, and using additional commercial income including from rental of building facilities, sale of information products, and advisory services; and (iii) provision of housing facilities on the new campus only for Hydromet employees. Under the project, a detailed assessment and transformation program will be finalized, with legal documentation drafted for government review and approval. The transformed Hydromet will have a board of directors with composition and responsibilities appropriate to its new legal form and structure. The Law on Hydrometeorology will be appropriately amended to reflect the foregoing. However, Hydromet will remain a public service entity, primarily funded by government budget, providing forecasts and public information including critical alerts free of charge in line with government expectations and common practice worldwide. The transformation is anticipated to comprise a government resolution Hydromet to convert Hydromet to State Institution status directly under the Executive Office of the President with new charter and permanent board of directors. Additional commercial sources of revenue for Hydromet are expected to include (i) rental of facilities from the new Hydromet operations center described in the succeeding paragraphs; (ii) sale of weather information products described under Output 3 below; and (iii) consultancy and other advisory services.

26. The project will enhance Hydromet's frameworks and systems for strategic planning, management, administration, and control towards ensuring output and development of quality climate services. Detailed program design will be prepared based on a gap analysis and technical needs assessment in line with WMO guidelines.<sup>14</sup> Hydromet's organizational business model and

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<sup>13</sup> WMO. 2015. *Manual on the WMO Information System*. WMO-No. 1060. Geneva.

<sup>14</sup> WMO. 2013. *Guide to the Implementation of a Quality Management System for National Meteorological and Hydrological Services*. WMO-No. 1100. Geneva.

strategic planning will be updated. A viable business and marketing strategy including sustainable O&M plan including annually-updated 5-year budget projections will be developed to provide a framework for Hydromet to seek and retain additional entrepreneurial revenue and offer affordable housing to staff members in the new operations center as will be allowed under Hydromet's new legal status. The sustainable O&M plan will be reviewed by ADB and subsequently approved by the Project Steering Committee in line with the grant covenants. Hydromet will remain primarily supported through core government funding, and thus the staging of the legal transition will be linked to the establishment of additional source of entrepreneurial income. Staff structure and responsibilities will be streamlined and consolidated with formal terms of reference including quality management responsibilities and career pathways. Management, administration, and control manuals will be updated or established. A user feedback and service quality M&E system will be established to support reporting and stakeholder engagement on among others service experience and content, forecast timeliness and accuracy, and mediums of dissemination. Annual stakeholder opinion surveys will be undertaken on Hydromet services. A time-bound action plan will be developed and implemented for ISO 9001 certification of Hydromet's quality management system.

27. A training program for senior and mid-level Hydromet professional staff will be designed and implemented on management and administration including strategic planning, human resource management, financial management, and career development including for women staff. Training will be conducted through a combination of workshops and seminars, and "on the job" training. Regional knowledge partnerships will be established, to support continued development of Hydromet capacity. The project will support a regional knowledge sharing event such as workshop, conference, or study tour. An annual stakeholder workshop will be held in-country to present project progress and plans.

28. The project will develop Hydromet capacity riverine flood forecasting and local flood alerts to support improvements in the water resources management and disaster resilience in the PRB area.

29. Gender-sensitive consultation with the newly-formed River Basin Organizations (RBOs) and other national and local government and civil society stakeholders will be conducted to inform (i) the selection of pilot areas and (ii) the design of flood forecasting dissemination and alerts systems including selection of model parameters and method of alert delivery. The target stakeholders may also include disaster risk management committees established under the ongoing ADB project Building Climate Resilience in the Pyanj River Basin.<sup>15</sup> During and following the establishment of the flood forecasting and early warning system, the project will conduct training for stakeholders in pilot areas on flood risks and the use of flood forecasts and disaster preparedness.

30. Hydromet's hydrological monitoring, forecasting, and warning will be developed for at least six (6) pilot areas in the PRB to be identified during project implementation<sup>16</sup>. More sites may be included in the forecasting and warning system, taking into account project budget, local needs, and the capacity of the existing monitoring network. Flood risk mapping will be undertaken to inform site selection, and sites will be chosen based on key risk and socio-economic indicators

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<sup>15</sup> ADB, 2013. *Report and Recommendation of the President to the Board of Directors for the Proposed Loan to the Republic of Tajikistan for Building Climate Resilience in the Pyanj River Basin*. Manila. (G0352-TAJ)

<sup>16</sup> An indicative short-list, to be expanded and revised during implementation, includes: Bichkharv (Vanj District); Ishkashim (Ishkashim District); Khirmandjo (Shuroobod District); Khorog (Shughnon District); Rushon and Shidz (Rushon District).

and appropriate terrain. Site selection and design will incorporate risk assessment and mitigation from climate-related natural hazards in the local area. The flood forecasting system is expected to include a two-dimensional riverflow simulation model, with calibrated rainfall-runoff, routing, and hydrodynamic models and accompanying flood early warning system.

## **2. Output 2: Modernized and climate proofed CIS WRM infrastructure fully operational**

31. Output 2 has four components (i) modernization and rehabilitation (M&R) of I&D infrastructure and its climate proofing, (ii) construction of sediment excluding basin, (iii) M&R of pumping units; and (iv) capacity development of local ALRI offices. All components are for the original project.

### **a. M&R of I&D infrastructure and its climate proofing (original project)**

32. The infrastructures proposed for M&R include Chubek main canal includes head regulator, escape structure, cross regulators, offtake structures, inter-farm and on-farm I&D canals, pump feeding canals, and associated structures. The capacities of these infrastructures have been checked to meet the (i) water requirements for the proposed new and more intensive cropping pattern; and (ii) the climate change risks anticipated during the next 50 years.

33. Except for few instances where climate proofing requires remodeling, most proposed works pertain to addressing deferred maintenance. While the sediments along main and inter-farm canals and drains which have reduced the irrigation conveyance capacity will be removed by ALRI using heavy machineries to be procured under the project, and the sediments along on-farm canals will be removed by farmers and WUAs. The M&R of various structures will be financed under the project.

34. The following are major works required for main canal M&R: (i) rehabilitation of canal banks that serve as inspection roads to facilitate O&M, and access to water monitoring installations; (ii) rehabilitation of Chubek Main Canal Head Regulator (CMCHR) and escape structure; (iii) rehabilitation of existing nine cross regulators; (iv) rehabilitation of existing 13 offtake structures to inter-farm canals; (v) replacement of all gates installed at head regulators and cross regulators; and (vi) installation of automatic water level measuring and recording structures on each diversion structures and new gauging wells upstream of all off taking and cross regulator structures and system control and data acquisition (SCADA) system which will connect each measuring and recording structures.

35. The following are typical major M&R works required for inter-farm canal depending on deteriorated conditions in each canal: (i) rehabilitation of existing head and cross regulators; (ii) installation of measuring structures (i.e., gauging sections and hydropost) downstream of head-regulators and canals where sufficient head is available, and all offtakes feeding on-farm canals with provisions of hydro-bridges on canals for measuring the velocity, following international standard; (iii) installation or rehabilitation of cross drainage structures to convey water across drainage channels below and above canals; (iv) reconstruction or rehabilitation of aqueducts; (v) rehabilitation of road bridges and pedestrian crossings; (vi) repair or replacement of gates at the inter-farm head and cross regulators; and (vii) M&R of offtakes to on-farm canals. For the ease of access to water by households, 12 water points along the main canal and 3 water points along each target inter-farm canal will also be provided.

36. The M&R of on-farm canals include the concrete lining or rehabilitation of concrete flumes and installation of flow measurement (hydro-post) at each intake.

**b. Construction of sediment excluding basin (original project)**

37. The Pyanj River carries huge amounts of sediments with about 460,000 cubic meter ( $m^3$ ) of suspended sediments entering the CIS every year posing a huge burden on the O&M budget for cleaning the irrigation network and a cause of accelerated deterioration of pumps. Currently, the bed load is excluded and diverted back to the Pyanj River at the CMCHR through the escape channel with sill level 60 centimeters (cm) lower than the sill level of the CMCHR. As sediment concentration is highly associated with discharge, about 84% of the sediments enter the CIS during the three summer months of June–August. There is a pressing need for minimizing sediments entry to CIS.

38. The Pyanj River flows are much higher than the CIS diversions throughout the year with a minimum of about 3 m head difference from the proposed sediment excluding basin during high flow months creating conditions favorable for effective hydraulic flushing of a large proportion of sediments, thus significantly reducing the cost of dredging. The capacity of the lead channel is 400  $m^3/sec$ , and capacity of the Chubek Main Canal is 150  $m^3/sec$  compared to CIS peak discharge requirement with climate proofing of 98.69  $m^3/sec$ . Thus, at CMCHR, about 270  $m^3/sec$  could be used for flushing the bed load thus releasing 130  $m^3/sec$  in the Chubek Main Canal. Out of the 130  $m^3/sec$ , 98.69  $m^3/sec$  could be released to meet the peak irrigation water requirement with climate proofing while the remaining, about 30  $m^3/sec$ , could be used for hydraulic flushing at the new sediment excluding basin. Thus, the existing system provides enough capacity for continued flushing of the base load at existing sediment escape channel at the CMCHR and about 30  $m^3/sec$  flow required for hydraulic flushing at the new sediment excluding basin along the left bank of the Chubek Main Canal.

39. Under the existing arrangements for hydraulic flushing of the base load at the CMCHR, the construction of a new sediment excluding basin will remove about 85% of the coarser portion of the suspended sediments, 70% through hydraulic flushing and 15% that settle in the bed, by mechanical equipment. The remaining 15% of the suspended sediment which consist mainly of silt and clay will pass on to the CIS, where about half would settle in the irrigation canals that ALRI local offices and WUAs still need to remove and the remaining half deposited in the fields.

40. The sediment excluding basin will be located about 250 m downstream of the CMCHR on the left side of the Chubek Main Canal. The main elements of the sediment excluding basin are: (i) 100 m long feeder channel from the existing Chubek Main Canal; (ii) intake of sediment excluding basin with gates; (iii) sediment excluding basin (500 m x 100 m) in two compartments which can be operated independently; (iv) gated flushing sluice with 160 m long channel leading to Pyanj River; (v) 650 m channel from sediment excluding basin to the existing main canal; (vi) fall structure at the junction of channel from the sediment excluding basin and the main canal; and (vii) strengthening of the flood embankment between the sediment excluding basin and Pyanj River.

**c. M&R of pumping units (original project)**

41. There are two main cascade pumping systems in CIS. One is Urtaboz cascade pumping system supplying water to agricultural land in Farkhor District through six pump stations (PSs) and the other is the Vose cascade pumping system supplying water through fourteen PSs to agricultural lands of Vose and Kulob districts. The Vose cascade system further consists of three

different cascade pumping systems i.e., Kulobdarya, Janubi and Lenin. In addition, there is also one isolated single stage pumping station at Guliston which takes water from the canal and supplies water to 40 ha of farm area.

42. With due consideration of the pump selection criteria, estimated modernization cost, and available funds, Urtaboz pumping system (complete with all PSs of Urtaboz 1, 2, 3, and 4), Janubi pumping system (consisting of Janubi 1 and 2, Perikatchka, and Moskva 1 and 2 PSs), and the central repair and maintenance facility of CIS located in Vose have been selected for M&R.

43. Urtaboz 1 PS is the base of Urtaboz cascade pumping system. It supplies water to 1,130 ha of farm area as well as pumps water to the next level PSs Urtaboz 2, Urtaboz 3, Urtaboz 4 and 4A that serve 215 ha, 424 ha and 3,930 ha, respectively. In Urtaboz 1 PS, 6 pumps supply water to Urtaboz 3 and Urtaboz 4 and 4A PSs. Out of the 6 pumps, only 2 are in working condition reducing water supply to 33% of the old design peak water demand of Urtaboz 3 and 4 and 4A PSs. Similarly, 2 pumps each in the Urtaboz 1 PS which supply water to Urtaboz 2 PS and to 1,130 ha are operating at only 50% capacity to meet the old design peak water demand. Urtaboz 3 and 4 and 4A PSs are also operating at reduced capacity of 50%. Urtaboz 4 and 4A PS which supply water to 3,930 ha of area is receiving only 33% of its old design peak water demand. Even if it receives 100% of the peak water demand, major pumps of Urtaboz 4 and 4A PSs, designed to supply water to 3,100 ha out of total 3,930 ha can work at only 50% capacity in the present condition.

44. Overall, this group of PSs covering about 40% of the total pumped irrigation area is in very bad shape and requires priority M&R.

45. In the Janubi cascade, the base PSs are Janubi 1 and 2 with six and five pumps respectively, feeding a command area of 1,520 ha jointly. Both these base PSs also supply water to the next level PSs at Perikachka and Moskava 1 and 2 which serve 725 ha, 180 ha and 178 ha area, respectively.

46. In Janubi 1 PS, only 2 out of 6 pumps and in Janubi 2 PS, only 2 out of 5 pumps are in working condition. This resulted in less than 50% of water supply capacity to meet old design peak water demand. Janubi 1 and 2 PSs supply water to 1,520 ha of area and Perikachka PS, and Moskva 1 and 2 PSs. At Perikachka PS, which supply water to 725 ha of area, only one out of two pumps is operating reducing the capacity to 50% of the old design peak water demand. At Moskva 1 PS, practically no pump is working whereas at Moskva 2 PS, nothing exists except the skeleton of the pump house structure.

47. Overall, the Janubi cascade pumping system covering about 18% of the total pumped irrigation area is in very bad shape and requires M&R on priority.

48. M&R of these two cascade pumping system will cover the following based on the result of diagnostic assessments in each PS completed under ADB's TA:<sup>17</sup> (i) replacements of pumps and motors; (ii) replacement of suction and discharge pipes of pumps and valves; (iii) installations of ventilation and air-conditioning system; (iv) replacement or installation of instruments (e.g., pressure gauges, pressure transmitters, pressure switches, flow meters); (v) provision of local

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<sup>17</sup> ADB. 2014. *Technical Assistance to the Republic of Tajikistan for Water Resources Management in Pyanj River Basin (Consultant Final Report)*. Manila.

SCADA system; (vi) M&R of electrical system; (vii) M&R of PS buildings; and (viii) replacement or new installations of overhead cranes and material handling devices.

49. With these M&R, the following benefits are anticipated: (i) improved, timely and reliable water supply to farmers; (ii) increased energy efficiency of pumping by more than 25% compared to the existing conditions and reduced O&M cost; and (iii) improved relations of water supplier with farmers by provision of transparent and timely water discharge data recorded and monitored through SCADA system.

50. In addition to the above proposed works, a feasibility study will be carried out to pilot various options for economically viable irrigation and farming at currently pumped irrigated areas outside the scope of the component. The study will explore efficient sources of irrigation water, using more economical irrigation methods, producing high value crops, and other activities that would make production from these areas economically viable. Depending upon the experience gained and results achieved, the pilot study could be replicated to other areas.

#### **d. Capacity development of local ALRI offices (original project)**

51. Under the component, the capacities of the local offices of ALRI and WUA Support Unit (WUASU) will improve to enable them to perform their duties more efficiently and effectively. This will include modernization of buildings, provision of office and field equipment, training of the staff, and study tours.

52. The District ALRI Offices in particular lack equipment and facilities to measure water flows and sediment concentration which provides important information for efficient design, monitoring, and evaluation. The output has allocated enough funds in the I&D and M&R component to establish hydroposts at key points and install automatic electronic devices to record water levels and continuously communicate water level data through SCADA to a central office. To support this, the component allocates sufficient funds for procurement of stream gauging and sediment sampling equipment and establishment of a laboratory for analyzing collected sediment samples. This would ensure continuous collection of accurate flow and sediment data and thus facilitate proper monitoring and evaluation (M&E).

53. In addition, ALRI central office staff will receive trainings from a service provider and the NGO that will implement Output 3 for ALRI's use of the M&E system using satellite remote sensing technology to assess water use efficiency and water conveyance efficiency.

54. Coupled with the machineries to be procured under the project for O&M of CIS WRM infrastructure under Output 2, capacity building of local ALRI staff will enable them to: (i) timely and accurately allocate water volume to each inter-farm irrigation canal and each on-farm canal; (ii) efficiently operate and maintain CIS infrastructure including regular removal of sediment along CIS I&D canals except for on-farm I&D infrastructure; (iii) regularly monitor and evaluate CIS conveyance capacity and efficiency; and (iv) effectively communicate with WUAs to obtain feedback irrigation water need. In addition, coupled with Output 3, capacity building of WUASUs will enable them to (i) train and guide existing WUAs in water measurement, farm water management, running WUAs, and record keeping of financial and office proceedings; (ii) possibly reorganize WUAs following hydrological boundaries; and (iii) form new WUAs to increase total O&M coverage to the entire CIS area. The project will also provide office and field equipment to facilitate their establishment, mobility and performance in their assigned tasks including O&M. Further, ALRI Training center at their district offices will be modernized and provided with equipment to be a respectable venue for training.

### 3. Output 3: Farm management capacity and water use skill improved

55. The objective of this output is to improve the farm management techniques and water use skill in the CIS command area to increase agricultural productivity, profitability, and use of improved weather information products in the PRB. There are four components under the output: (i) demonstration to promote profitable farm management and efficient water use (original project); (ii) production of high-quality seeds of major crops (original project); (iii) establishment and possible reorganization of WUAs and capacity development of all WUAs and beneficiaries in the CIS area (original project); and (iv) Marketing of fee-based information products by Hydromet (additional financing).

56. Women are already actively involved in agriculture at their family farms and, if required, on other farms in the neighborhood. However, their participation in managerial positions such as in WUAs secretariat needs to be encouraged. Women participation will be promoted and monitored in all the above activities. The project has built in motivation and provision to accommodate gender in the general and specific positions of authority within the limits of the project jurisdiction. The scope of women's active involvement under output 3 will be limited to the CIS command area in Farkhor, Hamadoni, and Vose districts. Special attention will be given to promote simpler value addition techniques in the project area. Women would be the focus of such activities. The non-government organizations (NGO) to be recruited under the output will make preparations to conduct the conference to promote value addition and promote understandings among the stakeholder and if possible, facilitate contracts.

57. Poor financial capacity and lack of credit availability to the project area farmers have been identified as some of the constraints towards achieving higher yields. This being addressed through the agriculture and income diversification credit line, totaling \$3.8 million made available under ADB's ongoing Grant 0352-TAJ.<sup>18</sup>

58. A reputed international NGO(s) with credible experience with possible experienced university teachers will be recruited to provide consulting services to implement the output including trainings, assessment of the required equipment and supplies, M&E of the performance and preparation of the reports, together with the local staff of the Department of Agriculture, ALRI, and WUASU.

#### a. Demonstration to promote profitable farm management and efficient water use (original project)

59. Demonstration plots for a total of 300 ha will promote more profitable farm management using improved agronomic techniques conducive for higher productivity and profitability per unit of farmland. The number of plots, type of activities to be demonstrated in each plot, and geographic distribution of plots will be determined during project implementation. The proposed activities would include but not be limited to the following:

- (i) **Promotion of improved seeds.** Use of certified seeds of improved varieties of wheat, cotton, and other important crops to replace the seeds used from the previous year's produce, or purchase of low quality seeds from the local market, and introduction of hybrid maize to significantly increase yields and value of production compared to those of existing varieties;

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<sup>18</sup> ADB. 2013. *Report and Recommendation of the President to the Board of Directors: Proposed Grant to the Republic of Tajikistan for Building Climate Resilience in the Pyanj River Basin Project*. Manila. (G0352-TAJ)

- (ii) **Promotion of efficient farm operations and management.** Training on how to make and assess farm management balance sheet; drill sowing of wheat which will require almost half of the seed rate compared to sowing by broadcasting; sowing of wheat with drill without plowing to demonstrate production of two crops a year and saving in the cost of land preparation; other improved farm operations including zero or minimum tillage; and replication of improved practices showcased in the demonstration farms in CIS area;
- (iii) **Promotion of balanced use of agricultural inputs.** Balanced and timely application of fertilizers on wheat, cotton, and other important crops to enhance yields; and herbicide sprays for weed control in wheat, cotton, vegetables, and orchards. It was observed that weed infestation especially in vegetables and orchards is very high in the project area; and
- (iv) **Promotion of High-Efficiency Irrigation System.** Drip irrigation to be introduced for orchards and vegetables in the pumped irrigated area as a measure of introducing water economy in high-cost water as well as to promote decreased cost of inputs, and increased production and productivity for water.

60. An M&E monitoring system using satellite remote sensing technology to assess water use efficiency and water conveyance efficiency was developed under the project preparation technical assistance to prepare the project. The developed M&E system will be used during project implementation to evaluate these performances and to recommend remedial measures to improve efficiencies. The M&E system will be used mainly by NGO with participation from a service provider specializing in satellite remote sensing technology, but the service provider and the NGO will also provide training to ALRI staff for their use of the M&E system and will hand over the system to ALRI.

61. Simpler value addition techniques particularly to process, preserve, and market perishable fruits and vegetables grown in the project area will also be promoted. Possibilities of value chain will be explored by holding a three-day conference with participants from international and national food companies, farmers in the project area, and government officials.

62. Periodic short training sessions will also be conducted for demonstration and other farmers in CIS area. The topics should address the current issues that farmers are facing, and would generally cover but not limited to the new practices and technologies introduced under the project like information on new crops introduced, double cropping, minimum tillage, efficient methods of irrigation, water conservation and water saving technologies, off-season production, tunnel farming, efficient harvesting and post-harvest, and value addition, financial management, preparing crop budgets, and selecting most suitable crop mix at a farm.

#### **b. Production of high-quality seeds (original project)**

63. There are no government seed production farms in the project area, and the field seed laboratories established at the district offices of the Department of Agriculture during the Soviet era are no longer functional. The Department of Agriculture has contract with three larger farms in Vose District for production of certified from the foundation seed provided by the Department of Agriculture. Currently, only wheat and cotton seeds are reproduced.

64. The poorer farmers are particularly suffering from poor quality seeds either from the previous crop or bought from the local market. The component will (i) supply foundation seed to seed growers to produce the seeds by themselves as well as for a large number of smaller farmers; (ii) diversify seed production for vegetable, fruit and other crops in addition to wheat and

cotton seeds being produced; (iii) develop capacity of the seed growers in seed production; and (iv) reestablish field seed laboratories at district offices of Department of Agriculture at Hamadoni, Farkhor, and Vose districts and develop their capacity to certify the seeds.<sup>19</sup>

65. The component will procure high quality foundation seed for wheat, cotton, and some other important crops and distribute seed enough for 5 ha during the first year of project implementation to the selected willing seed growing farmers with enough resources to invest in the required inputs. During the growth period, the project-hired NGO and seed specialists from the Department of Agriculture will regularly visit and advice the farmers on ways and means to ensure quality of the seed produced. At the crop maturity, the seed recipient farmers will return to the project one-and-a-half times the seeds they received. The seed returned will be provided to other farmers for further multiplication, and this cycle will continue.

**c. Establishment and possible reorganization of WUAs and capacity development of WUAs and beneficiaries (original project)**

66. Since the time organization of WUAs started in the country, a total of 27 WUAs covering the entire project area were established with the help of international agencies. At present however, there are only 20 WUAs covering about 83% of the project area. They are organized, generally, on administrative (jamoat) boundaries rather than hydrological. To facilitate their efficient management, the component will support their possible reorganization on hydrological boundaries, which is likely to face resistance from the local administration as well as the beneficiaries. The component will also facilitate formation of WUAs in the remaining project area, also, on hydrological boundaries.

67. It has been observed that, currently, the WUAs are not adequately equipped and trained to undertake their tasks efficiently. They are not quite conversant with water distribution and measurement in a practical way. The component will build capacity of the existing and new WUAs by providing them with office, field equipment, and training to the office bearers and technical staff to perform their expected tasks in a financially sustainable manner. Their institutional capacity to run WUAs like conducting formal meetings, taking decisions, M&E of their financial status and keeping financial records as well as official proceedings will be improved through training, and study tours.

68. To ensure continued periodic training to the new office bearers and staff, training modules will be prepared in close association with the WUASU, which was established in 2007 in the former MLRWR to facilitate establishment and monitoring of the WUAs. The capacity building to WUASU staff will be provided under output 2 to reactivate WUASU and enable them to take responsibility for all activities related to the WUAs. The WUASU will be associated with project activities implemented by NGO throughout the implementation period to facilitate its capacity development and enable it to undertake similar activities in the future in the project area as well as in other irrigation systems of the country.

**d. Marketing of fee-based information products by Hydromet (additional financing)**

69. The project will support the provision of additional specialty fee-based information products to supplement Hydromet's free-of-charge core public service outputs. Such products

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<sup>19</sup> The Department of Agriculture will be required to ensure adequate budget allocation and recruitment of adequately qualified and trained staff for seed laboratories and field staff to guide and supervise the private seed producers.

would seek primarily to provide value addition to profit-making enterprise, and may include historical datasets, focused daily or weekly forecasts, location- or sector-specific weather alerts, on a one-time or subscription basis. Such information services could offer significant value to clients' planning, operation, and maintenance decisions; for example, irrigation, planting, and harvesting scheduling by farmers. Pricing will be tailored to the target market and commensurate with affordability. The project will develop and implement a strategy for the marketing and sale for fee-based information products by Hydromet, particularly in the PRB area. Gender-sensitive consultations with farmers and stakeholder organizations including RBOs and WUAs will be undertaken to inform the design of the marketing and subscription platform and prospective new weather information products. During and following the establishment of the system and new products, further gender-sensitive training and awareness campaigns will be conducted on the receipt and use of weather services. A framework for sale of information products will be established including legal basis, pricing, subscription models, delivery models, and user engagement. A platform will be developed for managing the subscription and dissemination of weather information products through widely available technologies such as web, email, and SMS. This will be supported by on-site customer support at the Hydromet building. Hydromet's main website will be accordingly updated and modernized. Capacity building of Hydromet staff will be conducted on system O&M, marketing and product development to support the sustainability and quality of weather product services. The work will build upon a stakeholder survey conducted during project preparation, indicating prospective clients, products, and pricing levels.

## II. IMPLEMENTATION PLANS

### A. Project Readiness Activities

70. **Original project.** The loan and grant financing from ADB's Special Fund resources for the original project and the grant and financing from JFPR became effective in August 2017. The TA grant financing from JFPR became effective in October 2016. The project will be implemented from November 2017 to December 2021 with financial closing in June 2022. Prior to the approval of the loan, grants, and TA grant, the detailed design and the draft bidding documents for the contract of M&R of Ustaboz and Janubi cascade pumping systems have been prepared for international competitive bidding. The recruitment of three consulting services packages for outputs 1, 2, and 3 have been completed as of December 2017. The main project readiness activities are provided in Table 1.

**Table 1: Project Readiness Activities (original project)**

Indicative Activities	2016												Responsibility	
	1	2	3	4	5	6	7	8	9	10	11	12		
Preparation of detailed designs and bidding documents for the planned contract.		X												ADB
Preparation of the terms of reference and cost estimates for the consulting services to support each output		X												ADB
Start advertisement and processing to recruit three consulting services by PMO				X										GoT
Recruitment of three consulting service packages											X			GoT
<b>Loan and grant negotiations</b>							X							<b>ADB-GoT</b>
<b>ADB Board approval</b>									X					ADB
<b>Loan and grant signing</b>										X				ADB-GoT
<b>Additional PMO staff</b>												X		GoT
<b>Government legal opinion provided</b>											X			GoT
<b>Government budget inclusion</b>												X		GoT
<b>Loan and Grant effectiveness</b>												X		<b>GoT-ADB</b>

ADB = Asian Development Bank; GoT = Government of Tajikistan; M&R = modernization and rehabilitation; PMO = project management office.  
Source: ALRI and MEWR.

71. **Additional financing.** The grant financing for the additional financing is expected to become effective in the fourth quarter of 2018. With the support of ADB consultants, start-up activities will commence in April 2018 including recruitment by ADB of a national start-up staff consultant, issuance of the request for proposals prior to ADB Board approval for advanced contracting of project implementation consulting services by Hydromet, and establishment and commencement of recruitment for the new project implementation group to be established under Hydromet (H-PIG) to enable Hydromet to start implementing their respective activities after the effectiveness of the grant.

72. The main project readiness activities are provided in Table 2.

**Table 2: Project Readiness Activities for Additional Finance**

Indicative Activities	2018												Responsibility	
	1	2	3	4	5	6	7	8	9	10	11	12		
Readiness support consultant mobilized				X										ADB
Start advertisement and processing to recruit consulting services					X									Hydromet
Establish PIG in Hydromet and commence recruitment							X							Hydromet
Loan and grant negotiations				X										ADB-GoT
ADB Board approval						X								ADB
Grant signing								X						ADB-GoT
Government legal opinion provided								X						GoT
Government budget inclusion												X		GoT
Loan and Grant effectiveness												X		GoT-ADB

ADB = Asian Development Bank; GoT = Government of Tajikistan; PIG = project implementation group.  
Source: ADB and Hydromet.

**B. Overall Project Implementation Plan**

73. **Additional financing.** The implementation schedule for the additional financing is shown in Figure 2. Implementation of activities will start from Q4 2018 after loan effectiveness, and the project’s physical completion and financial closing are expected on June 2023 and December 2023, respectively.

74. **Original project.** The implementation schedule for the original project is shown in Figure 3. Implementation of activities started from Q3 2017 after loan effectiveness, and the project’s physical completion and loan and grants (including TA grant) financial closings are expected on 31 December 2021 and 30 June 2022, respectively.

**Figure 2: Proposed Project Implementation Schedule for Additional Financing**

	2018				2019				2020				2021				2022				2023			
	I	II	III	IV																				
<b>Project Management</b>																								
PIG established and staffed																								
Physical close																								
Financial close																								
<b>Output 1</b>																								
<b>1.1 Design and supervision services for modernization of operations center</b>																								
1.1.1 Detailed design undertaken for system integration																								
1.1.2 Bidding documents prepared and tendered																								
1.1.3 Construction supervision undertaken																								
<b>1.2 Core operational systems modernized</b>																								
1.2.1 Contract awarded for civil works																								
1.2.2 Contract awarded for office furniture																								
1.2.3 Contract awarded for core IT systems																								
<b>1.3 Mixed-use buildings constructed</b>																								
1.3.1 Contract awarded for civil works																								
<b>1.4 Legal reforms implemented</b>																								
1.4.1 Business development and transition team established																								
1.4.2 Project Steering Committee confirmed																								
1.4.3 Draft government amendment for new legal structure and charter drafted and submitted																								
<b>1.5 Institutional framework and quality management system enhanced</b>																								
1.5.1 Gap analysis and detailed program prepared																								
1.5.2 Organizational business model and strategic planning updated																								
1.5.3 Management, administration, and control manuals updated or established																								
1.5.4 User feedback and service quality M&E system established																								
1.5.5 Annual stakeholder survey on Hydromet services undertaken																								
1.5.6 Time-bound action plan for ISO 9001 certification developed																								
<b>1.6 Capacity building and knowledge-sharing program implemented</b>																								
1.6.1 Training for senior and mid-level Hydromet staff undertaken																								
1.6.2 Regional and international knowledge partnerships established																								
1.6.3 Regional knowledge sharing event held																								
1.6.4 Annual stakeholder workshop held																								
<b>1.7 Community awareness and preparedness enhanced</b>																								
1.7.1 Gender-sensitive consultation on flood forecasting and warning systems undertaken																								
1.7.2 Gender-sensitive stakeholder training and awareness on flood forecasts and disaster preparedness																								
<b>1.8 Flood forecasting system developed and capacity building undertaken</b>																								
1.8.1 Pilot districts selected and detailed design including IT system integration prepared																								
1.8.2 Flood risk mapping of target areas in PRB prepared																								
1.8.3 Contract awarded for flood forecasting and monitoring equipment																								
1.8.4 Capacity building for Hydromet staff on flood forecasting undertaken																								
<b>Output 3</b>																								
<b>3.1 Community awareness and weather product accessibility enhanced</b>																								
3.1.1 Gender-sensitive consultation undertaken in PRB districts on development of weather services																								
3.1.2 Gender-sensitive stakeholder training and awareness campaign on weather services undertaken																								
<b>3.2 Subscription platform and new weather products developed</b>																								
3.2.1 Detailed design undertaken for system integration																								
3.2.2 Contract awarded for IT systems																								
3.2.3 Website updated and information subscription and delivery system established																								
3.3.3 Capacity building for Hydromet staff on marketing and product development undertaken																								

PIG = project implementation group

Source: Hydromet and Asian Development Bank.

**Figure 3: Proposed Project Implementation Schedule (Original Project)**

No.	Outputs/Components/Major Activities	2016				2017				2018				2019				2020				2021				2022			
		I	II	III	IV																								
1	Output 1: Water Resources in PRB better managed.																												
	a Improving WRM System in Tajikistan Portion																												
	b Effective Joint PRB Regional Management																												
2	Output 2: Modernized and Climate-proofed CIS WRM infrastructure fully Operational																												
	a M&R of I&D Infrastructure and Its Climate Proofing																												
	b Construction of Sediment Excluding Basin																												
	c M&R of Pumping Units																												
	d Capacity Development of ALRI Staff																												
	e Sediment Cleaning Work Along CIS by ALRI																												
3	Output 3: Farm Management Capacity and Water Use Skill improved																												
	a Demonstration to Promote Profitable Farm Management and Efficient Water Use																												
	b Production of High-quality Seeds																												
	c Establishment and Possible Reorganization of WUAs and Capacity Development																												
	d Sediment Cleaning Work Along CIS On-farm canals by WUAs																												
4	Project Management																												
1	Project Management																												
	a Establishment of PMO and PIOs			X																									
	b Recruitment of Consultant for Each Output																												
	e Review of Feasibility Report and Bidding Documents of Pumps																												
	f Preparation of Detailed Design and Tender Documents																												
	g ICB for M&R of Pumps and Sediment Excluding Basin																												
	h ICB for M&R of I&D Infrastructure																												
	i ICB for Heavy Machinery for O&M of CIS																												
	j Preparation of Other smaller Contracts																												
2	Project M&E																												
	a Preparation of Financial Statements of Expenditures																												
	b Develop M&E System																												
	c Site Specific Environmental Management Plan																												
	d Environment and Health Safety Plan																												
	e Gender Action Plan																												
3	Project Reporting																												
	a Quarterly Progress Reports																												
	b Midterm Socioeconomic Survey and Economic Analysis																												
	c ALRI's Submission of CIS Asset Management and O&M Plan																												
	d Government's Approval of SIC Asset Management and O&M Plan																												
	e Government's Project Completion Report																												

ALRI = Agency of Land Reclamation and Irrigation, CIS = Chubek Irrigation System, I&D = irrigation and drainage, ICB = international competitive bidding, M&E = monitoring and evaluation, M&R = modernization and rehabilitation, O&M = operation and maintenance, PIO = project information office, PMO = project management office, PRB = Pyanj River basin, WRM = water resources management, WUA = water users' association.

Note: The Project Implementation Group (PIG) established within ALRI took up the PMO's role of managing Outputs 2 and 3 as agreed at the loan negotiations on 1 December 2017.

Source: ALRI and MEWR.

### III. PROJECT MANAGEMENT ARRANGEMENTS

#### A. Project Implementation Organizations—Roles and Responsibilities

75. **EAs.** MEWR and ALRI are the two executing agencies (EAs) for the original project. The MEWR is responsible for managing the original scope of output 1 and ALRI is responsible for managing the original scope of outputs 2 and 3. They will assign two project officials (one for managing output 1 and another for managing outputs 2 and 3). The official assigned by ALRI will supervise ALRI's Project Implementation Group (PIG) activities, and the official assigned by MEWR will supervise MEWR's PIG activities, and they will provide management guidance. They are also responsible for compliance with loan and grant covenants. Hydromet is the EA for additional financing project, responsible for managing the additional financing components under outputs 1 and 3. Hydromet will assign (i) one official as focal point (project director) responsible for supervising Hydromet's PIG activities, providing management guidance, and compliance with grant covenants, and (ii) at least one staff as counterpart for each the flood forecasting and fee-based services components with qualifications satisfactory to ADB.

76. **Project implementation units. Original Project.** The existing PMO under the ALRI of Grant 0352-TAJ (footnote 18) originally served as the project PMO to implement original scope of outputs 2 and 3 for the project. A Project Implementation Group (PIG) was subsequently set up in ALRI and took over the PMO's role after it was officially established and fully staffed to capacity satisfactory to ADB.<sup>20</sup> The ALRI and MEWR PIG will facilitate project steering group meetings by inviting representatives from the two EAs to report implementation status and seek policy and management guidance for the project. Key staff in each PIO have been recruited and/or appointed.

77. Each of the two PIGs will be responsible for (i) implementing project activities in accordance with the project design; (ii) coordinating activities between ALRI and MEWR, Hydromet, PIOs and other agencies concerned; (iii) ensuring compliance with environmental and social safeguard requirements; (iv) maintaining appropriate accounts, including reports on withdrawal applications and disbursement; (v) carrying out recruitment of consulting services and procurement activities; (vi) developing CIS asset management and O&M plan to comply with the loan covenant; (vii) monitor, evaluate and report on project progress, and disseminate project progress (e.g., planned and completed project activities including procurement) through ALRI's or Project's website; and (viii) preparing quarterly progress and other reports in format acceptable to ADB.

78. Three PIOs under ALRI will be established at the field level. The PIO at Hamadoni district will be responsible for overseeing and monitoring activities of output 2 (i.e., M&R of Chubek main canal, sediment excluding structure, and the I&D network) and output 3 in Hamadoni district. The PIO at Farkhor district will be responsible for overseeing and monitoring activities of output 2 (i.e., M&R of Urtaboz pumping system and I&D network) and output 3 in Farkhor district while the PIO at Vose district will be responsible for overseeing and monitoring activities of output 2 (i.e., M&R of Janubi pumping system and I&D network) and output 3 in Vose and Kulob districts.

79. **Additional Financing.** A new project implementation group will be established in Hydromet (H-PIG) responsible for (i) implementing project activities in accordance with the project design; (ii) coordinating activities between EAs, stakeholders, and other agencies concerned; (iii) ensuring compliance with environmental and social safeguard requirements; (iv) maintaining

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<sup>20</sup> This arrangement was agreed at the loan negotiations and PIG took up the PMO's role on 1 December 2017.

appropriate accounts, including reports on withdrawal applications and disbursement; (v) carrying out recruitment of consulting services and procurement activities; (vi) developing asset management and O&M plan to comply with the grant covenant; (vii) monitor, evaluate and report on project progress, and disseminate project progress (e.g., planned and completed project activities including procurement) through Hydromet's or Project's website; and (viii) preparing quarterly progress and other reports in format acceptable to ADB. The H-PIG and project implementation consultants will be primarily based in the current Hydromet building and are expected to use the offices recently renovated under the ongoing ADB technical assistance (TA8090-TAJ). During implementation, the project will explore cost- or staff-sharing arrangements with the H-PIG for the ongoing World Bank project in Hydromet subject to ADB approval.

80. **Project Steering Group.** The Project Steering Group will be co-chaired by the Director of ALRI, the First Deputy Minister of MEWR, and the Director of Hydromet and will comprise senior staff of ALRI, MEWR, and Hydromet. Its mandate will include (i) providing PIGs, and H-PIG with policy guidance on the implementation of the project; (ii) monitor project impacts; (iii) review and evaluate project performance; (iv) review project audits; and (v) ensure close coordination among agencies involved in the project activities. The Project Steering Group will meet as often as necessary to discharge its functions and in any event not less than quarterly.

81. **Project Steering Committee.** The Project Steering Committee (PSC) will be chaired by the Deputy Prime Minister with the following members: Director of ALRI, deputy ministers of the Ministry of Finance, Ministry of Foreign Affairs, Ministry of Economic Development and Trade, MEWR, Ministry of Agriculture, Chairman of Committee for State Investment and State Property Management, Committee for Women and Family Affairs, and Committee for Environmental Protection. The Committee will be held upon request and provide the EAs with strategic and policy guidance on project implementation. The Project Steering Committee, or a subset of thereof, may simultaneously serve as the board of directors for Hydromet, upon its legal transformation.

82. **Board of Directors for Hydromet.** The transformed Hydromet will have a board of directors with composition and responsibilities appropriate to its new legal form and structure. The board is expected to provide oversight and guidance to Hydromet management on strategy and policy. In line with the format of the board: (i) the director of Hydromet will represent Hydromet management as the secretary of the board of directors; (ii) Asian Development Bank will have observer status on the board of directors: such status will allow a previously-agreed designated representative to participate in board meetings and review board meeting minutes, without voting or other decision-making rights; and (iii) World Bank will be invited to join under observer status, and other donor agencies may likewise be invited. The board of directors will meet upon request, and in any event not less than annually, with meeting minutes recorded and published on the Hydromet website. The board of directors may comprise five (5) to seven (7) members chaired by the Deputy Prime Minister, made up of a subset of members of the Project Steering Committee. Additional representatives, such as from Tojik Telekom and Barqi Tojik may be invited to join the board to reflect the range of stakeholders of Hydromet services.

83. The detailed role and responsibilities in each organization is provided in Table 3.

**Table 3: Roles and Responsibilities in Each Organization**

<b>Project implementation organizations</b>	<b>Management Roles and Responsibilities</b>
<b>Ministry of Finance (MOF)</b>	Borrower: <ol style="list-style-type: none"> <li>(i) Sign of loan agreement;</li> <li>(ii) Monitor of project implementation and providing respective coordination and facilitation;</li> <li>(iii) Allocate and release counterpart funds;</li> <li>(iv) Endorse to ADB the authorized staff with approved signatures for withdrawal applications (WAs) processing; and</li> <li>(v) Process and submit to ADB any request, when required, for reallocating the loan proceeds.</li> </ol>
<b>MEWR, ALRI, and Hydromet</b>	Executing Agencies: <ol style="list-style-type: none"> <li>(i) Assign project directors (one for output 1 and another for outputs 2 and 3);</li> <li>(ii) Establish the PIG and PIOs with the required staffing (for ALRI);</li> <li>(iii) Establish H-PIG with required staff (for Hydromet)</li> <li>(iv) Overall responsibility for managing of project outputs (MEWR responsible for the original output 1, ALRI responsible for original outputs 2 and 3, and Hydromet responsible for additional financing components of outputs 1 and 3);</li> <li>(v) Overall responsibility for reporting on physical, non-physical, procurement and financial progress for project activities including the development of the government's project completion report and its submission to ADB;</li> <li>(vi) Timely provision of agreed counterpart funds for project activity;</li> <li>(vii) Conduct timely financial audits as per agreed timeframe and taking recommended actions;</li> <li>(viii) Comply with Loan/Grant Agreement covenants; and</li> <li>(ix) Public disclosure of project outputs.</li> </ol>
<b>PIGs, and H-PIG</b>	For respective project components: <ol style="list-style-type: none"> <li>(i) Update an overall implementation plan, preparing annual project budget, and request MoF PIG operation budget;</li> <li>(ii) Establish the advance (imprest) account and maintaining the accounts;</li> <li>(iii) Update procurement plan, as necessary;</li> <li>(iv) Disseminate project progress (e.g., planned and completed project activities including procurement) through ALRI's, Hydromet's, or Project's website;</li> <li>(v) Recruit consultants and procuring works and goods;</li> <li>(vi) Coordinate with other government agencies, departments and units, local governments, district office, jamoats, communities as necessary;</li> <li>(vii) Guide the plans, surveys, studies, detailed designs, capacity development activities, demonstration activities, workshops to be prepared or implemented by the consultants;</li> <li>(viii) Monitor and supervise consulting services and PIO operations;</li> <li>(ix) Monitor and supervise works conducted by contractors, and the delivery of goods procured by suppliers with the support of the consultants;</li> <li>(x) Implement gender action plan and updating the plan as necessary;</li> <li>(xi) Monitor project progress and evaluating project benefits and social and environmental impacts;</li> <li>(xii) Conduct economic analysis at the midterm of the project implementation;</li> </ol>

	<ul style="list-style-type: none"> <li>(xiii) Implement required loan and grant covenants including the development of CIS asset management and O&amp;M plan (for PIG), and development of Hydromet sustainable O&amp;M plan (for H-PIG);</li> <li>(xiv) Manage loan disbursement and maintaining financial accounts; and</li> <li>(xv) Prepare periodic implementation progress reports.</li> </ul>
<b>ALRI PIOs (Hamadoni, Farkhor, and Vose)</b>	<ul style="list-style-type: none"> <li>(i) Day-to-day field level implementation of the respective works and activities for outputs 2 and 3;</li> <li>(ii) Conduct inspection of the quality and standard of works and goods, and provide feedback, guidance, and instruction to the contractors and suppliers;</li> <li>(iii) Supervise the performance and outputs of the contractors, suppliers and consultants;</li> <li>(iv) Prepare periodic progress reports and other required documents for submission to the PIG; and</li> <li>(v) Coordinate implementation activities with district office, local governments, jamoats, communities, and other PIOs.</li> </ul>
<b>ADB</b>	<p>Financier</p> <ul style="list-style-type: none"> <li>(i) Assist the EAs and PIG in providing timely guidance at each stage of the project for smooth implementation;</li> <li>(ii) Review all the documents that require ADB approval upon the submission by the PIG;</li> <li>(iii) Conduct periodic project review missions, a midterm review, and a completion mission;</li> <li>(iv) monitor EAs' compliance of all loan and grant covenants</li> <li>(v) Timely process withdrawal applications and release eligible funds;</li> <li>(vi) monitor EAs' compliance of financial audit recommendations;</li> <li>(vii) Regularly update the project performance review reports with the assistance of the EAs and PIG; and</li> <li>(viii) Regularly post on ADB website the updated project information documents for public disclosure, and the safeguards documents as per disclosure provision of the ADB Safeguards Policy Statement (2009), and ADB Public Communications Policy.</li> </ul>

Source: ALRI.

## **B. Key Person Involved in Project Implementation**

### **1. Executing Agencies and ADB**

#### **Executing Agencies**

##### **ALRI**

Kholmurod Rahmon  
 Director  
 Telephone:  
 Shamsi Street 5/1, Dushanbe, Tajikistan

##### **MEWR**

Usmonali Usmonzoda  
 Minister  
 Telephone: +992 37 235 3566  
 Shamsi Street 5/1, Dushanbe, Tajikistan

Sulton Rahimzoda  
 First Deputy Minister  
 Telephone: + 992 37 235 9914

**State Agency for  
Hydrometeorology (Hydromet)**

Homidjon Rasulzoda  
Director  
Telephone: +992 372 21 51 91  
Shevchenko Street 47, Dushanbe 734026,  
Tajikistan

**ADB**

Environment, Natural Resources and  
Agriculture Division

Natsuko Totsuka  
Officer-in-Charge  
Telephone No. +63 2 632 6748  
Email address: ntotsuka@adb.org

Mission Leader

**Original project**  
Ryutaro Takaku  
Principal Water Resources Specialist  
Tel (632) 632-5158  
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Email: [rtakaku@adb.org](mailto:rtakaku@adb.org)

**Additional Financing**

Nathan Rive  
Climate Change Specialist  
Telephone: +63-2-632-4444  
Email: nrive@adb.org

Resident Mission Focal

Gulsun O. Farosatshoeva  
Senior Project Assistant  
Telephone: +992 37 221 0558  
Email: gfarosatshoeva@adb.org

**2. PIGs, PIOs, and H-PIG**

84. **Original Project.** The following are staff requirements in the ALRI PIG and PIOs. ALRI is responsible to identify PIG and PIO staff to accomplish implementation of outputs 2 and 3 for the project. Proposed key PIG staff requires ADB's review and approval. The roles and tasks of key PIG and PIO staffs are provided in Table 4. The MEWR will use already institutionalized PIG to implement output 1 of the project, and thus PIG staffs that are the MEWR's regular staff do not require ADB's review and approval.

**Table 4: Roles and Responsibilities of Key PIG and PIO staff (Original Project)<sup>a</sup>**

<b>Position</b>	<b>Roles and Responsibilities</b>
PIG Director	<ul style="list-style-type: none"> <li>(i) Draft annual work programs for each output, submit them to the project director and its deputy and obtaining their agreements;</li> <li>(ii) Consult with the chief accountant to monitor budgetary expenditure, review disbursement requests, prepare the annual budget and submit these the project director and its deputy for agreements;</li> <li>(iii) Ensure the hiring of suitably qualified staff to implement the all outputs in accordance with ADB requirements;</li> <li>(iv) Guide and collaborate with the relevant staff to monitor output implementation in accordance with the agreed work program;</li> <li>(v) Attend, hold or participate in seminars, workshops, media events etc. to represent the project;</li> <li>(vi) Conduct site visits as required to monitor and correct implementation of the project;</li> </ul>

	<ul style="list-style-type: none"> <li>(vii) Develop and submit recommendations to the project director and its deputy to resolve issues which arise in the course of project implementation;</li> <li>(viii) Support the project director and its deputy in the overall project management and preparation of reports for the Government and its relevant agencies;</li> <li>(ix) Manage all staff directly working on the project, including staff grievance procedures and make recommendations to the project director and its deputy on hiring decisions;</li> <li>(x) Coordinate with relevant key staff to maintain an overview of the day-to-day operations of the project;</li> <li>(xi) Provide operational support to key staff members in the implementation of their responsibilities;</li> <li>(xii) Draft a comprehensive project reporting system, submit it to the project director and its deputy for agreements and implementations;</li> <li>(xiii) Coordinate implementation of project outputs with the relevant project related agencies;</li> <li>(xiv) Draft CIS asset management and O&amp;M plan by updating a linked document to the project document for ALRI's review and approval;</li> <li>(xv) Assist the project director and its deputy to coordinate interaction with relevant ministries and agencies, as may be required;</li> <li>(xvi) Liaise with local government administrations participating in the project to ensure successful implementation of project activities;</li> <li>(xvii) Draft project implementation reports and submit to the project director and its deputy for agreements and distributions;</li> <li>(xviii) Liaise with ADB staff and supervision missions to ensure successful completion of missions and ongoing project monitoring; and</li> <li>(xix) Implement recommendations of ADB supervision missions and associated aide-memoires, as agreed by the project director and its deputy.</li> </ul>
Chief Accountant (PIG)	<ul style="list-style-type: none"> <li>(i) Responsible for taking care of financing, funds flow arrangements, payments, recording, and monitoring of both ADB and Government funds; establish monitoring and management procedures for the advance (imprest) account and Statement of Expenditure (SOE) procedures;</li> <li>(ii) Ensure timely preparation of the annual audited project accounts and submission to ADB within 6 months of financial year end;</li> <li>(iii) Cooperate with the Project Manager and the PIG staff to develop a strategy for guiding and supporting purchase operations made by the PIG in regard to project components;</li> <li>(iv) Maintain an information on ADB disbursement guidelines, and other resources needed by staff in carrying out disbursements, advance (imprest) account operation, SOE procedures;</li> <li>(v) Negotiate and prepare standard bidding packages and specifications to evaluate, enter into contracts, oversee delivery, issue invoices, inspect/test procured items, and make payments to suppliers/contractors;</li> <li>(vi) Coordinate with the specialists of the PIG, to develop and implement payment mechanisms and procedures to support purchases of goods, technical assistance, and construction services; and</li> <li>(vii) Communicate through the Project Director information and/or documentation to the Government or ADB for their inspection, obtaining comments and/or for commencement of funding.</li> </ul>
Chief Procurement Specialist (PIG)	<ul style="list-style-type: none"> <li>(i) Develop an Operational Manual covering the procurement policies, procedures and standard documents in order to minimize cost and ensure a scheduled carrying out of procurement activities in line with the requirements of the Government and ADB;</li> <li>(ii) Maintain an information database on procurements of technical services, suppliers of equipment, ADB procurement guidelines, standard and model bidding documents, and other resources needed by staff in carrying out project components;</li> <li>(iii) Negotiate and prepare standard bidding packages and specifications to evaluate, enter into contracts, oversee delivery, issue invoices, inspect/test procured items, and make payments to suppliers/contractors;</li> <li>(iv) Establish a monitoring system within the procurement unit of the PIG for overseeing project procurement actions and coordinating necessary approvals or correcting shortcomings in procedures; and</li> <li>(v) Communicate through the Project Director information and/or documentation to the Government or ADB for their inspection, obtaining comments and/or for commencement of funding.</li> </ul>
Environment Specialist (PIG)	<ul style="list-style-type: none"> <li>(i) Ensure that EMP will be updated during detailed design completed;</li> <li>(ii) Ensure that bidding documents include all requirement to implement IEE and its EMP;</li> <li>(iii) Ensure that the bidder selected will have adequate resources to implement and update EMP;</li> </ul>

	<ul style="list-style-type: none"> <li>(iv) Undertake environmental safeguards monitoring activities and prepare environmental safeguard reports to be submitted to ADB; and</li> <li>(v) Ensure that the any works are implemented in accordance with ADB SPS 2009 as well as the government law and regulation related to environment.</li> </ul>
Social & Gender Specialist (PIG)	<ul style="list-style-type: none"> <li>(i) Ensure that LARP and GAP will be updated during detailed design and planning completed;</li> <li>(ii) Ensure that bidding documents, capacity building programs, demonstration activities, any activities for output 1 include all requirement to implement LARP and GAP;</li> <li>(iii) Ensure that the bidder selected will have adequate resources to implement and update LARP and GAP;</li> <li>(iv) Undertake social safeguards and gender monitoring activities and prepare social safeguard and gender reports to be submitted to ADB; and</li> <li>(v) Ensure that the any works are implemented in accordance with ADB SPS 2009 as well as the government law and regulation related to resettlement.</li> </ul>
M&E Specialist (PIG)	<ul style="list-style-type: none"> <li>(i) Ensure that an appropriate M&amp;E strategy and plans are developed to assess the achievement of each project output;</li> <li>(ii) During initial phase of the implementation of the project, reconfirm and/or update: (a) activities with milestones, performance targets and indicators with baselines, all of which are defined in the Design and Monitoring Framework, (b) requirements indicated in the Summary Poverty Reduction and Social Strategy, and (c) Gender Action Plan;</li> <li>(iii) Ensure to update (a) activities with milestones, performance targets and indicators with baselines, all of which are defined in the Design and Monitoring Framework, (b) requirements indicated in the Summary Poverty Reduction and Social Strategy at the project completion, and (c) Gender Action Plan;</li> <li>(iv) Ensure that baseline, intermediate and end-of project socio-economic surveys and impact assessment in each output of the project are planned and conducted;</li> <li>(v) Collect necessary information to draft CIS asset management and O&amp;M plan; and</li> <li>(vi) Disseminate project progress (e.g., planned and completed project activities including procurement) through ALRI's or Project's website.</li> </ul>
PIO manager (Hamadoni, Farkhor, and Vose)	<ul style="list-style-type: none"> <li>(i) Serve as the 'Engineer' and 'Coordinator' for all activities including civil works, delivery of goods, services, capacity building, demonstration activities for outputs 2 and 3;</li> <li>(ii) Oversee all activities for outputs 2 and 3, specifically monitor their implementation in relation to the agreed work plan;</li> <li>(iii) Report any deviations from the work plan to the PIG director;</li> <li>(iv) Establish monitoring and evaluation system for output implementation;</li> <li>(v) Support the PIG director for the execution of the outputs 2 and 3;</li> <li>(vi) Identify any operational problems and raise them with the PIG director;</li> <li>(vii) Coordinate with district ALRI office, WUA support unit, district office of Ministry of Agriculture, local governments to resolve any issues in implementing outputs 2 and 3, inform them of the outputs status;</li> <li>(viii) Organize orientation or training programs to educate project participants; and</li> <li>(ix) Cooperate with the PIG director, to draft an annual work plan for the PIO, which will be submitted to the Project Director for approval.</li> </ul>

<sup>a</sup> PIG took up the PMO's role on 1 December 2017 as described in para. 76.

Source: ALRI.

85. The detailed staffing requirements and estimated salaries of ALRI's PIG and PIOs are provided in Table 5.

**Table 5: Staffing Requirement for ALRI's PIG and PIOs (Original Project)<sup>a</sup>**

No	Position	Source of financing (ADB/ALRI)
1	PIG Director	ALRI
2	Chief procurement specialist	ALRI
3	Chief Engineer	ALRI
4	Chief accountant	ALRI
5	Cashier	ADB
6	M&E specialist	ADB
7	Environmental specialist	ADB
8	Driver	ALRI
9	Guards	ALRI
10	Cleaner	ALRI
11	Administrator	ADB
12	Social & Gender specialist	ADB
13	Translator	ADB
14	Financial manager	ADB
15	Deputy Director/ PIO Manager in Hamadoni	ADB
16	Engineer	ADB
17	Administrator	ADB
18	Driver	ALRI
19	Guards	ALRI
20	Cleaner	ALRI
21	Deputy Director/ PIO Manager in Farhor	ADB
22	Engineer	ADB
23	Administrator	ADB
24	Driver	ALRI
25	Guards	ALRI
26	Cleaner	ALRI
27	Deputy Director /PIO Manager in Vose	ADB
28	Engineer	ADB
29	Administrator	ADB
30	Driver	ALRI
31	Guards	ALRI
32	Cleaner	ALRI

ALRI = Agency of Land Reclamation and Irrigation; M&E = monitoring and evaluation; PIG = project implementation group; PIO = project implementation office;

<sup>a</sup> The table was updated when PIG took up the PMO's role on 1 December 2017 as described in para. 76. Source: ALRI.

86. **Additional Financing.** The following are staff requirements in the H-PIG. Hydromet is responsible to identify H-PIG staff to accomplish implementation of additional financing outputs 1 and 3 for the project. Hiring of candidate PIG staff requires ADB's prior review and approval. The roles and tasks of key H-PIG staffs are provided in Table 6.

**Table 6: Roles and Responsibilities of H-PIG staff (Additional Financing)**

Position	Roles and Responsibilities
H-PIG Director	<ul style="list-style-type: none"> <li>(i) Draft annual work programs for each output, submit them to the Hydromet focal point (project director) and its deputy and obtaining their agreements;</li> <li>(ii) Consult with the chief accountant to monitor budgetary expenditure, review disbursement requests, prepare the annual budget and submit these the project director and its deputy for agreements;</li> <li>(iii) Ensure the hiring of suitably qualified staff to implement the all outputs in accordance with ADB requirements;</li> <li>(iv) Guide and collaborate with the relevant staff to monitor output implementation in accordance with the agreed work program;</li> <li>(v) Attend, hold or participate in seminars, workshops, media events etc. to represent the project;</li> <li>(vi) Conduct site visits as required to monitor and correct implementation of the project;</li> <li>(vii) Develop and submit recommendations to the project director and its deputy to resolve issues which arise in the course of project implementation;</li> <li>(viii) Support the project director and its deputy in the overall project management and preparation of reports for the Government and its relevant agencies;</li> <li>(ix) Manage all staff directly working on the project, including staff grievance procedures and make recommendations to the project director and its deputy on hiring decisions;</li> <li>(x) Coordinate with relevant key staff to maintain an overview of the day-to-day operations of the project;</li> <li>(xi) Provide operational support to key staff members in the implementation of their responsibilities;</li> <li>(xii) Draft a comprehensive project reporting system, submit it to the project director and its deputy for agreements and implementations;</li> <li>(xiii) Coordinate implementation of project outputs with the relevant project related agencies;</li> <li>(xiv) Prepare, coordinate, and lead Hydromet transformation process including drafting of legal documentation and coordination with relevant stakeholders;</li> <li>(xv) Draft Hydromet sustainable O&amp;M plan including budget projections for review of ADB and approved by Project Steering Committee;</li> <li>(xvi) Assist the project director and its deputy to coordinate interaction with relevant ministries and agencies, as may be required;</li> <li>(xvii) Liaise with local government administrations participating in the project to ensure successful implementation of project activities;</li> <li>(xviii) Draft project implementation reports and submit to the project director and its deputy for agreements and distributions;</li> <li>(xix) Liaise with ADB staff and supervision missions to ensure successful completion of missions and ongoing project monitoring; and</li> <li>(xx) Implement recommendations of ADB supervision missions and associated aide-memoires, as agreed by the project director and its deputy.</li> </ul>
Forecasting Technical Officer/Deputy Director	<ul style="list-style-type: none"> <li>(i) Support and lead all design and implementation of flood forecasting and warning and fee-based information services components for sustainable and efficient operation;</li> <li>(ii) Prepare and implement gender-sensitive community consultation, training, and awareness;</li> <li>(iii) Undertake system design and integration, ensuring compatibility with existing Hydromet systems and use of best practices;</li> <li>(iv) Prepare detailed specifications for system procurement including equipment, civil works, services, and software and support identification of vendors;</li> <li>(v) Support and lead system installation, testing, and operation;</li> <li>(vi) Prepare operations manuals for Hydromet staff for sustainable operation and maintenance; and</li> <li>(vii) Prepare and implement training of Hydromet staff for flood forecasting and warning including training materials.</li> </ul>
IT Officer	<ul style="list-style-type: none"> <li>(i) Support and lead design, installation, and implementation of all IT-related activities including fit-out of core IT system in main office building, flood forecasting activities, and fee-based information services platform for sustainable and efficient operation;</li> </ul>

	<ul style="list-style-type: none"> <li>(ii) Undertake system design and integration, ensuring compatibility with existing Hydromet systems and use of best practices;</li> <li>(iii) Prepare detailed specifications for system procurement including equipment, civil works, services, and software and support identification and coordination with vendors;</li> <li>(iv) Support and lead system installation, testing, and operation;</li> <li>(v) Prepare operations manuals for Hydromet staff for sustainable operation and maintenance; and</li> <li>(vi) Prepare and implement training of Hydromet staff for flood forecasting and warning including training materials.</li> </ul>
Chief Accountant	<ul style="list-style-type: none"> <li>(i) Responsible for taking care of financing, funds flow arrangements, payments, recording, and monitoring of both ADB and Government funds; establish monitoring and management procedures for the advance (imprest) account and Statement of Expenditure (SOE) procedures;</li> <li>(ii) Ensure timely preparation of the annual audited project accounts and submission to ADB within 6 months of financial year end;</li> <li>(iii) Cooperate with the Project Manager and the H-PIG staff to develop a strategy for guiding and supporting purchase operations made by the H-PIG in regard to project components;</li> <li>(iv) Maintain an information on ADB disbursement guidelines, and other resources needed by staff in carrying out disbursements, advance (imprest) account operation, SOE procedures;</li> <li>(v) Negotiate and prepare standard bidding packages and specifications to evaluate, enter into contracts, oversee delivery, issue invoices, inspect/test procured items, and make payments to suppliers/contractors;</li> <li>(vi) Coordinate with the specialists of the H-PIG, to develop and implement payment mechanisms and procedures to support purchases of goods, technical assistance, and construction services; and</li> <li>(vii) Communicate through the Project Director information and/or documentation to the Government or ADB for their inspection, obtaining comments and/or for commencement of funding.</li> </ul>
Procurement Officer	<ul style="list-style-type: none"> <li>(i) Develop an Operational Manual covering the procurement policies, procedures and standard documents in order to minimize cost and ensure a scheduled carrying out of procurement activities in line with the requirements of the Government and ADB;</li> <li>(ii) Maintain an information database on procurements of technical services, suppliers of equipment, ADB procurement guidelines, standard and model bidding documents, and other resources needed by staff in carrying out project components;</li> <li>(iii) Negotiate and prepare standard bidding packages and specifications, evaluate bids, enter into contracts, oversee delivery, issue invoices, inspect/test procured items, and make payments to suppliers/contractors;</li> <li>(iv) Establish a monitoring system within the procurement unit of the H-PIG for overseeing project procurement actions and coordinating necessary approvals or correcting shortcomings in procedures; and</li> <li>(v) Communicate through the Project Director information and/or documentation to the Government or ADB for their inspection, obtaining comments and/or for commencement of funding.</li> </ul>
Environment Specialist	<ul style="list-style-type: none"> <li>(i) Ensure that EMP will be updated during detailed design completed;</li> <li>(ii) Review and updated IEE as required;</li> <li>(iii) Ensure that bidding documents include all requirement to implement IEE and its EMP;</li> <li>(iv) Ensure that the bidder selected will have adequate resources to implement and update EMP;</li> <li>(v) Undertake environmental safeguards monitoring activities and prepare environmental safeguard reports to be submitted to ADB; and</li> <li>(vi) Ensure that the any works are implemented in accordance with ADB SPS 2009 as well as the government law and regulation related to environment.</li> </ul>
Social Development and Gender Specialist	<ul style="list-style-type: none"> <li>(i) Ensure that LARP (as applicable) and GAP will be updated during detailed design and planning completed;</li> <li>(ii) Ensure that bidding documents, capacity building programs, demonstration activities, any activities for output 1 include all requirement to implement LARP (as applicable) and GAP;</li> <li>(iii) Ensure that the bidder selected will have adequate resources to implement and update LARP (as applicable) and GAP;</li> <li>(iv) Prepare and mobilize gender-sensitive consultation and training activities under flood forecasting and fee-based information services components;</li> <li>(v) Undertake social safeguards and gender monitoring activities and prepare social safeguard and gender reports to be submitted to ADB; and</li> <li>(vi) Ensure that the any works are implemented in accordance with ADB SPS 2009 as well as the government law and regulation related to resettlement.</li> </ul>
M&E Specialist	<ul style="list-style-type: none"> <li>(i) Ensure that an appropriate M&amp;E strategy and plans are developed to assess the achievement of each project output;</li> </ul>

	<ul style="list-style-type: none"> <li>(ii) During initial phase of the implementation of the project, reconfirm and/or update: (a) activities with milestones, performance targets and indicators with baselines, all of which are defined in the Design and Monitoring Framework, (b) requirements indicated in the Summary Poverty Reduction and Social Strategy, and (c) Gender Action Plan;</li> <li>(iii) Ensure to update (a) activities with milestones, performance targets and indicators with baselines, all of which are defined in the Design and Monitoring Framework, (b) requirements indicated in the Summary Poverty Reduction and Social Strategy at the project completion, and (c) Gender Action Plan;</li> <li>(iv) Ensure that baseline, intermediate and end-of project socio-economic surveys and impact assessment in each output of the project are planned and conducted;</li> <li>(v) Collect necessary information to draft sustainable O&amp;M plan; and</li> <li>(vi) Disseminate project progress (e.g., planned and completed project activities including procurement) through Hydromet's or Project's website.</li> </ul>
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Source: Hydromet

**Table 7: Estimated staffing Requirement for Hydromet PIG (Additional Financing)**

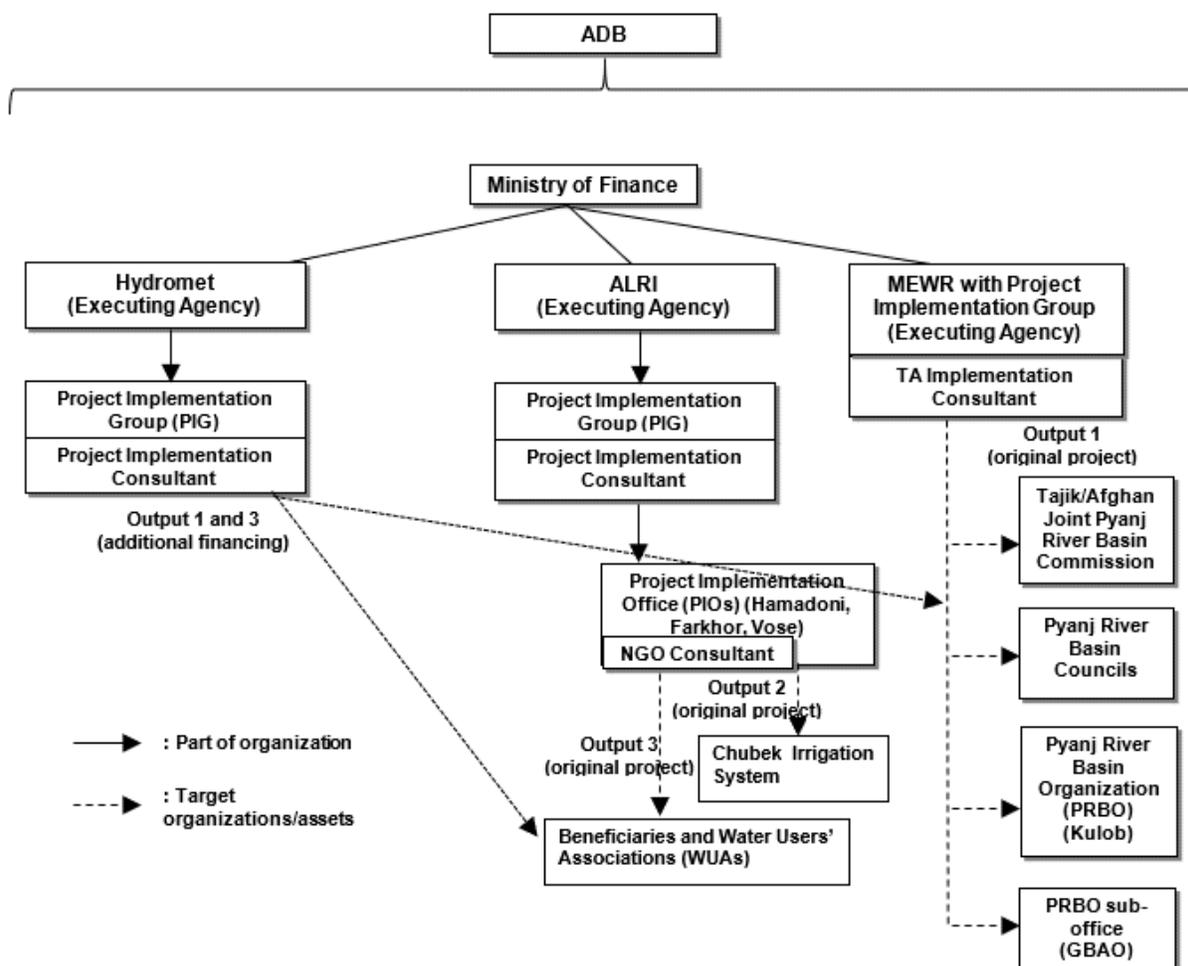
Designation	Months
PIG Head	60
Forecasting Technical Officer/Deputy Director	60
IT Officer	60
Construction Supervisor	36
Procurement Officer	60
Chief Accountant	60
Cashier	60
Environment Specialist	36
M&E Specialist	60
Social Development and Gender Specialist	24
Office Manager & Interpreter/Translator	60
Project Assistant	60
Driver	60
<b>Total</b>	

Source: Hydromet

### C. Project Organization Structure

87. Organization structure for project implementation is given in Figure 4.

**Figure 4: Project Organization Structure (overall project)**



Source: ADB.

#### IV. COST AND FINANCING

##### A. Detailed Cost Estimates by Expenditure Category

88. Expenditure accounts project cost summary is given in Table 8 and Table 9 below.

**Table 8: Detailed Cost Estimates by Expenditure Category (Original Project)<sup>a</sup>**  
(\$)

Item		Foreign Exchange	Local Currency	Total Cost	% of Total Base Cost
<b>A. Investment Cost</b>					
1	Civil Works	2,462,161	12,058,276	14,520,437	50.9
2	Mechanical and Equipment				
	a Vehicles	256,957	38,543	295,500	1.0
	b Machinery	2,811,217	421,683	3,232,900	11.3
	c Pumps, Motors and Auxiliaries	3,929,421	589,413	4,518,834	15.8
	d Supplies, Others	651,304	97,696	749,000	2.6
3	Survey, Study and Design	36,821	492,479	529,300	1.9
4	Training and Workshops	7,645	102,257	109,902	0.4
5	Consulting Services				
	a Project Management	1,034,882	782,086	1,816,968	6.4
	b Capacity Developemnt	816,357	402,878	1,219,235	4.3
	<b>Subtotal</b>	<b>12,006,765</b>	<b>14,985,310</b>	<b>26,992,076</b>	<b>94.6</b>
<b>B. Recurrent Costs</b>					
1	PMO and PIO Salaries	0	997,988	997,988	3.5
2	Office Accommodation	0	274,000	274,000	1.0
3	O&M Equipment	0	76,041	76,041	0.3
4	Office/Vehicle O&M	0	202,458	202,458	0.7
	<b>Subtotal</b>	<b>0</b>	<b>1,550,486</b>	<b>1,550,486</b>	<b>5.4</b>
	<b>Total Base Cost</b>	<b>12,006,765</b>	<b>16,535,796</b>	<b>28,542,562</b>	<b>100.0</b>
<b>C. Contingencies</b>					
1	Physical	496,093	713,890	1,209,983	4.2
2	Price	474,258	682,469	1,156,728	4.1
	<b>Subtotal</b>	<b>970,351</b>	<b>1,396,359</b>	<b>2,366,711</b>	<b>8.3</b>
<b>D. Financing Charges During Construction</b>					
1	Interest	699,000	0	699,000	2.4
2	Commitment	0	0	0	0.0
	<b>Subtotal</b>	<b>699,000</b>	<b>0</b>	<b>699,000</b>	<b>2.4</b>
	<b>TOTAL</b>	<b>13,676,117</b>	<b>17,932,156</b>	<b>31,608,272</b>	<b>110.7</b>

O&M = operation and maintenance, PIO = project implementation office, PMO = project management office.

<sup>a</sup> Project Implementation Group (PIG) took up the PMO's role on 1 December 2017 as described in para. 76.

Source: ADB estimates.

**Table 9: Detailed Cost Estimates by Expenditure Category (Additional Financing)**  
(\$)

	Foreign Currency	Local Currency	Total
<b>A. Investment Cost</b>			
1. Civil Works			
a. Office Building and Ancillary	446,248	1,130,494	1,576,742
b. Mixed-use Buildings	1,057,028	2,677,804	3,734,831
2. Equipment	1,585,620	493,304	2,078,924
3. Study, Survey & Design <sup>a</sup>	33,200	162,680	195,880
4. Training & Workshops <sup>a</sup>	31,892	156,272	188,164
5. Consulting Services	2,250,000	700,000	2,950,000
<b>Subtotal</b>	5,403,988	5,320,554	10,724,542
<b>B. Recurrent Cost</b>			
1. PIG Salaries	675,000	0	675,000
2. O&M Equipment	21,305	230,094	251,399
3. Office/Vehicle O&M and Audit	12,200	131,760	143,960
<b>Subtotal</b>	708,505	361,854	1,070,359
<b>Total Base Cost</b>	6,112,493	5,682,408	11,794,901
<b>C. Contingencies</b>			
1. Physical	257,559	239,436	496,995
2. Price	255,913	237,906	493,819
<b>Subtotal</b>	513,471	477,343	990,814
<b>Total Project Cost (A+B+C)</b>	6,625,964	6,159,751	12,785,715

<sup>a</sup> To be added as provisional sums under consulting services contract.  
Source: ADB estimates.

## **B. Allocation and Withdrawal of Loan and Grants Proceeds**

89. For the original project the government has requested a loan in various currencies equivalent to SDR 13,758,000 (\$19.15 million) from ADB's Special Funds resources to help finance the project. The loan will have a 32-year term, including a grace period of 8 years, an interest rate of 1% per annum during the grace period and 1.5% per annum thereafter, and such other terms and conditions set forth in the draft financing agreement. The government has requested a grant not exceeding \$5.85 million from the ADB's Special Funds resources to help finance the project. The JFPR Grant will provide a grant equivalent to \$3 million for output 3, which will be administered by ADB.<sup>21</sup> The government will contribute \$3.6 million by way of taxes (including social tax) and duties foregone.

90. For the additional financing project the government has requested a grant not exceeding \$11.5 million, comprising \$6.5 million grant from ADB's Special Funds and \$5 million grant from the Green Climate Fund. The government will contribute \$1.3 million by way of taxes and duties.<sup>22</sup>

<sup>21</sup> In addition, the JFPR TA will provide a TA grant equivalent to \$2 million for Output 1, which will be administered by ADB.

<sup>22</sup> The government contribution will not include income tax and social tax of Hydromet PIG staff and national and international consultants. The ADB grant will finance income tax and social taxes of the Hydromet PIG. The ADB grant and GCF grant will jointly finance income and other unidentifiable taxes of consultants in accordance with Appendix 4C (page 3, para. (ii)) of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

**Table 10: Allocation and Withdrawal of Loan and Grants Proceeds (Original Project)****1. ADB ADF Loan**

Category			ADF Loan Financing
Number	Item	Amount Allocated [SDR]	Percentage and Basis for Withdrawal from the Loan Account
		Category	
1	Civil Works; Vehicles; and Pumps, Motors and Auxiliaries	11,802,000	100% of total expenditure claimed.*
2	Supplies and Others; Office Accommodation; and Office Equipment	319,000	100% of total expenditure claimed.
3	Interest During Construction	502,000	100% of amount due
4	Unallocated	1,135,000	
	<b>Total</b>	<b>13,758,000</b>	

\* Exclusive of taxes and duties imposed within the territory of the Beneficiary.

**2. ADB ADF Grant**

Category			ADF Grant Financing
Number	Item	Amount Allocated [\$]	Percentage and Basis for Withdrawal from the Grant Account
		Category	
1	Machinery; Survey, Study and Design; PMO and PIO salaries; and Consulting Services <sup>a</sup>	5,079,145	100% of total expenditure claimed.*
2	Training and Workshops; and Office/Vehicle Operation and Maintenance	234,360	100% of total expenditure claimed.
3	Unallocated	536,495	
	<b>Total</b>	<b>5,850,000</b>	

\* Exclusive of taxes and duties imposed within the territory of the Beneficiary.

<sup>a</sup> Project Implementation Group (PIG) took up the PMO's role on 1 December 2017 as described in para. 76.

**3. JFPR Grant**

Category			JFPR Grant Financing
Number	Item	Amount Allocated [\$]	Percentage and Basis for Withdrawal from the Grant Account
		Category	
1	Civil Works; Machinery; Survey, Study and Design; and Consulting Services	2,016,878	100% of total expenditure claimed.*
2	Supplies and Others; and Training and Workshops	733,000	100% of total expenditure claimed.
3	Unallocated	250,122	
	<b>Total</b>	<b>3,000,000</b>	

\* Exclusive of taxes and duties imposed within the territory of the Beneficiary.

Source: ADB estimates.

**Table 11: Allocation and Withdrawal of Loan and Grants Proceeds (Additional Financing)****1. ADB ADF Grant**

Category			ADF Loan Financing
Number	Item	Amount Allocated [\$]	Percentage and Basis for Withdrawal from the Loan Account
		Category	
1	Civil Works (Mixed-use Buildings)	3,523,426	100% of total expenditure claimed.*
2	Study, Survey, and Design; Training and Workshops; Capacity Building	253,433	36.20% of total expenditure claimed.*
3	Consulting Services (Project Management)	513,374	36.20% of total expenditure claimed.*
4	Equipment; O&M Equipment; Office/Vehicle O&M and Audit.	922,080	36.20% of total expenditure claimed.*
5	PIG Salaries	675,000	100% of total expenditure claimed.
6	Unallocated	612,687	
	Total	6,500,000	

\* Exclusive of taxes and duties, except income tax and social tax, imposed within the territory of the Recipient.

**2. GCF Grant**

Category			ADF Grant Financing
Number	Item	Amount Allocated [\$]	Percentage and Basis for Withdrawal from the Grant Account
		Category	
1	Civil Works (Office Building and Ancillary)	1,487,493	100% of total expenditure claimed.*
2	Study, Survey, and Design; Training and Workshops; Capacity Building	446,567	63.80% of total expenditure claimed.*
3	Consulting Services (Project Management)	904,603	63.80% of total expenditure claimed.*
4	Equipment; O&M Equipment; Office/Vehicle O&M and Audit.	1,624,770	63.80% of total expenditure claimed.*
5	Unallocated	536,567	
	Total	5,000,000	

\* Exclusive of taxes and duties, except income tax and social tax, imposed within the territory of the Recipient.

Source: ADB estimates.

## C. Detailed Cost Estimate by Financier

**Table 12: Detailed Cost Estimate by Financier (Consolidated All Financiers – Original Project)<sup>a</sup>**  
(\$)

Item	ADB ADF Loan	ADB ADF Grant	JFPR Grant	Government	Total Costs
	Amount	Amount	Amount	Amount	
<b>A. Investment Cost</b>					
1 Civil Works	12,240,489	0	385,978	1,893,970	14,520,437
2 Mechanical and Equipment	4,280,377	2,311,217	1,155,000	1,049,639	8,796,234
a Vehicles	256,957	0	0	38,543	295,500
b Machinery	0	2,311,217	500,000	421,683	3,232,900
c Pumps, Motors and Auxiliaries	3,929,421	0	0	589,413	4,518,834
d Supplies, Others	94,000	0	655,000	0	749,000
3 Survey, Study and Design	0	308,261	152,000	69,039	529,300
4 Training and Workshops	0	31,902	78,000	0	109,902
5 Consulting Services	0	1,661,276	978,900	396,026	3,036,203
a Project Management	0	1,579,972	0	236,996	1,816,968
b Capacity Developemnt	0	81,304	978,900	159,031	1,219,235
<b>Subtotal</b>	<b>16,520,866</b>	<b>4,312,657</b>	<b>2,749,878</b>	<b>3,408,675</b>	<b>26,992,076</b>
<b>B. Recurrent Costs</b>					
1 PMO and PIO Salaries	0	798,390	0	199,598	997,988
2 Office Accommodation	274,000	0	0	0	274,000
3 O&M Equipment	76,041	0	0	0	76,041
4 Office/Vehicle O&M	0	202,458	0	0	202,458
<b>Subtotal</b>	<b>350,041</b>	<b>1,000,848</b>	<b>0</b>	<b>199,598</b>	<b>1,550,486</b>
<b>Total Base Cost</b>	<b>16,870,907</b>	<b>5,313,504</b>	<b>2,749,878</b>	<b>3,608,272</b>	<b>28,542,562</b>
<b>C. Contingencies</b>					
1 Physical	804,938	278,178	126,867	0	1,209,983
2 Price	775,155	258,318	123,255	0	1,156,728
<b>Subtotal</b>	<b>1,580,093</b>	<b>536,496</b>	<b>250,122</b>	<b>0</b>	<b>2,366,711</b>
<b>D. Financing Charges During Construction</b>					
1 Interest	699,000	0	0	0	699,000
2 Commitment	0	0	0	0	0
<b>Subtotal</b>	<b>699,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>699,000</b>
<b>TOTAL</b>	<b>19,150,000</b>	<b>5,850,000</b>	<b>3,000,000</b>	<b>3,608,272</b>	<b>31,608,272</b>

<sup>a</sup> Project Implementation Group (PIG) took up the PMO's role on 1 December 2017 as described in para. 76.  
Source: ADB estimates.

**Table 13: Detailed Cost Estimate by Financier (ADF Loan, ADF Grant, and Government – Original Project)<sup>a</sup>**  
(\$)

Item	ADB ADF Loan		ADB ADF Grant		Government		Total Costs
	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	
<b>A. Investment Cost</b>							
1 Civil Works	12,240,489	87.0	0	0.0	1,836,073	13.0	14,076,562
2 Mechanical and Equipment	4,280,377	56.6	2,311,217	30.5	974,639	12.9	7,566,234
a Vehicles	256,957	87.0	0	0.0	38,543	13.0	295,500
b Machinery	0	0.0	2,311,217	87.0	346,683	13.0	2,657,900
c Pumps, Motors and Auxiliaries	3,929,421	51.9	0	0.0	589,413	13.0	4,518,834
d Supplies, Others	94,000	1.2	0	0.0	0	0.0	94,000
3 Survey, Study and Design	0	0.0	308,261	87.0	46,239	13.0	354,500
4 Training and Workshops	0	0.0	31,902	100.0	0	0.0	31,902
5 Consulting Services	0	0.0	1,661,276	87.0	249,191	13.0	1,910,468
a Project Management	0	0.0	1,579,972	87.0	236,996	13.0	1,816,968
b Capacity Development	0	0.0	81,304	87.0	12,196	13.0	93,500
<b>Subtotal</b>	<b>16,520,866</b>	<b>69.0</b>	<b>4,312,657</b>	<b>18.0</b>	<b>3,106,143</b>	<b>13.0</b>	<b>23,939,666</b>
<b>B. Recurrent Costs</b>							
1 PMO and PIO Salaries	0	0.0	798,390	80.0	199,598	20.0	997,988
2 Office Accommodation	274,000	100.0	0	0.0	0	0.0	274,000
3 O&M Equipment	76,041	100.0	0	0.0	0	0.0	76,041
4 Office/Vehicle O&M	0	0.0	202,458	100.0	0	0.0	202,458
<b>Subtotal</b>	<b>350,041</b>	<b>22.6</b>	<b>1,000,848</b>	<b>64.6</b>	<b>199,598</b>	<b>12.9</b>	<b>1,550,486</b>
<b>Total Base Cost</b>	<b>16,870,907</b>	<b>66.2</b>	<b>5,313,504</b>	<b>20.8</b>	<b>3,305,741</b>	<b>13.0</b>	<b>25,490,152</b>
<b>C. Contingencies</b>							
1 Physical	804,938	74.3	278,178	25.7	0	0.0	1,083,116
2 Price	775,155	75.0	258,318	25.0	0	0.0	1,033,473
<b>Subtotal</b>	<b>1,580,093</b>	<b>74.7</b>	<b>536,496</b>	<b>25.3</b>	<b>0</b>	<b>0.0</b>	<b>2,116,589</b>
<b>D. Financing Charges During Construction</b>							
1 Interest	699,000	100.0	0	0.0	0	0.0	699,000
2 Commitment	0	0.0	0	0.0	0	0.0	0
<b>Subtotal</b>	<b>699,000</b>	<b>100.0</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>699,000</b>
<b>TOTAL</b>	<b>19,150,000</b>	<b>67.7</b>	<b>5,850,000</b>	<b>20.7</b>	<b>3,305,741</b>	<b>11.7</b>	<b>28,305,741</b>

<sup>a</sup> Project Implementation Group (PIG) took up the PMO's role on 1 December 2017 as described in para. 76.

Note: The estimated Government's financing includes taxes and duties by way of exemptions and social taxes as part of cash contributions.

Source: ADB estimates.

**Table 14: Detailed Cost Estimates by Financier (JFPR Grant and Government – Original Project)<sup>a</sup>**  
(\$)

Item	JFPR Grant		Government		Total Costs
	Amount	% of Cost Category	Amount	% of Cost Category	
<b>A. Investment Cost</b>					
1 Civil Works	385,978	87.0	57,897	13.0	443,875
2 Mechanical and Equipment	1,155,000	93.9	75,000	6.1	1,230,000
a Vehicles	0	0.0	0	0.0	0
b Machinery	500,000	87.0	75,000	13.0	575,000
c Pumps, Motors and Auxiliaries	0	0.0	0	0.0	0
d Supplies, Others	655,000	100.0	0	0.0	655,000
3 Survey, Study and Design	152,000	87.0	22,800	13.0	174,800
4 Training and Workshops	78,000	100.0	0	0.0	78,000
5 Consulting Services	978,900	87.0	146,835	13.0	1,125,735
a Project Management	0	0.0	0	0.0	0
b Capacity Development	978,900	87.0	146,835	13.0	1,125,735
<b>Subtotal</b>	<b>2,749,878</b>	<b>90.1</b>	<b>302,532</b>	<b>9.9</b>	<b>3,052,410</b>
<b>B. Recurrent Costs</b>					
1 PMO and PIO Salaries	0	0.0	0	0.0	0
2 Office Accommodation	0	0.0	0	0.0	0
3 O&M Equipment	0	0.0	0	0.0	0
4 Office/Vehicle O&M	0	0.0	0	0.0	0
<b>Subtotal</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>0</b>
<b>Total Base Cost</b>	<b>2,749,878</b>	<b>90.1</b>	<b>302,532</b>	<b>9.9</b>	<b>3,052,410</b>
<b>C. Contingencies</b>					
1 Physical	126,867	100.0	0	0.0	126,867
2 Price	123,255	100.0	0	0.0	123,255
<b>Subtotal</b>	<b>250,122</b>	<b>100.0</b>	<b>0</b>	<b>0.0</b>	<b>250,122</b>
<b>D. Financing Charges During Construction</b>					
1 Interest	0	0.0	0	0.0	0
2 Commitment	0	0.0	0	0.0	0
<b>Subtotal</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>0</b>
<b>TOTAL</b>	<b>3,000,000</b>	<b>90.8</b>	<b>302,532</b>	<b>9.2</b>	<b>3,302,532</b>

<sup>a</sup> Project Implementation Group (PIG) took up the PMO's role on 1 December 2017 as described in para. 76.  
Source: ADB estimates.

**Table 15: Detailed Cost Estimate by Financier (Additional Financing)**  
(\$)

	ADB		GCF		Government <sup>a</sup>		Total	Taxes and Duties
	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category		
<b>A. Investment Cost</b>								
1. Civil Works								
a. Office Building and Ancillary	0	0%	1,487,493	94%	89,250	6%	1,576,742	89,250
b. Mixed-use Buildings	3,523,426	94%	0	0%	211,406	6%	3,734,831	211,406
2. Equipment	637,855	31%	1,123,945	54%	317,124	15%	2,078,924	317,124
3. Study, Survey & Design	60,100	31%	105,900	54%	29,880	15%	195,880	29,880
4. Training & Workshops	57,732	31%	101,729	54%	28,703	15%	188,164	28,703
5. Consulting Services	905,118	31%	1,594,882	54%	450,000	15%	2,950,000	450,000
<b>Subtotal</b>	<b>5,184,230</b>	<b>48%</b>	<b>4,413,949</b>	<b>41%</b>	<b>1,126,362</b>	<b>11%</b>	<b>10,724,542</b>	<b>1,126,362</b>
<b>B. Recurrent Cost</b>								
1. PIG Salaries	675,000	100%	0	0%	0	0%	675,000	0
2. O&M Equipment	77,134	31%	135,916	54%	38,349	15%	251,399	38,349
3. Office/Vehicle O&M and Audit	44,170	31%	77,830	54%	21,960	15%	143,960	21,960
<b>Subtotal</b>	<b>796,304</b>	<b>74%</b>	<b>213,746</b>	<b>20%</b>	<b>60,309</b>	<b>6%</b>	<b>1,070,359</b>	<b>60,309</b>
<b>Total Base Cost</b>	<b>5,980,534</b>	<b>51%</b>	<b>4,627,695</b>	<b>39%</b>	<b>1,186,671</b>	<b>10%</b>	<b>11,794,901</b>	<b>1,186,671</b>
<b>C. Contingencies</b>								
1. Physical	247,174	50%	199,487	40%	50,334	10%	496,995	50,334
2. Price	272,292	55%	172,818	35%	48,710	10%	493,819	48,710
<b>Subtotal</b>	<b>519,466</b>	<b>52%</b>	<b>372,305</b>	<b>38%</b>	<b>99,044</b>	<b>10%</b>	<b>990,814</b>	<b>99,044</b>
<b>Total Project Cost (A+B+C)</b>	<b>6,500,000</b>	<b>51%</b>	<b>5,000,000</b>	<b>39%</b>	<b>1,285,715</b>	<b>10%</b>	<b>12,785,715</b>	<b>1,285,715</b>

<sup>g</sup> The estimated Government's financing comprises taxes and duties.

Source: ADB estimates.

## D. Detailed Cost Estimate by Outputs/Components

**Table 16: Project Cost Summary by Outputs/Components (Original Project)<sup>a</sup>**  
(\$)

Item		Total Costs	Output 2		Output 3	
			Amount	% of Cost Category	Amount	% of Cost Category
<b>A. Investment Cost</b>						
1	Civil Works	14,520,437	14,076,562	96.9	443,875	3.1
2	Mechanical and Equipment					
a	Vehicles	295,500	295,500	100.0	0	0.0
b	Machinery	3,232,900	2,657,900	82.2	575,000	17.8
c	Pumps, Motors and Auxiliaries	4,518,834	4,518,834	100.0	0	0.0
d	Supplies, Others	749,000	94,000	12.6	655,000	87.4
3	Survey, Study and Design	529,300	354,500	67.0	174,800	33.0
4	Training and Workshops	109,902	31,902	29.0	78,000	71.0
5	Consulting Services		1,910,468		1,125,735	
a	Project Management	1,816,968	1,816,968	100.0	0	0.0
b	Capacity Developemnt	1,219,235	93,500	7.7	1,125,735	92.3
	<b>Subtotal</b>	<b>26,992,076</b>	<b>23,939,666</b>	<b>88.7</b>	<b>3,052,410</b>	<b>11.3</b>
<b>B. Recurrent Costs</b>						
1	PMO and PIO Salaries	997,988	997,988	100.0	0	0.0
2	Office Accommodation	274,000	274,000	100.0	0	0.0
3	O&M Equipment	76,041	76,041	100.0	0	0.0
4	Office/Vehicle O&M	202,458	202,458	100.0	0	0.0
	<b>Subtotal</b>	<b>1,550,486</b>	<b>1,550,486</b>	<b>100.0</b>	<b>0</b>	<b>0.0</b>
	<b>Total Base Cost</b>	<b>28,542,562</b>	<b>25,490,152</b>	<b>89.3</b>	<b>3,052,410</b>	<b>10.7</b>
<b>C. Contingencies</b>						
1	Physical	1,209,983	1,083,116	89.5	126,867	10.5
2	Price	1,156,728	1,033,473	89.3	123,255	10.7
	<b>Subtotal</b>	<b>2,366,711</b>	<b>2,116,589</b>	<b>89.4</b>	<b>250,122</b>	<b>10.6</b>
<b>D. Financing Charges During Construction</b>						
1	Interest	699,000	699,000	100.0	0	0.0
2	Commitment	0	0	0.0	0	0.0
	<b>Subtotal</b>	<b>699,000</b>	<b>699,000</b>	<b>100.0</b>	<b>0</b>	<b>0.0</b>
	<b>TOTAL</b>	<b>31,608,272</b>	<b>28,305,741</b>	<b>89.6</b>	<b>3,302,532</b>	<b>10.4</b>

<sup>a</sup> Project Implementation Group (PIG) took up the PMO's role on 1 December 2017 as described in para. 76.

Notes: The total cost includes taxes and duties including social tax of \$3.6 million to be financed from the government resources. All prices are year-end-2015 prices. Physical contingencies computed at 5% for all expenditure accounts given the detailed technical due diligence. Price contingencies computed at 1.1% on foreign exchange costs and 5% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate. Financing charges include interest during construction for ADB loan which was computed at the rate of 1% per annum.

Source: ADB estimates.

**Table 17: Project Cost Summary by Outputs/Components (Additional Financing)**  
(\$)

	Output 1		Output 3		Total
	Amount	% of Cost Category	Amount	% of Cost Category	
<b>A. Investment Cost</b>					
1. Civil Works					
a. Office Building and Ancillary	1,576,742	100%	0	0%	1,576,742
b. Mixed-use Buildings	3,734,831	100%	0	0%	3,734,831
2. Equipment	1,831,124	88%	247,800	12%	2,078,924
3. Study, Survey & Design	195,880	100%	0	0%	195,880
4. Training & Workshops	126,532	67%	61,632	33%	188,164
5. Consulting Services	2,275,668	77%	674,332	23%	2,950,000
<b>Subtotal</b>	<b>9,740,778</b>	<b>91%</b>	<b>983,764</b>	<b>9%</b>	<b>10,724,542</b>
<b>B. Recurrent Cost</b>					
1. PIG Salaries	506,250	75%	168,750	25%	675,000
2. O&M Equipment	94,149	37%	157,250	63%	251,399
3. Office/Vehicle O&M and Audit	107,970	75%	35,990	25%	143,960
<b>Subtotal</b>	<b>708,369</b>	<b>66%</b>	<b>361,990</b>	<b>34%</b>	<b>1,070,359</b>
<b>Total Base Cost</b>	<b>10,449,147</b>	<b>89%</b>	<b>1,345,753</b>	<b>11%</b>	<b>11,794,901</b>
<b>C. Contingencies</b>					
1. Physical	451,631	91%	45,364	9%	496,995
2. Price	439,561	89%	54,258	11%	493,819
<b>Subtotal</b>	<b>891,193</b>	<b>90%</b>	<b>99,621</b>	<b>10%</b>	<b>990,814</b>
<b>Total Project Cost (A+B+C)</b>	<b>11,340,340</b>	<b>89%</b>	<b>1,445,375</b>	<b>11%</b>	<b>12,785,715</b>

Source: ADB estimates.

## E. Detailed Cost Estimates by Year

91. Accumulative by year project expenditures is given in Table 18 and Table 19.

**Table 18: Project Components by Year, Including Contingencies (Original Project)<sup>a</sup>**  
(\$ million)

Item	Total Costs	Year 1	Year 2	Year 3	Year 4	Year 5
<b>A. Investment Cost</b>						
1 Civil Works	14,520,437	363,011	3,741,433	5,048,272	3,823,715	1,544,006
2 Mechanical and Equipment						
a Vehicles	295,500	7,388	76,141	102,736	77,815	31,422
b Machinery	3,232,900	80,823	833,011	1,123,972	851,330	343,765
c Pumps, Motors and Auxiliaries	4,518,834	112,971	1,164,353	1,571,048	1,189,960	480,503
d Supplies, Others	749,000	18,725	192,992	260,402	197,237	79,644
3 Survey, Study and Design	529,300	13,233	136,383	184,020	139,382	56,282
4 Training and Workshops	109,902	2,748	28,318	38,209	28,941	11,686
5 Consulting Services						
a Project Management	1,816,968	45,424	468,172	631,699	478,468	193,204
b Capacity Development	1,219,235	30,481	314,156	423,887	321,065	129,645
<b>Subtotal</b>	<b>26,992,076</b>	<b>674,802</b>	<b>6,954,958</b>	<b>9,384,245</b>	<b>7,107,913</b>	<b>2,870,157</b>
<b>B. Recurrent Costs</b>						
1 PMO and PIO Salaries	997,988	24,950	257,148	346,967	262,803	106,119
2 Office Accommodation	274,000	6,850	70,601	95,261	72,153	29,135
4 O&M Equipment	76,041	1,901	19,593	26,437	20,024	8,086
5 Office/Vehicle O&M	202,458	5,061	52,167	70,388	53,314	21,528
<b>Subtotal</b>	<b>1,550,486</b>	<b>38,762</b>	<b>399,509</b>	<b>539,052</b>	<b>408,295</b>	<b>164,868</b>
<b>Total Base Cost</b>	<b>28,542,562</b>	<b>713,564</b>	<b>7,354,467</b>	<b>9,923,297</b>	<b>7,516,208</b>	<b>3,035,026</b>
<b>C. Contingencies</b>						
1 Physical	1,209,983	30,250	311,772	420,671	318,629	128,662
2 Price	1,156,728	28,918	298,050	402,156	304,605	122,999
<b>Subtotal</b>	<b>2,366,711</b>	<b>59,168</b>	<b>609,823</b>	<b>822,826</b>	<b>623,234</b>	<b>251,660</b>
<b>D. Financing Charges During Construction</b>						
1 Interest	699,000	62,910	111,840	146,790	174,750	202,710
2 Commitment						
<b>Subtotal</b>	<b>699,000</b>	<b>62,910</b>	<b>111,840</b>	<b>146,790</b>	<b>174,750</b>	<b>202,710</b>
<b>TOTAL</b>	<b>31,608,272</b>	<b>835,642</b>	<b>8,076,129</b>	<b>10,892,914</b>	<b>8,314,192</b>	<b>3,489,396</b>
<b>% Total Project Costs</b>	<b>100.0%</b>	<b>2.6%</b>	<b>25.6%</b>	<b>34.5%</b>	<b>26.3%</b>	<b>11.0%</b>

<sup>a</sup> Project Implementation Group (PIG) took up the PMO's role on 1 December 2017 as described in para. 76.

Source: ADB estimates.

**Table 19: Project Components by Year, Including Contingencies (Additional Financing)**  
(\$)

	Total	Year 1	Year 2	Year 3	Year 4	Year 5
<b>A. Investment Cost</b>						
1. Civil Works						
a. Office Building and Ancillary	1,576,742	520,847	595,047	460,847	0	0
b. Mixed-use Buildings	3,734,831	0	1,244,944	1,244,944	1,244,944	0
2. Equipment	2,078,924	0	1,062,944	1,015,980	0	0
3. Study, Survey & Design	195,880	148,680	11,800	11,800	11,800	11,800
4. Training & Workshops	188,164	36,716	54,416	54,416	36,716	5,900
5. Consulting Services	2,950,000	295,000	1,032,500	1,032,500	590,000	0
<b>Subtotal</b>	<b>10,724,542</b>	<b>1,001,243</b>	<b>4,001,651</b>	<b>3,820,487</b>	<b>1,883,460</b>	<b>17,700</b>
<b>B. Recurrent Cost</b>						
1. PIG Salaries	675,000	164,875	164,875	127,375	112,875	105,000
2. O&M Equipment	251,399	113,339	68,440	38,940	15,340	15,340
3. Office/Vehicle O&M and Audit	143,960	73,160	17,700	17,700	17,700	17,700
<b>Subtotal</b>	<b>1,070,359</b>	<b>351,374</b>	<b>251,015</b>	<b>184,015</b>	<b>145,915</b>	<b>138,040</b>
<b>Total Base Cost</b>	<b>11,794,901</b>	<b>1,352,617</b>	<b>4,252,666</b>	<b>4,004,502</b>	<b>2,029,375</b>	<b>155,740</b>
<b>C. Contingencies</b>						
1. Physical	496,995	53,487	183,740	173,206	84,025	2,537
2. Price	493,819	21,092	134,090	192,983	133,002	12,653
<b>Subtotal</b>	<b>990,814</b>	<b>74,579</b>	<b>317,830</b>	<b>366,189</b>	<b>217,027</b>	<b>15,190</b>
<b>Total Project Cost (A+B+C)</b>	<b>12,785,715</b>	<b>1,427,196</b>	<b>4,570,496</b>	<b>4,370,691</b>	<b>2,246,402</b>	<b>170,930</b>

Source: ADB estimates.

## F. Contract Awards and Disbursement Projection

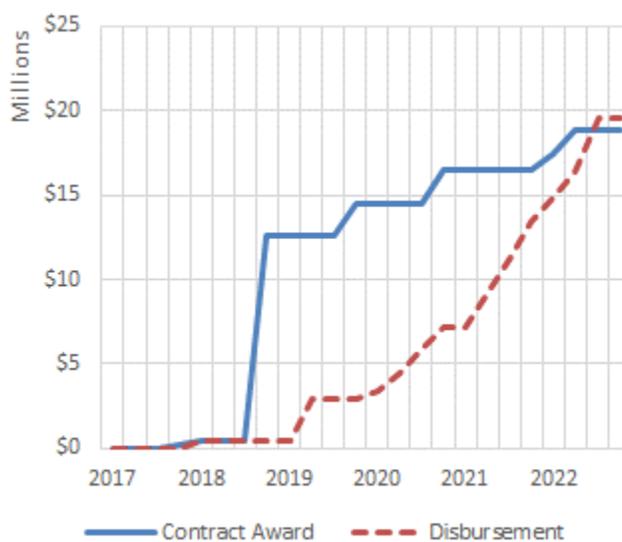
92. The forecasted contract award and disbursement profile as of May 2018 for the original and additional project financing is shown below.

**Table 20: Asian Development Fund (Loan – Original Project)**  
(\$ million equivalent)

Year	Projections for Contract Award					Projections for Disbursement				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2017	0.00	0.00	0.00	0.18	0.18	0.00	0.00	0.00	0.00	0.00
2018	0.27	0.00	0.00	12.20	12.47	0.46	0.00	0.00	0.00	0.46
2019	0.00	0.00	0.00	1.79	1.79	0.00	2.44	0.00	0.00	2.44
2020	0.00	0.00	0.00	2.02	2.02	0.50	1.00	1.50	1.30	4.30
2021	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	2.27	6.27
2022	0.92	1.50	0.00	0.00	2.42	1.42	1.50	3.20	0.00	6.12
Total					18.88					19.59

Source: ADB estimates.

**Figure 5: Contract and Disbursement S-curve**  
(\$ million)



Source: ADB estimates.

**Table 21: Asian Development Fund (Grant – Original Project)**  
(\$ million)

Year	Projections for Contract Award					Projections for Disbursement				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2017	0.00	0.00	2.06	0.00	2.06	0.00	0.00	0.21	0.00	0.21
2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.51
2019	2.46	0.00	0.00	0.00	2.46	0.00	0.30	0.30	0.40	1.00
2020	0.00	0.17	0.00	0.00	0.17	0.25	0.25	0.50	0.56	1.56
2021	0.00	0.16	0.50	0.50	1.16	0.00	0.50	0.50	1.00	2.00
2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.00	0.57
<b>Total</b>					<b>5.85</b>					<b>5.85</b>

Source: ADB estimates.

**Figure 6: Contract and Disbursement S-curve**  
(\$ million)



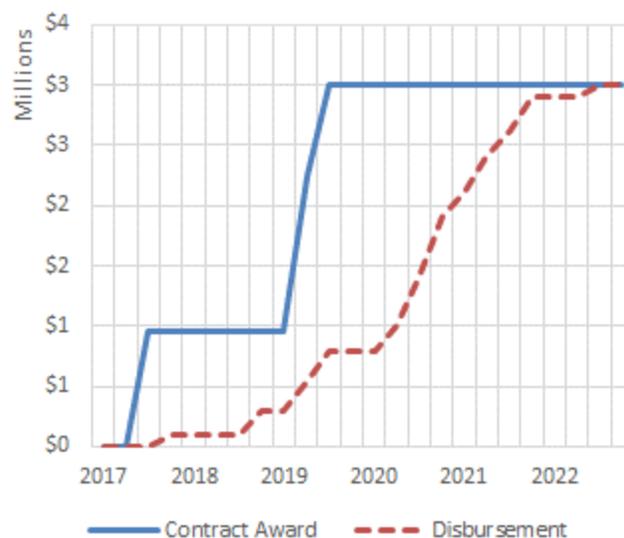
Source: ADB estimates.

**Table 22: JFPR Grant (Original Project)**  
(\$ million)

Year	Projections for Contract Award					Projections for Disbursement				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2017	0.00	0.00	0.96	0.00	0.96	0.00	0.00	0.00	0.10	0.10
2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20
2019	0.00	1.29	0.75	0.00	2.04	0.00	0.25	0.25	0.00	0.50
2020	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.40	0.52	1.12
2021	0.00	0.00	0.00	0.00	0.00	0.20	0.30	0.20	0.28	0.98
2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.10
<b>Total</b>					<b>3.00</b>					<b>3.00</b>

Source: ADB estimates.

**Figure 7: Contract and Disbursement S-curve**  
(\$ million)



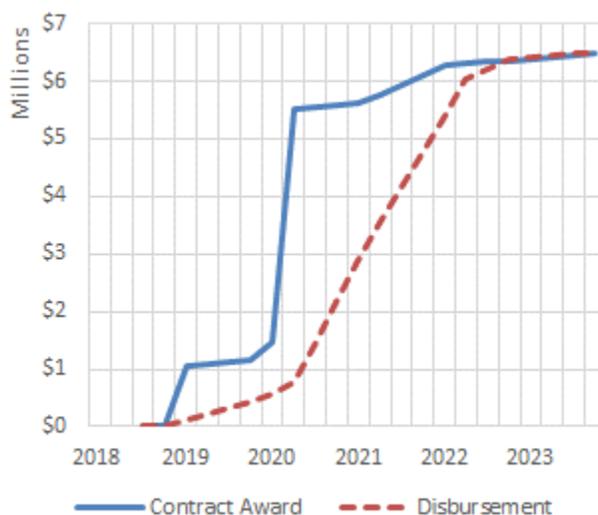
Source: ADB estimates.

**Table 23: Asian Development Fund Grant (Additional Financing)**  
(\$ million)

Projections for Contract Award						Projections for Disbursement					
Year	Q1	Q2	Q3	Q4	Total	Year	Q1	Q2	Q3	Q4	Total
2018	0.00	0.00	0.00	0.00	0.00	2018	0.00	0.00	0.00	0.03	0.03
2019	1.06	0.04	0.03	0.03	1.16	2019	0.10	0.10	0.11	0.11	0.41
2020	0.31	4.03	0.03	0.03	4.41	2020	0.11	0.22	0.70	0.76	1.78
2021	0.03	0.17	0.16	0.16	0.53	2021	0.65	0.65	0.62	0.62	2.55
2022	0.16	0.04	0.03	0.03	0.27	2022	0.62	0.63	0.18	0.18	1.62
2023	0.03	0.04	0.03	0.03	0.14	2023	0.03	0.04	0.03	0.00	0.10
Total					6.50	Total					6.50

Source: ADB estimates

**Figure 8: Contract and Disbursement S-curve**  
(\$ million)



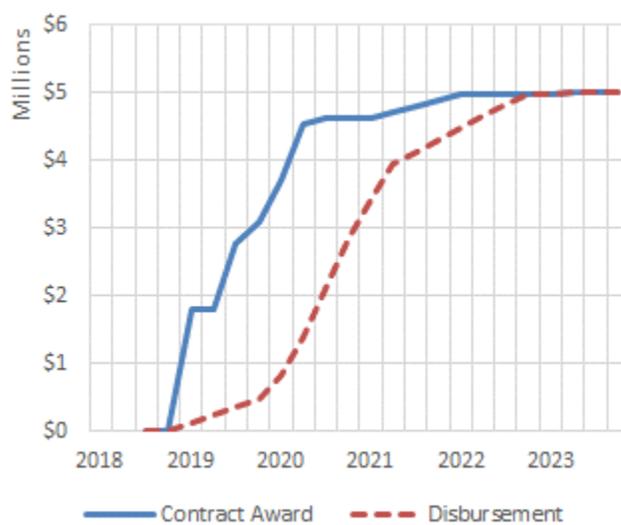
Source: ADB estimates

**Table 24: Green Climate Fund Grant (Additional Financing)**  
(\$ million)

Projections for Contract Award						Projections for Disbursement					
Year	Q1	Q2	Q3	Q4	Total	Year	Q1	Q2	Q3	Q4	Total
2018	0.00	0.00	0.00	0.00	0.00	2018	0.00	0.00	0.00	0.00	0.00
2019	1.80	0.00	0.97	0.33	3.11	2019	0.11	0.12	0.13	0.13	0.49
2020	0.60	0.84	0.07	0.00	1.51	2020	0.35	0.57	0.68	0.78	2.38
2021	0.00	0.10	0.09	0.09	0.28	2021	0.56	0.52	0.17	0.17	1.43
2022	0.09	0.00	0.00	0.00	0.10	2022	0.17	0.18	0.17	0.17	0.70
2023	0.00	0.00	0.00	0.00	0.00	2023	0.00	0.00	0.00	0.00	0.00
Total					5.00	Total					5.00

Source: ADB estimates

**Figure 9: Contract and Disbursement S-curve**  
(\$ million)



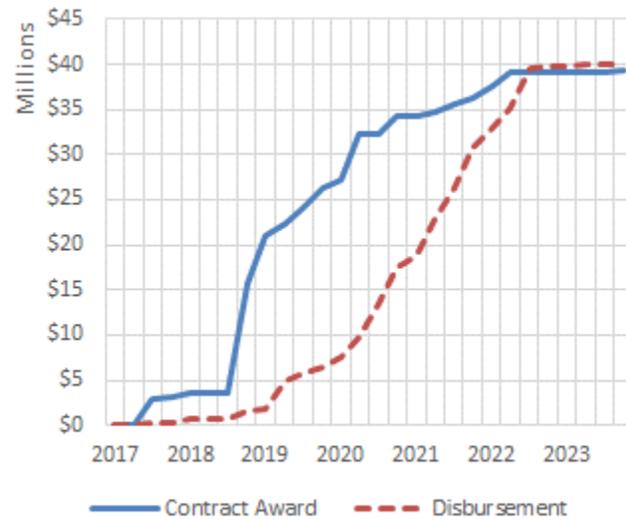
Source: ADB estimates

**Table 25: Total Project (Original and Additional Financing)**  
(\$ million)

Year	Projections for Contract Award					Projections for Disbursement					
	Q1	Q2	Q3	Q4	Total	Year	Q1	Q2	Q3	Q4	Total
2017	0.00	0.00	3.01	0.18	3.20	2017	0.00	0.00	0.21	0.10	0.30
2018	0.27	0.00	0.00	12.20	12.47	2018	0.46	0.00	0.00	0.75	1.21
2019	5.32	1.33	1.76	2.16	10.56	2019	0.21	3.21	0.79	0.64	4.84
2020	0.91	5.04	0.10	2.05	8.11	2020	1.21	2.23	3.78	3.93	11.15
2021	0.03	0.42	0.76	0.76	1.97	2021	1.41	3.97	3.50	4.35	13.22
2022	1.18	1.54	0.03	0.03	2.78	2022	2.22	2.30	4.23	0.36	9.12
2023	0.03	0.04	0.03	0.03	0.14	2023	0.03	0.04	0.03	0.00	0.11
<b>Total</b>					<b>39.23</b>	<b>Total</b>					<b>39.94</b>

Source: ADB estimates

**Figure 10: Contract and Disbursement S-curve**  
(\$ million)

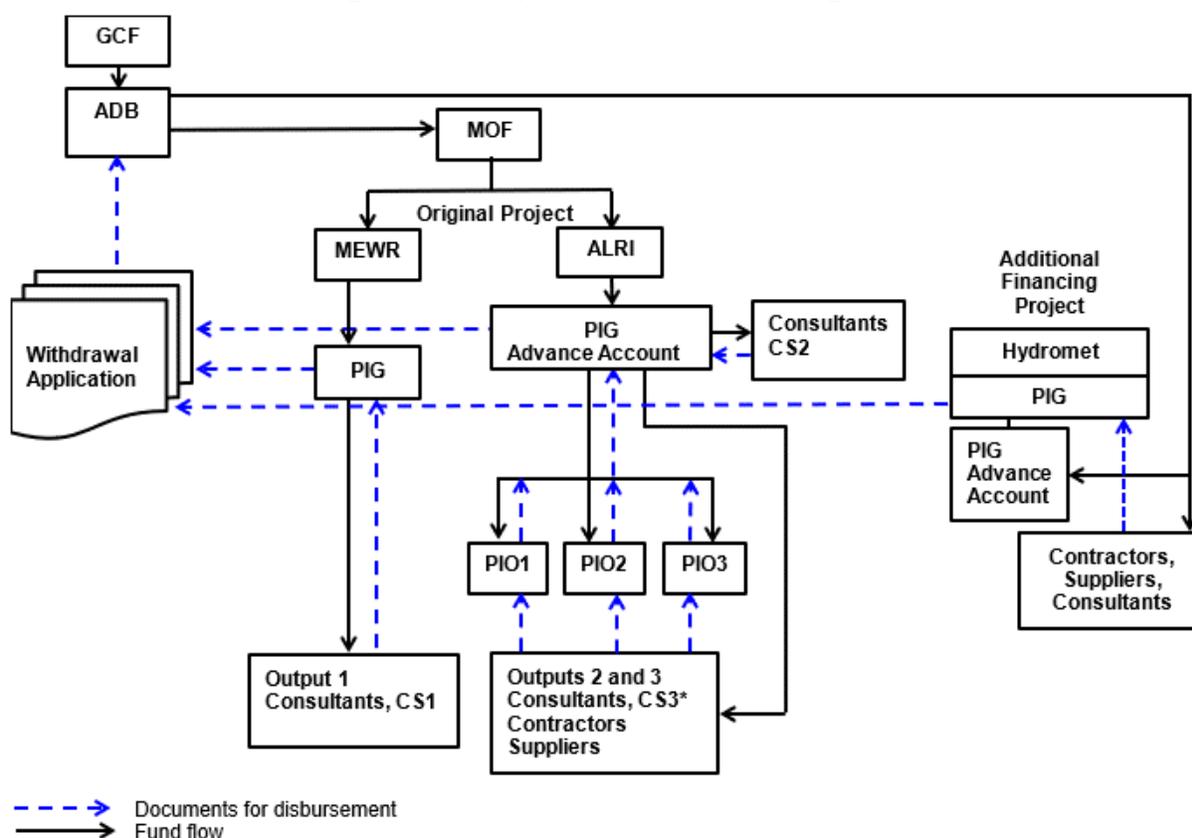


Source: ADB estimates

## G. Fund Flow Diagram

93. The fund flow arrangement is depicted in Figure 11.

Figure 11: Proposed Funds Flow Diagram



ADB = Asian Development Bank; MOF = Ministry of Finance; ALRI = Agency for Land Reclamation and Irrigation; CS1 = Consulting Service package 1; CS2 = Consulting Service package 2; CS3 = Consulting Service package 3 (\* Output 3 only); GCF = Green Climate Fund; MEWR = Ministry of Energy and Water Resources; PIG = Project Implementation Group; PIOs = Project Implementation Offices; PMO = Project Management Office.  
Source: Asian Development Bank.

## V. FINANCIAL MANAGEMENT

### A. Financial Management Assessment

94. The country public financial management (PFM) system was assessed by reviewing a public expenditure and financial accountability (PEFA) assessment completed in November 2012. Financial Management Assessments (FMA) have been performed on EAs with reference to the Guidelines for the Financial Management and Analysis of Projects,<sup>23</sup> and Financial Management Technical Guidance Note.<sup>24</sup> The assessments focus on accountability and transparency, and covers (i) internal controls, (ii) funds flow arrangements, (iii) accounting and financial reporting, and (iv) independent audit.

95. **PFM system Assessment.** The latest PEFA report indicates that overall, less than one-third indicators for PFM system of Tajikistan scores well. Relatively strong performance was found for budget credibility, and for comprehensiveness and transparency, but weak in most of other dimensions. Areas which were found to be weaker include overall internal control, accounting, recording and reporting, and external scrutiny and audit.

<sup>23</sup> ADB. 2005. *Guidelines for the Financial Management and Analysis of Project*. Manila.

<sup>24</sup> ADB. 2015. *Financial Management Technical Guidance Note*. Manila.

96. **Implementation Arrangement.** ALRI will be the EA to implement outputs 2 and 3 of the Project. MEWR will be the EA responsible for implementing output 1. A PIG has been set up in ALRI to implement outputs 2 and 3. MEWR will implement output 1 through its PIG.

97. At the field level, three Project Implementation Offices (PIOs) will be established at Hamadoni, Farkhor, and Vose, to implement outputs 2 and 3. The PIOs will be led by PIO Heads, who report to PIG Project Director. The PIOs will be supported by a team of international and national consultants in project preparation and implementation, including capacity development of various agencies.

98. Hydromet will be the EA to implement the additional financing components under outputs 1 and 3. A new project implementation group will be established in Hydromet (H-PIG) to be supported by a team of international and national consultants in project implementation.

99. **Experiences with Donors.** ALRI are experienced in implementing projects financed by international donors, including World Bank, ADB, Global Agriculture and Food Security Program (GAFSP), Kuwait Development fund (KDF), and Islamic Development Bank (IDB).

100. Hydromet has experience in implementing projects financed by international donors, including World Bank, ADB, Finnish Meteorological Agency, WMO and Global Facility for Disaster Risk and Recovery.

101. **Staffing.** PIG/ALRI took up the PMO's role to implement Outputs 2 and 3 of the project on 1 December 2017. PIG has a chief accountant, a cashier, and a financial management specialist. The accountant and FMS will be trained with ADB policies and procedures on disbursement, financial reporting and auditing.

102. The Hydromet PIG will including one chief accountant and one cashier position.

103. **Planning and Budgeting.** The PIG/H-PIG will prepare the project's annual budgets including required social tax for PIG and PIO/H-PIG staff for ALRI's/Hydromet's approval. Once approved, it will be submitted to MOF for final approval. During project implementation the actual expenditures are compared with planned budgeted expenditures on a monthly and quarterly basis, and reports on an analysis of variations is prepared. Significant variations in budgeted expenditure need to be approved by the Project Director prior to actual expenditure.

104. **Safeguard Over Assets.** ALRI/Hydromet and the PIGs have procedures that assure sufficient controls are undertaken over project assets, and safeguards are in place to protect assets from fraud, waste, and abuse. An annual physical inventory of all stocks and materials is carried out, and the fixed assets inventory is required to be updated every two years.

105. **Internal Audit.** ALRI/Hydromet do not have a department or unit for conducting internal audit of either the ALRI/Hydromet or project operations, a deficiency in the internal control environment of the agency's financial management system. Although the PMOs of ongoing projects executed under ALRI prepare monthly, quarterly, and annual financial statements to the financial and economic department of the ministry, these are not intended for internal audit purposes.

106. **Project Financial Reporting and External Audit.** The government engaged one audit firm each year to audit several ADB financed projects for fiscal year 2011 (FY2011), FY2012, FY2013, and FY2014. Quality of project audit submissions, including audited annual project financial statements (APFS), audit report (AR), and management letter (ML), is one of the best among

developing member countries in Central and West Asia. However, the audit firm pointed out that EAs and IAs maintain disbursement records without preparing APFS, and the audit firm had to help prepare APFS. These raises concerns on (i) audit firm's independence in performing the audit; and (ii) capacity of project accountants to prepare APFS. ADB Financial Audit Consultation Mission (June 2014) recommended that accounting software be installed in all PMOs for ADB financed projects. The PIG of ALRI will have 1C accounting software installed. The software will similarly be purchased for H-PIG.

107. **Risk Assessment and Risk Mitigation Measures.** The assessments and proposed measures are shown in Table 26 and Table 27. The capacity of Hydromet and H-PIG is deemed sufficient to administer the use of an advance (imprest) account as proposed.

**Table 26: Financial Management Risk (Original Project)**

Risk Type	Risk Description	Risk Rating <sup>a</sup>	Risk Mitigation Measures
<b>Inherent Risk</b>			
1. Internal controls	Internal control is less effective for payroll controls and non-salary expenditure.  Procurement related internal control is strong in legal and regulatory framework, but lack of information and the basis on contract awards, weak in using competitive procurement methods, and an independent administrative procurement complaint system.  Internal audit is less effective without meeting recognized professional standards; recommended measures do not address the underlying cause of the problems.	S	Capacity building and information system development are essential to improve internal control.
2. Accounting and financial reporting	Accounts reconciliation is strong in all dimensions. Information on resources received by service delivery units, and quality and timeliness of in-year budget reports, are weak.  Consolidated government statements are prepared, but not fully compliant with recognized international accounting standards.	S	The PMO/PIG will implement the Project applying international standards on accounting, reporting, and auditing  Training on financial reporting and auditing should be provided.
3. External audit	The Law on the Supreme Audit Institution (SAI) was adopted in 2011, but no SAI has yet been established. External audit is not yet in place.	H	The Project will be audited annually by independent private auditors in accordance with international standards on auditing.
Overall inherent risks		S	
<b>Control risks</b>			
1. Staffing	Lack of capacity for the PMO to manage ADB funds. <sup>b</sup>	M	An accounting and financial management staff will be recruited to strengthen PIG/ALRI capacity. Training and consultant support should be provided.
2. Funds flow	The fund flow risks concerns the delays of payments to contractors, which will delay project implementation activities.	M	The majority funds will be through the PIG to avoid delays.  PIG manages CS1 for Output 1.

<b>Risk Type</b>	<b>Risk Description</b>	<b>Risk Rating<sup>a</sup></b>	<b>Risk Mitigation Measures</b>
3. Accounting and financial reporting	Low risk for PMO, as staff are experienced following cash basis IPSAS with 1C accounting software. <sup>b</sup>  Moderate risk for MEWR to prepare Project FS due to low capacity.	M	Majority funds would be through PIG/ALRI. IC accounting software will be installed in PIG/ALRI.  PIG manages CS1 for Output 1 only using direct payment procedure.
4. Internal Controls and internal audit	Internal control environment in PMO and MEWR needs strengthening.	S	Establishing a well-staffed and resourced internal control system is recommended.
5. External Audit	There would be low risk in conducting audit by private audit firm(s) on project FS prepared by PMO and PIG. <sup>b</sup>	L	Majority funds will pass through PIG.  Project FS prepared by PIGs will be audited by independent private audit firms.
6. Rotation of auditors	The same audit firm to audit an organization for a long period of time has risks due to complacency and familiarity with Management and staff.	L	It is proposed that auditors be rotated every three to five years in line with international best practice.
<b>Overall control risks</b>		<b>M</b>	
<b>Overall risks</b>		<b>S</b>	

ADB = Asian Development Bank; CS1 = Consulting Service package 1; FS = financial statements; IPSAS = International Public Sector Accounting Standards; MEWR = Ministry of Energy and Water Resources; PIG = Project Implementation Group; PMO = Project Management Office.

<sup>a</sup> H = High, S = Substantial, M = Moderate, L = Low.

<sup>b</sup> PIG/ALRI took up the PMO's role to implement Outputs 2 and 3 of the project on 1 December 2017.

Source: Asian Development Bank.

**Table 27: Financial Management Risk (Additional Financing)**

<b>Risk Type</b>	<b>Risk Description</b>	<b>Risk Rating<sup>a</sup></b>	<b>Risk Mitigation Measures</b>
<b>Inherent Risk</b>			
<b>1. Internal controls</b>	<p>Internal control is less effective for payroll controls and non-salary expenditure.</p> <p>Procurement related internal control is strong in legal and regulatory framework, but lack of information and the basis on contract awards, weak in using competitive procurement methods, and an independent administrative procurement complaint system.</p> <p>Internal audit is less effective without meeting recognized professional standards; recommended measures do not address the underlying cause of the problems.</p>	S	Capacity building of PIG finance and procurement staff to be conducted in ADB's financial and procurement policies and procedures.
<b>2. Accounting &amp; financial reporting</b>	Information on resources received by service delivery units, and quality and timeliness of in-year budget reports, are weak. Consolidated government statements are prepared in a timely manner on a cash basis, but not fully compliant with recognized international accounting standards.	S	Capacity building of PIG finance and procurement staff to be conducted applying international standards on accounting, reporting, and auditing Training on financial reporting and auditing should be provided. Regular review of external audit reports and management letter should be used to update financial management action plan as required.
<b>3. External audit</b>	<p>The Law on the Supreme Audit Institution was adopted in 2011, but no organization has yet been established. External audit is not yet in place, and there are no audit reports for parliament to examine.</p> <p>Legislative scrutiny of the annual budget law is strong in all dimensions.</p>	H	The project will be audited annually by independent private auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with international standards on auditing or the national equivalent acceptable to ADB.
<b>Overall inherent risks</b>		<b>S</b>	
<b>Control risks</b>			

<b>Risk Type</b>	<b>Risk Description</b>	<b>Risk Rating<sup>a</sup></b>	<b>Risk Mitigation Measures</b>
<b>1. Staffing</b>	Lack of capacity for the PIG to manage ADB funds.	M	Hiring of professional staff having experience of implementing WB/ADB financed projects. Capacity building of PIG finance and procurement staff to be conducted in ADB's financial and procurement policies and procedures. Consultant support would be provided to strengthen PIG staff knowledge and capacity.
<b>2. Funds flow</b>	The fund flow risks concerns the delays of payments to contractors, which will delay project implementation activities.	M	Majority of funds for the project will be under control of PIG to avoid delays. Consulting Service will be managed by ADB using direct payment procedure only.
<b>3. Accounting and financial reporting</b>	The risk of inaccurate accounting and incorrect & delayed reporting due to un-familiarity with ADB requirements.	M	Hiring of professional staff having experience of implementing WB/ADB financed projects.  Capacity building of PIG finance and procurement staff to be conducted in ADB's financial and procurement policies and procedures.  Using appropriate software for accounting and financial reporting.
<b>4. Internal Controls and internal audit</b>	Internal control environment needs strengthening.	S	Establishing a well-staffed and resourced internal control system is recommended.
<b>5. External Audit</b>	There would be low risk in conducting audit by private audit firm(s) on project FS prepared by PIG.	L	Project FS prepared by PIG will be audited by an independent professional audit firm competitively selected.
<b>6. Rotation of auditors</b>	The same audit firm to audit an organization for a long period of time has risks due to complacency and familiarity with Management and staff.	L	It is proposed that auditors be rotated every three to five years in line with international best practice
<b>Overall Control Risk</b>		<b>M</b>	
<b>Overall Risk</b>		<b>S</b>	

ADB = Asian Development Bank; FS = financial statements; IPSAS = International Public Sector Accounting Standards; PIG = Project Implementation Group.

<sup>a</sup> H = High, S = Substantial, M = Moderate, L = Low.

Source: Asian Development Bank

**Table 28: Financial Management Action Plan (Additional Financing)**

Activity	Target Date
Mobilization of ADB staff consultant for project startup and readiness, to provide training and support for procurement and financial management systems.	April 2018
Establishment of Hydromet PIG, staffed with qualified chief accountant, procurement specialist, and cashier	December 2018
Procurement and installation of accounting software (e.g. 1C Software) for PIG	December 2018
Advance (imprest) accounts opened by PIG in local bank	December 2018
PIC mobilized to support PIG on project implementation including training on financial management and procurement	December 2018 (training through 2019)
Annual project audit performed by independent firm on IPSAS cash basis. Firm changed every 3-5 years.	Annual
PIC training for Hydromet staff on management, administration and control	Through to Q1 2020

PIG = project implementation group; PIC = project implementation consultant

## B. Disbursement

108. The loan, grants, and delegated TA grant proceeds will be disbursed in accordance with ADB's Loan Disbursement Handbook (2017, as amended from time to time),<sup>25</sup> and detailed arrangements agreed upon between the government and ADB.

109. **Direct payment.** The procedures will generally be used for civil works contracts and consulting services.<sup>26</sup> All disbursements for MEWR components of output 1 will be through direct payment. Withdrawal application will be prepared by the relevant unit (e.g. PIG or H-PIG).

110. **Advance (imprest) account.** The ALRI's PIG shall establish a separate advance (imprest) account in US Dollars for each fund source (ADF Loan, ADF Grant, and JFPR Grant) for the original project at a bank acceptable to ADB. Hydromet's PIG shall establish a separate advance (imprest) account in US Dollars for each fund source (ADF Grant and GCF Grant) for the additional financing project. The request for initial advance to the advance (imprest) account should be accompanied by an Estimate of Expenditure Sheet<sup>27</sup> setting out the estimated expenditures for the forthcoming six (6) months of project implementation, and evidence that the advance (imprest) account has been duly opened. Every liquidation and replenishment request of the advance (imprest) account submitted to ADB should be accompanied by: (i) Statement of Account (Bank Statement) where the advance (imprest) account is maintained, and (ii) the Advance Account Reconciliation Statement (AARS) reconciling the above mentioned bank statement against PIG's records.<sup>28</sup> The advance accounts are to be used exclusively for ADB's and ADB-administered cofinancier funds' share of eligible expenditures. The executing agencies who administer the advance accounts are accountable and responsible for proper use of advances to the advance account.

111. The total outstanding advances to the advance (imprest) account will not at any time exceed the estimated ADB financed expenditures to be paid from the advance (imprest) account for the next 6 months.<sup>29</sup>

<sup>25</sup> Available at: <https://www.adb.org/documents/loan-disbursement-handbook>.

<sup>26</sup> Direct payments under Loan/Grant disbursement should be used for payments above the minimum WA amount. Payments below the amount should be paid through reimbursement or advance (imprest) fund procedures.

<sup>27</sup> Available in Appendix 8A of the *Loan Disbursement Handbook*.

<sup>28</sup> Follow the format provided in Appendix 8B of the *Loan Disbursement Handbook*.

<sup>29</sup> The bank charges on the advance (imprest) account will be financed from the proceeds of the loan.

112. The statement of expenditure (SOE) procedure, as described in the Loan Disbursement Handbook, will be used to reimburse eligible expenditure and to liquidate and replenish the advance (imprest) account for individual payments of up to \$100,000 equivalent.<sup>30</sup> SOE records should be maintained and made readily available for review by ADB's disbursement and review mission or upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit.<sup>31</sup> Individual payments in excess of the SOE ceiling should be accompanied by full supporting documents when submitting the withdrawal application to ADB.

113. Before submitting the first withdrawal application, the Government must submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the borrower, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is set in accordance with the Loan Disbursement Handbook (i.e., \$200,000 equivalent). Individual payment below this amount should be paid by the respective PIG and subsequently claimed from ADB (i) through reimbursement; or (ii) from the advance (imprest) accounts, unless otherwise accepted by ADB. The borrower should ensure sufficient category and contract balances before requesting disbursements.

### **C. Project Financial Reporting, Auditing, and Public Disclosure**

114. The PIGs, and H-PIG shall (i) maintain separate accounts and records for the Project by funding source for all expenditures incurred on the project; (ii) prepare annual financial statements for the Project in accordance with cash-based International Public Sector Accounting Standard; (iii) have such project financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with international standards for auditing or the national equivalent acceptable to ADB; (iv) as part of each such audit, have the auditors prepare a report which includes the auditors' opinions on the financial statements and use of the Grant proceed<sup>32</sup> and a management letter which sets out the deficiencies in the internal control of the Project that were identified in the course of the audit, if any; and (v) furnish to ADB, no later than 6 months after the end of each related fiscal year, copies of such audited project financial statements, audit report and management letter, all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request.

115. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

116. The Government, EAs, PIGs, and H-PIG have been made aware of ADB's approach to delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.<sup>33</sup> ADB reserves the right to require a change in the auditor, or for

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<sup>30</sup> SOE forms are available in Appendix 7B and 7D of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

<sup>31</sup> Checklist for advance (imprest) account procedures and formats are available at: <https://www.adb.org/documents/loan-disbursement-handbook>

<sup>32</sup> Auditor's opinions shall cover (i) whether the project financial statements present a true and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting framework; and (ii) whether loan and grant proceeds were used only for the intended purposes of the project in accordance with ADB's Loan Disbursement Handbook and the loan/grant and project agreements.

<sup>33</sup> ADB approach and procedures regarding delayed submission of audited project financial statements:

(i) When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (a) the audit documents are overdue; and (b) if they are not received within the next six

additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

117. ADB shall disclose the annual audited financial statements for the project and the opinion of the auditors on the financial statements no later than 14 calendar days of ADB's confirmation of their acceptability by posting them on ADB's website. The management letter will not be disclosed.

## **VI. PROCUREMENT AND CONSULTING SERVICES**

### **A. Advance Contracting and Retroacting Financing**

118. All advance contracting will be undertaken in conformity with ADB's Procurement Guidelines (2015, as amended from time to time) and the Guidelines on the Use of Consultants by Asian Development Bank and its Borrowers (2013, as amended from time to time). The issuance of invitations to bid under advance contracting will be subject to ADB approval. The EAs have been advised that approval of advance contracting does not commit ADB to finance the project.

119. Advance contracting will be used for recruitment of consulting services.

120. There is no retroactive financing envisaged in this project.

### **B. Procurement of Goods, Works and Consulting Services**

121. All procurement of goods and works will be undertaken in accordance with ADB's Procurement Guidelines. Key features of the procurement of civil works and goods are summarized in the following paragraphs. The procurement plan indicates review procedures, goods, works and consulting service contract packages and national competitive bidding (NCB) guidelines. International competitive bidding (ICB) procedures will be used for civil works contracts estimated to cost \$1 million or more (\$3 million or more for additional financing) while NCB procedures for contract costing below \$1 million (below \$3 million for additional financing). Similarly, ICB procedure will also be used for goods contracts estimated to cost \$1 million (\$2 million for additional financing) or more while NCB procedure for contracts costing below \$1 million (\$2 million for additional financing). Shopping procedures will be used for contracts for procurement of small works and equipment worth less than \$100,000.

122. For the additional financing project only, universal procurement will apply as per cases when (i) ADB administers cofinancing resources for ADB-financed operations, or (ii) ADB resources and a cofinancier's resources are used to jointly finance individual procurement packages. The government has (i) indicated that individuals recruited directly or indirectly under the project, including PIG staff,

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months, requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.

- (ii) When audited project financial statements have not been received 6 months after the due date, ADB will (a) inform the executing agency of ADB's actions to withhold processing of requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new reimbursement, and issuance of new commitment letters; and (b) advise that the loan may be suspended if the audit documents are not received within the next 6 months; and
- (iii) When audited project financial statements have not been received 12 months after the due date, ADB may suspend the loan.

national consultants, or international consultants, will be subject to income tax and social tax in accordance with the requirements of the national laws and international treaties, as appropriate; and (ii) requested that those be financed from the grant proceeds. Therefore, cost estimates of PIG staff and consultant remuneration includes estimated amounts of income tax and social tax, which will be paid from grant proceeds. ADB will not finance value-added tax (VAT), gross sales tax (GST), and other similar types of taxes and duties.<sup>34</sup>

### C. Procurement Plan (Original Project)

123. Various packages of the procurement plan are presented in the following sections. The basic data of the project is given in Table 29.

**Table 29: Basic Data (Original Project)**

<b>Project Name:</b> Water Resources Management in Pyanj River Basin	
<b>Project Number:</b> 47181-013-TAJ	<b>Approval Number:</b>
<b>Country:</b> Tajikistan	<b>Executing Agency:</b> Agency of Land Reclamation and Irrigation (ALRI) and Ministry of Energy and Water Resourced (MEWR)
<b>Project Procurement Classification:</b> B	
<b>Procurement Risk:</b> Low	
<b>Project Financing Amount:</b> \$ 31.61 million <b>ADB Financing:</b> \$25 million <b>Cofinancing (JFPR grant and administered by ADB):</b> \$3 million <sup>a</sup> <b>Non-ADB Financing (GOT) :</b> \$3.61 million	<b>Project Financial Closing Date:</b> June 2022
<b>Date of First Procurement Plan:</b> July 2016	<b>Date of this Procurement Plan:</b> December 2017

<sup>a</sup> In addition, there is a JFPR TA grant amounting to \$2 million administered by ADB.

Source: ALRI.

#### 1. Process Thresholds, Review and 18-Month Procurement Plan

##### a. Project Procurement Thresholds

124. Except as ADB may otherwise agree, the following process thresholds given in Table 30 shall apply to procurement of goods and works. The thresholds may be reviewed and updated based on the further assessments during the preparation of the new country partnership strategy expected in 2019.

**Table 30: Thresholds for Procurement of Goods and Works (Original Project)**

Method	Threshold
International Competitive Bidding (ICB) for Works	Over \$1,000,000
International Competitive Bidding for Goods	Over \$1,000,000
National Competitive Bidding (NCB) for Works	Between \$100,000 and \$1,000,000
National Competitive Bidding for Goods	Between \$100,000 and \$1,000,000
Shopping for Works	Below \$100,000
Shopping for Goods	Below \$100,000

Source: ALRI.

<sup>34</sup> As per page 3, para (i) of Appendix 4C of the ADB *Loan Disbursement Handbook* (2017, as amended from time to time).

### b. ADB Prior or Post Review

125. Except as ADB may otherwise agree, the following, given in Table 31 prior or post review requirements apply to the various procurement and consultant recruitment methods used for the project.

**Table 31: Review Requirements for Various Procurement and Consultant Recruitment Methods**

<b>Procurement Method</b>	<b>Prior or Post</b>	<b>Comments</b>
<b>Procurement of Goods and Works</b>		
ICB Works	Prior	Prior review applies to the procurement of the first two NCB contracts. If the first two contracts are procured satisfactorily it will be determined by ADB if post-review may be used.
ICB Goods	Prior	
NCB Works	Prior	
NCB Goods		Prior review applies to the procurement of the first two NCB contracts. If the first two contracts are procured satisfactorily it will be determined by ADB if post-review may be used.
Shopping for Works	Post	
Shopping for Goods	Prior	
<b>Recruitment of Consulting Firms</b>		
Quality- and Cost-Based Selection (QCBS)	Prior	Quality and cost based on 90:10 quality–cost weighting. Applied in accordance with <i>Guidelines on the Use of Consultants</i> (2013, as amended from time to time)
Other selection methods: Consultants Qualifications (CQS), Least-Cost Selection (LCS), Fixed Budget (FBS), and Single Source (SSS)	Prior	
<b>Recruitment of Individual Consultants</b>		
Individual Consultants	Prior	

Source: ALRI.

### c. 18-Month Procurement Plan

#### 2. Goods and Works Contracts Estimated to Cost More than \$1 Million

126. Table 32 lists the goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

**Table 32 : Works and Goods to be Procured During First 18 Months**

Package Number <sup>5</sup>	General Description	Estimated Value (\$ million)	Procurement Method	Review [Prior / Post/Post (Sample)]	Bidding Procedure	Advertisement Date (quarter/year)	Comments
<b>Original Project</b>							
ICB-W-1	Sediment Excluding Basin and Modernization and Rehabilitation of Pumping Units	13,600,000.00	ICB	Prior	1S1E	Q3 / 2018	Prequalification of Bidders: N  Domestic Preference Applicable: N
	Lot 1: Sediment Excluding Basin	6,800,000.00					
	Lot 2: Modernization and Rehabilitation of Pumping Units	6,800,000.00					Bidding Document: Large Works
ICB-W-2	Modernization and Rehabilitation of Irrigation Drainage Infrastructure	5,000,000.00	ICB	Prior	1S1E	Q4 / 2018	Prequalification of Bidders: N  Domestic Preference Applicable: N
	Lot 1: Modernization and Rehabilitation of Irrigation and Drainage Infrastructure in Vose	1,666,667.00					
	Lot 2: Modernization and Rehabilitation of Irrigation and Drainage Infrastructure in Farhor	1,666,667.00					Bidding Document: Small Works

These costs do not include taxes and duties.

### 3. Consulting Services Contracts Estimated to Cost More Than \$100,000

127. Table 33 lists the consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

**Table 33 : Consulting Services to be Procured During First 18 Months**

Package Number	General Description	Value (\$ million)	Recruitment Method	Review (Prior / Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
<b>Original Project</b>							

#### 4. Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000

128. Table 34 groups smaller-value goods, works and consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

**Table 34 : Smaller Value Contract to be Awarded During the First 18 Months**

Goods and Works								
Package Number <sup>5</sup>	General Description	Estimated Value (\$ million)	Number of Contracts	Procurement Method	Review [Prior / Post/Post (Sample)]	Bidding Procedure <sup>6</sup>	Advertisement Date (quarter/year)	Comments <sup>7</sup>
<b>Original project</b>								
NCB-G-1	Agriculture machinery for seed grower	570,000.00	1	NCB	Prior	1S1E	Q2 / 2018	Prequalification of Bidders: N  Domestic Preference Applicable: N  Bidding Document : Goods
SHG-1	Accounting software	23,000.00	1	SHOPPI NG	Prior		Q1 / 2018	
SHG-3 to 5	Farm demonstration equipment	270,000.00	3	SHOPPI NG	Prior		Q1 / 2018	
SHG-6	Seed certification laboratory	90,000.00	1	SHOPPI NG	Prior		Q3 / 2018	
SHG -7	Foundation seed	50,000.00	1	SHOPPI NG	Prior		Q3 / 2018	
SHG- 8	Foundation seed	50,000.00	1	SHOPPI NG	Prior		Q1 / 2019	
SHW-1	Repair and renovation of ALRI district offices	99,999.00	1	SHOPPI NG	Post		Q1 / 2018	
SHW-2	Workshop at Vose for Pump Stations	99,999.00	1	SHOPPI NG	Post		Q4 / 2018	

Note: In addition, auditing services will be recruited every year. These are base costs and do not include contingencies and taxes and duties.

Source: ALRI

## D. Procurement Plan (Additional Financing)

129. Various packages of the procurement plan are presented in the following sections. The basic data of the project is given in Table 39.

**Table 35: Basic Data (Additional Financing)**

<b>Project Name:</b> Water Resources Management in Pyanj River Basin (Additional Financing)	
<b>Project Number:</b>	<b>Approval Number:</b>
<b>Country:</b> Tajikistan	<b>Executing Agency:</b> State Agency for Hydrometeorology (Hydromet)
<b>Project Procurement Classification:</b> B	
<b>Procurement Risk:</b> Low	
<b>Project Financing Amount:</b> \$ 12.8 million <b>ADB Financing:</b> \$6.5 million <b>Cofinancing (Green Climate Fund):</b> \$5.0 million <b>Non-ADB Financing (GOT) :</b> \$1.3 million	<b>Project Financial Closing Date:</b> June 2023
<b>Date of First Procurement Plan:</b> February 2018	<b>Date of this Procurement Plan:</b> April 2018

Source: Hydromet.

## 5. Process Thresholds, Review and 18-Month Procurement Plan

### a. Project Procurement Thresholds

130. Except as ADB may otherwise agree, the following process thresholds given in Table 36 shall apply to procurement of goods and works. The thresholds may be reviewed and updated based on the further assessments during the preparation of the new country partnership strategy expected in 2019.

**Table 36: Thresholds for Procurement of Goods and Works (Additional Financing)**

Method	Threshold
International Competitive Bidding (ICB) for Works	Over \$3,000,000
International Competitive Bidding for Goods	Over \$2,000,000
National Competitive Bidding (NCB) for Works	Between \$100,000 and \$3,000,000
National Competitive Bidding for Goods	Between \$100,000 and \$2,000,000
Shopping for Works	Below \$100,000
Shopping for Goods	Below \$100,000

Source: Hydromet

### b. ADB Prior or Post Review

131. Except as ADB may otherwise agree, the following, given in Table 37 prior or post review requirements apply to the various procurement and consultant recruitment methods used for the project.

**Table 37: Review Requirements for Various Procurement and Consultant Recruitment Methods**

<b>Procurement Method</b>	<b>Prior or Post</b>	<b>Comments</b>
<b>Procurement of Goods and Works</b>		
ICB Works	Prior	Prior review applies to the procurement of the first two NCB contracts. If the first two contracts are procured satisfactorily it will be determined by ADB if post-review may be used.
ICB Goods	Prior	
NCB Works	Prior	
NCB Goods		Prior review applies to the procurement of the first two NCB contracts. If the first two contracts are procured satisfactorily it will be determined by ADB if post-review may be used.
Shopping for Works	Post	
Shopping for Goods	Prior	
<b>Recruitment of Consulting Firms</b>		
Quality- and Cost-Based Selection (QCBS)	Prior	Quality and cost based on 90:10 quality–cost weighting. Applied in accordance with <i>Guidelines on the Use of Consultants</i> (2013, as amended from time to time)
Other selection methods: Consultants Qualifications (CQS), Least-Cost Selection (LCS), Fixed Budget (FBS), and Single Source (SSS)	Prior	
<b>Recruitment of Individual Consultants</b>		
Individual Consultants	Prior	

Source: Hydromet.

**c. 18-Month Procurement Plan**

**6. Goods and Works Contracts Estimated to Cost More than \$1 Million**

132. Table 38 lists the goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

**Table 38 : Works and Goods to be Procured During First 18 Months**

Package Number <sup>5</sup>	General Description	Estimated Value (\$ million)	Procurement Method	Review [Prior / Post/Post (Sample)]	Bidding Procedure	Advertisement Date (quarter/year)	Comments
<b>Additional Financing</b>							
H-CW-1	Building No 1  Office Building - Remaining Construction	1,000,000	NCB	Prior	1S1E	Q2 2019	Prequalification of Bidders: N Bidding Document: Small Works
H-CW-2	Building No 5 and 6 Mixed-use Buildings	4,100,000	ICB	Prior	1S1E	Q4 2019	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Small Works

These costs do not include taxes and duties.

## 7. Consulting Services Contracts Estimated to Cost More Than \$100,000

133. Table 39 lists the consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

**Table 39 : Consulting Services to be Procured During First 18 Months**

Package Number	General Description	Value (\$ million)	Recruitment Method	Review (Prior / Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
<b>Additional Financing</b>							
CS-01	Project Implementation Consultants including Survey and Design	1,900,000	QCBS (90:10)	Prior	Q2 2018	FTP	Assignment International  Quality-Cost Ratio 90:10

Note: These costs do not include taxes and duties. The cost estimate may be updated as necessary.

## 8. Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000

134. Table 40 groups smaller-value goods, works and consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

**Table 40 : Smaller Value Contract to be Awarded During the First 18 Months**

Goods and Works								
Package Number <sup>5</sup>	General Description	Estimated Value (\$ million)	Number of Contracts	Procurement Method	Review [Prior / Post/Post (Sample)]	Bidding Procedure <sup>6</sup>	Advertisement Date (quarter/year)	Comments <sup>7</sup>
<b>Additional Financing</b>								

H-CW-3	Building No 2, 3 & 4  Laboratory, Conference Hall and Archive, Visitor's Center, Warehouse, Landscaping, Fencing, etc.	350,000	1	NCB	Prior	1S1E	Q2 2019	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Small Works
H-CW-4	Relocation of Hydromet to new operations center	70,000	1	Shopping	Prior		Q2 2020	Comments: at least 3 quotes;
H-G-01	Office/Vehicle O&M. Furniture, equipment, vehicle rental.	200,000 (total)	3-4	Shopping	Prior		Q1 2019 to Q1 2020	Comments: at least 3 quotes;
H-G-02	Hydromet monitoring equipment and installation – e.g. river gauges and weather stations	800,000	1	ICB	Prior		Q4 2019	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
H-G-03	IT equipment, services, and installation – networking, storage, CPUs	500,000 (total)	2	NCB	Prior		Q1 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
H-G-04	Containerized offices, installation and fit-out	180,000	1	NCB	Prior		Q1 2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
H-G-05	Flood and weather forecasting equipment and services with IT and installation	440,000	1	ICB	Prior		Q4 2019	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
H-SHG-1	Accounting software	23,000.00	1	SHOPPING	Prior		Q1 2019	

Note: In addition, auditing services will be recruited every year. These are base costs and do not include contingencies and taxes and duties.

## VII. SAFEGUARDS

### A. Environmental Safeguard

135. The original and additional financing project is categorized B for environment. ALRI and Hydromet shall ensure that the design, construction, operation and maintenance of project's facilities to be financed under output 2 are carried out in accordance with ADB's Safeguard Policy Statement (SPS, 2009), the applicable laws and regulations in Tajikistan, and the initial environmental examination (IEE) and its environmental management plan (EMP). ALRI and Hydromet shall ensure that potential adverse environmental impacts arising from their respective project components are avoided, minimized, mitigated or compensated by implementing all the mitigation and monitoring measures described in the IEE and EMP. ALRI and Hydromet shall ensure that:

- (i) The EMP to be updated by the contractors, based once the detailed design is available and prior to the implementation of civil works. The contractor prepares and submits for approval to the project implementation consultant and PIGs site specific environmental health and safety management plans at least 10 days before taking possession of any work site. No access to the site will be allowed until the site specific environmental health and safety management plans is approved by PIGs prior to commencing any construction works. The site specific environmental health and safety management plans will be tailored to the environmental impacts of the site and the specific project activities as planned by the contractor;
- (ii) The contractor, project implementation consultant, and PIGs have sufficient resources to implement, monitor and record the implementation of the site specific environmental health and safety management plans;
- (iii) The contractor is responsible for the day to day implementation of the site specific environmental health and safety management plans with project implementation consultant visiting regularly monitoring to confirm implementation;
- (iv) PIGs, with the help of the project implementation consultant, will submit to ADB semi-annual environmental monitoring reports for the project within 1 month of the close of each half of the calendar year during project implementation, and the reports will include a review of the progress on implementation of environmental measures described in the site specific environmental health and safety management plans, monitoring of such measures, problems encountered and remedial measures taken;
- (v) The detailed engineering design and civil works and other contracts for the project incorporate applicable environmental measures identified in the IEE and the site specific environmental health and safety management plans;
- (vi) PIGs will establish and implement the Grievance Redress Mechanism, as described in the IEE prior to construction. Environment Field Inspector will be a focal person for grievances in the field. All complaints will be recorded in the complaints register on site and will be addressed through the procedures set up in the Grievance Redress Mechanism; and
- (vii) Should any change in scope take place the ALRI will immediately inform ADB and a due diligence on environment will be carried out by PIG. Any additional study required will be conducted, and the IEE will be updated by PIG as required by SPS 2009. If there are any unanticipated environmental impacts, they would be reviewed, and a corrective action plan will be prepared by the contractor for implementation under the supervision of PIG with assistance, of project implementation consultant.

## **B. Social Safeguards**

136. The original and additional financing project is classified as category C for involuntary resettlement impacts. Under the original project, the main structure of the sediment excluding basin will be located in the strict controlled border area. Construction works associated with repairs and/or renovation of some existing installations on the irrigation canal and renovation of pumping stations will not be significant and will be limited within the existing facility itself. A due diligence report on resettlement for the original project has been prepared and disclosed to ADB website. The additional financing project, does not entail land acquisition and resettlement, nor involuntary resettlement impacts.

137. If any changes or additional land requirements or involuntary resettlement impacts are identified, a resettlement plan will be prepared in accordance with the Safeguard Policy Statement (2009) and the same is approved by ADB before award of related civil work contract and implemented before commencement of civil works contract as applicable.

138. The original and additional financing project is screened as category C project for indigenous peoples planning requirement under SPS 2009 and MEWR, ALRI, and Hydromet shall ensure that the project does not have any indigenous peoples' impacts within the meaning of the Safeguard Policy Statement (2009). And if during design review or implementation, any change to the scope, location with prior approval of ADB, causes to have any such impacts, MEWR, ALRI, and Hydromet shall take all steps required to ensure that the project complies with the applicable laws and regulations of Tajikistan and the ADB's Safeguard Policy Statement 2009.

## **C. Prohibited Investment Activities**

139. Pursuant to ADB's Safeguard Policy Statement (2009),<sup>35</sup> ADB funds may not be applied to the activities described in the ADB Prohibited Investment Activities List set forth in Appendix 5 of the SPS. EAs will ensure that the project is in compliance with applicable national laws and regulations and will apply the prohibited investment activities list to the project financed by ADB.

## **VIII. GENDER AND SOCIAL DIMENSIONS**

140. Gender actions aimed at addressing the gender issues include (i) Institutionalizing women's participation in RBO and River basin council (RBC) structures, as well as in the PRB Management Plan, (ii) Ensuring that gender-sensitive messages are included in the project's information campaign materials, (iv) Conducting community consultation meetings with 50% women participation, (v) Encouraging the employment of local labor and women, (vi) Installing water points in strategic areas for household use, (vii) Identifying the extent of women's participation in WUA membership, leadership, and secretariat, (viii) Developing and conducting training programs for water users on WUA leadership and management and new agricultural practices, (ix) Organizing demonstration plots and study tours for exchange of knowledge among water users, and (x) Conducting baseline and endline surveys on WUAs. The Gender and Social Development consultant engaged by MEWR will be responsible for implementing all gender actions related to output 1, while the Gender and Social Development Officer engaged by ALRI PIG will be responsible for ensuring implementation of all gender actions in outputs 2 and 3. The international NGO tasked to implement output 3 is expected to have the gender expertise necessary to implement the gender actions in output 3. The project's

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<sup>35</sup> Available at: <http://www.adb.org/documents/safeguard-policy-statement>.

Gender Action Plan (GAP) is in Table 41. The cost for implementing the GAP is incorporated in the cost allocation for each output.

**Table 41 : Gender Action Plan**

Activity	Performance Targets/ Indicators	Responsibility	Time frame
<b>Output 1. WRM capacity improved in PRB</b>			
<b>Original project</b>			
1.1 Conduct a gender and social analysis of the proposed RBO and RBC structures, including their mandates, statute, membership, management, programs, and ensure that the results of the analysis inform the establishment of the RBO and RBCs.	<ul style="list-style-type: none"> <li>Gender and social analysis report on the proposed RBO and RBC.</li> <li>Policy and implementation plan of the RBO and RBC explicitly provide for inclusion of women in the secretariat and membership, as well as identify specific programs and actions that ensure women's meaningful participation in water management.</li> <li>Management structure of the RBO and each RBC includes at least one woman.</li> <li>Meetings of the RBO and RBC ensure the meaningful participation of women and reflected in the minutes of the meetings.</li> </ul>	Gender & Social Development Consultant	Q3 2017
1.2 Ensure that women's concerns are reflected in the Pyanj River Basin Management Plan	<ul style="list-style-type: none"> <li>Pyanj River Basin Management Plan includes a provision on ensuring women's participation in the RBO and RBC.</li> </ul>	Gender & Social Development Consultant, RBO, RBC	Q1 2019
1.3 Ensure women's meaningful participation in river basin-wide consultation among water users	<ul style="list-style-type: none"> <li>At least 30% of the participants in meetings are women (2015 baseline,0).</li> <li>Minutes of the meetings reflect women's views on water resources management, water quality, and service provision of the RBC.</li> <li>Grievances, concerns and disputes of different water users, including those of women water users, are addressed and reflected in minutes of the meetings.</li> </ul>	Gender & Social Development Consultant, RBO, RBC	Q1 2019
1.4 Conduct information campaign on the project including, new technologies learned, with focus on benefits to women farmers.	<ul style="list-style-type: none"> <li>All information materials contain gender-sensitive messages.</li> <li>Four billboards (one for each district), five kinds of posters, three kinds of radio advertisements produced.</li> </ul>	Gender & Social Development Consultant, RBO	Q4 2017
<b>Additional financing</b>			
1.5 Gender-sensitive training, outreach, and preparedness for flood disaster risk management (DRM) in Pyanj River Basin (PRB).	<ul style="list-style-type: none"> <li>At least 30% of trainees in PRB on flood forecasts and preparedness are women. (Baseline 2017: not applicable)</li> <li>At least 30% of stakeholders consulted in PRB on flood forecasting and warning system design are women. (Baseline 2017: not applicable)</li> <li>Maintain a roster of Hydromet DRM focal points, at least 30% of which are women. (Baseline 2017: not applicable)</li> </ul>	H-PIG and PIC gender and development consultants	Project social close
1.6 Ensure proportionate representation of females at senior/mid-level managerial positions	<ul style="list-style-type: none"> <li>An average of 25% of staff positions at Chief and Deputy Chief of Department, Chief of Groups, Heads of Units, Laboratory, and Stations are held by women. (Baseline 2017: average 20%)</li> </ul>	H-PIG and PIC gender and development consultants	Project social close
1.7 Ensure gender-appropriate	<ul style="list-style-type: none"> <li>Modernized campus is designed and</li> </ul>	H-PIG and PIC gender and social	Project close

facilities within modernized Hydromet Campus	constructed with adequate gender-appropriate facilities (e.g. sanitary, changing rooms, breast feeding rooms, refreshment areas). (Baseline 2017: not applicable)	development consultants	
1.8 Conduct training in administration and management for Hydromet senior and mid-level staff.	<ul style="list-style-type: none"> <li>At least one female staff representative for building facilities and maintenance is assigned. (Baseline 2017: 0)</li> <li>At least 25 qualified female staff from Hydromet are trained in administration and management including leadership, financial management, and commercial management. (Baseline 2017: 0)</li> <li>Gender inclusive HR policy, including templates for staff profiles and clear career track profiles is approved and implemented. (Baseline 2017: not applicable)</li> </ul>	H-PIG and PIC gender and social development consultants	Project close
<b>Output 2. WRM infrastructure in PRB modernized and climate-proofed</b>			
<b>Original project</b>			
2.1 Conduct public consultations on the employment of local community members in civil works, including ways to facilitate women's engagement in civil works and other project work.	<ul style="list-style-type: none"> <li>Community participation in public consultations includes at least 50% women (2015 baseline, 30%).</li> <li>Agenda of public consultations include encouraging women to do project work and soliciting recommendations to enable women to be employed in project work.</li> </ul>	ALRI, PIOs, PIG Gender & Social Development Officer	Q3 2018
2.2 Employ local labor, including women, in project works.	<ul style="list-style-type: none"> <li>Labor contract documents include specific provisions encouraging the hiring of local labor and women workers.</li> </ul>	Contractors overseen by ALRI, PIO and PIG Gender & Social Development Officer	Q3 2018
2.3 Install water points in strategic places for household use.	<ul style="list-style-type: none"> <li>12 water points along main canals and 3 water points along each target inter-farm canal installed for use of households in the project target area (2015 Baseline, 0).</li> </ul>	Contractors overseen by ALRI, PIO and PIG Gender & Social Development Officer	Q3 2018- Q2 2021
<b>Output 3. Farm management and water use capacities increased</b>			
<b>Original project</b>			
3.1 Conduct (baseline) social mapping of WUAs in the project areas.	<ul style="list-style-type: none"> <li>List of WUAs, including size of membership (sex-disaggregated), leadership composition, number and kinds of activities done in the past.</li> <li>Women-led WUAs as well as WUAs with at least 30% women members are identified (2015 baseline, incomplete statistics on WUAs).</li> <li>Social mapping report identifies ways to increase women's participation in WUA management/secretariat.</li> </ul>	NGO overseen by ALRI, PIO and PIG Gender & Social Development Officer	Q1 2018- Q4 2020
3.2 Conduct TNA of WUAs, with specific attention to the training needs of women water users.	<ul style="list-style-type: none"> <li>TNA report includes a specific section highlighting the needs and concerns of women water users.</li> </ul>	NGO overseen by ALRI, PIO and PIG Gender & Social Development Officer	Q3 2017
3.3 Develop and conduct training programs for WUA managers and members, with special programs for women, to address the needs of water users.	<ul style="list-style-type: none"> <li>At least two detailed training programs that improve the farming and water use knowledge and skills of all water users (2015 baseline, 0).</li> <li>At least two detailed leadership training programs targeting women water users designed to increase the number of women in leadership positions in the WUAs.</li> <li>WUA management trainings on topics such as</li> </ul>	NGO overseen by ALRI, PIO and the Gender & Social Development Officer	Q3 2017

	financial management, budgeting and organizing, include women participants			
3.4	Organize demonstration plots on men- and women-led <sup>a</sup> farms and plots showcasing improved agricultural practices.	<ul style="list-style-type: none"> <li>At least 50% women participation in all trainings (2015 baseline, 40%)</li> <li>30% of demonstration plots showcasing improved agricultural practices are on women-led plots and farms (2015 baseline, 0)</li> <li>At least 30% of CIS farmers implementing improved irrigated agricultural practices by 2020 are women (2015 baseline, 0)</li> </ul>	NGO overseen by ALRI, PIO and PIG Gender & Social Development Officer	Q1 2018- Q2 2020
3.5	Conduct cross-farm visits and study tours among WUAs and dekhan farms to enhance learning and exchange of good practices.	<ul style="list-style-type: none"> <li>Eight cross-farm visits and study tours conducted (2015 baseline, 0)</li> <li>50% of participants in study tours are women (2015 baseline, 0)</li> </ul>	NGO overseen by ALRI, PIO and PIG Gender & Social Development Officer	Q1 2019
3.6	Document experiences and lessons learned in implementing systematic water use training programs and ensuring women's full participation	<ul style="list-style-type: none"> <li>Report includes good practices and lessons learned in ensuring women's full participation in water use training programs</li> </ul>	NGO overseen by ALRI PIO and PIG Gender & Social Development Officer	Q3 2019- Q2 2021
3.7	Conduct (end line) social mapping of WUAs in the project areas	<ul style="list-style-type: none"> <li>WUAs coverage of CIS area increased to 100%, with women's membership in WUAs increased to at least 30% in 2020 (2015 baseline, 20%)</li> <li>Women's representation is at least 10% in WUA leadership and 20% in steering committee, by 2020 (2015 baseline, 0 women head of WUA and 14% women in the steering committee)</li> </ul>	NGO overseen by ALRI PIO and PIG Gender & Social Development Officer	Q4 2020
<b>Additional financing project</b>				
3.8	Gender-sensitive consultation and training on weather products	<ul style="list-style-type: none"> <li>At least 30% of trainees in PRB on use of weather products are women. (Baseline 2017: not applicable)</li> <li>At least 30% of stakeholders consulted in PRB on the design of weather products are women. (Baseline 2017: not applicable)</li> </ul>	H-PIG and PIC gender and social development consultants	Project close
<b>Efficient and effective project management system</b>				
<b>Overall project</b>				
• Recruit the gender and social development experts for the project	• Gender & Social Development Consultant (for Output 1) and Gender & Social Development Officer (for Outputs 2&3) are hired within the first three months of project implementation	MEWR/ALRI/Hydrom et	Q1 2017/Q4 2018	
• Engage an NGO with strong gender capacity for Output 3	• Gender is mainstreamed in all components of Output 3	ALRI, PIO, PIG Gender & Social Development Officer	Q1 2017	
• Include gender indicators in the project performance monitoring system	• PPMS includes gender indicators and regularly populated with sex-disaggregated data	MEWR, ALRI, PIO, PIG Gender & Social Development Officer, H-PIG, PIC	Q3 2017/Q4 2017	
• Ensure reporting of gender equality results	• Quarterly progress reports and annual reports, as well as completion reports include progress of GAP implementation	MEWR, ALRI, PIO and PIG Gender & Social Development Officer, H-PIG, PIC	Q4 2018 – Q2 2023	

ALRI = Agency on Land Reclamation and Irrigation, CIS = Chubek Irrigation System, DRM = disaster risk management, GAP = gender action plan, H-PIG = Hydromet Project Implementation Group, MEWR = Ministry of Energy and Water Resources, MIS = management information system, NGO = nongovernment organization, PIC = project implementation consultant, PIO = Project Implementation Office, PMO = Project Management Office, PPMS = project performance monitoring system, PRB = Pyanj River Basin, RBC = River Basin

Council, RBO = River Basin Organization, TNA = training needs assessment, WRM = water resources management, WUA = water users association.

<sup>a</sup> Women-led farms and plots are those that are owned, registered under women's names, or predominantly managed by women.  
Source: Asian Development Bank.

## IX. PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION

141. The EAs will be responsible for monitoring project progress and evaluating project outputs. Monitoring and evaluation shall be in accordance with the design and monitoring framework (DMF) and each EA will be responsible for regular reporting both to the Project Steering Group and ADB.

### A. Project Design and Monitoring Framework

**Table 42: Design and Monitoring Framework**

<b>Impacts the Project is Aligned with</b> <b>Current project</b> Irrigated land in good condition and food security increased <sup>a</sup> The efficiency of water resource use increased <sup>b</sup> <b>Overall project</b> Above impacts unchanged Climate resilience of agriculture and water resources management improved <sup>c</sup>			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
<b>Outcome</b> <b>Current project</b> Increased agricultural production in CIS area of PRB  <b>Overall project</b> Agricultural productivity and relevance of forecasting services increased in the PRB	<b>Current project</b> By December 2022, a. Cultivated irrigated areas served by CIS increased to originally designed 50,163 ha (2014 baseline: 43,210 ha) b. Cropping intensities increased by 10% for gravity irrigation and by 50% for pump irrigation (2014 baselines cropping intensities: 118% for gravity irrigation and 106% for pump irrigation) c. Crop yield increased by 8% (2014 baseline: <sup>d</sup> )  <b>Overall project</b> a–c. Unchanged By December 2024, d. Share of surveyed government and civil society stakeholders “satisfied” with Hydromet’s forecasting services increased to 30% (2017 baseline: 20%) e. Share of annual Hydromet budget contributed by income from sale of fee-based services increased to 1.5% (2017 baseline: 0%)	a. ALRI reports  b–c. Provincial and district agricultural statistics, and NGOs’ report through ALRI  a–c. Unchanged  d. Hydromet market survey reports  e. Hydromet annual reports	Extreme climate events hamper agricultural production.
<b>Outputs</b>			



Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
<p>CIS WRM modernized and climate-proofed</p> <p><b>Overall project</b> Unchanged</p> <p><b>Output 3</b> <b>Current project</b> Farm management capacity and water use skill improved</p> <p><b>Overall project</b> Unchanged.</p>	<p>By June 2021,</p> <p>2a. Irrigation conveyance efficiency for on-farm canal in CIS increased to 66% for gravity-fed system and 82% for pump-fed system (2014 baseline: 60% for both systems)</p> <p>2b. Pump efficiency of target pump stations in CIS increased to 75% (2014 baseline: less than 50%)<sup>e</sup></p> <p>2c. Sediment entering CIS canal reduced to 112,500 m<sup>3</sup>/year (2014 baseline: 460,000 m<sup>3</sup>/year)</p> <p>2d. Access to water for household use provided by installation of 12 water points along main canal and three water points along each target inter-farm canal (2015 baseline: 0)</p> <p><b>Overall project</b> Unchanged</p> <p><b>Current project</b></p> <p>By December 2021,</p> <p>3a. WUAs coverage of CIS area increased to 100% (2014 baseline: 83%)</p> <p>3b. Average collection rate (in value terms) of irrigation service fee among all WUAs increased to 80% (2014 baseline: 46%)</p> <p>3c. Women's membership in WUAs increased to 30% (2014 baseline: 13%)</p> <p>3d. Average water use ratio (i.e., field application efficiency) in CIS area increased to 60% (2014 baseline: 50%)</p> <p>3e. At least 30% of women lead demonstration plot activities (2014 baseline: 0)</p> <p><b>Overall project</b> 3a–e. Unchanged</p> <p>By June 2023,</p> <p>3f. IT platform for sale of Hydromet information and forecasting products established, including government-</p>	<p>2a–d. ALRI and consultant reports</p> <p>3a–c. NGO reports through ALRI</p> <p>3d. ALRI reports</p> <p>3e. NGOs reports through ALRI</p> <p>3a–e. Unchanged</p> <p>3f–g. Hydromet project reports</p>	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
	<p>approved pricing plan (2017 baseline: not applicable)</p> <p>3g. At least 500 individuals (of which 30% are female) report increased knowledge on receiving and using weather forecasting products in the PRB (2017 baseline: 0)</p>		

**Output 1: Water resources in PRB better managed**

- 1.1 Facilities of PRB organization available and equipped by Q3 2018 (changed)
- 1.2 Establish PRB organization by Q3 2018 (changed)
- 1.3 Establish PRB council by Q4 2018 (changed)
- 1.4 PRB organization prepares PRBMP by Q4 2018 (unchanged)
- 1.5 PRB council reviews PRBMP by Q2 2019 (unchanged)
- 1.6 Establish joint PRB committee with Government of Afghanistan by Q3 2019 (changed)
- 1.7 Joint PRB committee prepares PRB WRM monitoring system by Q2 2020 (changed)
- 1.8 Joint PRB committee approves PRB WRM monitoring system by Q3 2020 (changed)
- 1.9 Training of local MEWR staff completed by Q2 2021 (unchanged)
- 1.10 Flood risk mapping of PRB prepared and pilot districts selected by Q3 2019 (added)
- 1.11 Detailed design, including IT system integration, prepared by Q4 2019 (added)
- 1.12 Hydromet relocated to modernized and fitted-out operation center by Q3 2020 (added)
- 1.13 Resolution for legal transformation and charter drafted and submitted to government by Q4 2019 (added)
- 1.14 Capacity building in strategy, management, administration, and control by Q2 2020 (added)
- 1.15 User feedback and service performance M&E system established by Q2 2020 (added)
- 1.16 Prepare sustainable Hydromet O&M plan, including budget projections, by Q2 2021 (added)
- 1.17 Regional knowledge sharing event held by Q4 2021 (added)
- 1.18 Annual stakeholder surveys and workshops on Hydromet services undertaken by Q2 2023 (added)
- 1.19 Consultation and training in flood forecasting and warning undertaken by Q1 2022 (added)

**Output 2: Modernized and climate-proofed CIS WRM fully operational**

- 2.1 Complete modernization of main and inter-farm irrigation structures by Q2 2021 (unchanged)
- 2.2 Complete modernization of pump stations by Q2 2021 (unchanged)
- 2.3 Complete construction of sediment, excluding basin, by Q3 2020 (unchanged)
- 2.4 Equipment of O&M of main CIS including sediment excluding basin available by Q3 2020 (unchanged)
- 2.5 SCADA system starts operation by Q3 2020 (unchanged)
- 2.6 Conduct capacity development program for ALRI staff and WUA support units by Q4 2020 (unchanged)
- 2.7 Complete deposited sediment cleaning work along CIS by ALRI by Q2 2021 (unchanged)
- 2.8 Adopt O&M plan and water management system of CIS by Q2 2020 (unchanged)
- 2.9 Complete feasibility study for alternate irrigation method for non-target pump-fed areas by Q2 2019 (unchanged).

**Output 3: Farm management capacity and water use skill improved.**

- 3.1 Engage NGOs to implement the output (completed)
- 3.2 Conduct capacity development program for improved farm management by Q4 2021 (unchanged)
- 3.3 Select demonstration plots by Q2 2020 (unchanged)
- 3.4 Conduct WUA training program by Q4 2021 (unchanged)
- 3.5 Clean up deposited sediments along CIS on-farm drains by WUAs and water users by Q4 2021 (changed)
- 3.6 Record and publish experience of women's full participation in water use trainings as example of best practices by Q2 2020 (unchanged)

- 3.7 Hold consultation and training on weather information services by Q1 2022 (added)  
 3.8 Undertake installation and system integration of IT systems, including update of Hydromet website, by Q2 2020 (added)  
 3.9 Market at least one new weather information product to customers in the PRB by Q4 2020 (added)

### Project Management Activities

Project Management Office's initiation of recruitment process of the consultant in each output (completed)  
 Recruitment of consultants (completed)  
 Initiation of the bid process of the major contract (i.e., pump stations and sediment-excluding basin) by Q2 2018 (changed)  
 Initiation of the bid process of the heavy machinery equipment by Q1 2019 (changed)  
 Contracts for the heavy machinery equipment awarded by Q2 2019 (changed)  
 Contract for the major contractor awarded by Q4 2018 (changed)  
 Hydromet PIG established and staffed by Q4 2018 (added)  
 Project implementation consultants for Hydromet mobilized by Q4 2018 (added)  
 Civil works contracts for additional financing awarded by Q2 2020 (added)  
 Goods contracts for additional financing awarded by Q2 2020 (added)

### Inputs

ADB			
Loan <sup>f</sup>	Grant <sup>h</sup>		
\$19.15 million <sup>g</sup> (current)	\$5.85 million (current)		
\$0 (additional)	\$6.50 million (additional)		
\$19.15 million (overall)	\$12.35 million (overall)		

JFPR		GCF
Grant	Technical Assistance Grant	Grant
\$3.0 million (current)	\$2.0 million (current)	\$0 (current)
\$0 (additional)	\$0 (additional)	\$5.0 million (additional)
\$3.0 million (overall)	\$2.0 million (overall)	\$5.0 million (overall)

Government
\$3.61 million (current)
\$1.29 million (additional)
\$4.90 million (overall)

### Assumptions for Partner Financing

#### Current project

Not applicable

#### Overall project

Unchanged

ADB = Asian Development Bank, ALRI = Agency for Land Reclamation and Irrigation, CIS = Chubek Irrigation System, GCF = Green Climate Fund, ha = hectare, Hydromet = State Agency for Hydrometeorology of Tajikistan, IT = information technology, JFPR = Japan Fund for Poverty Reduction, m<sup>3</sup> = cubic meter, M&E = monitoring and evaluation, MEWR = Ministry of Energy and Water Resources, NGO = nongovernment organization, O&M = operation and maintenance, PIG = project implementation group, PMO = project management office, PRB = Pyanj River Basin, PRBC = Pyanj River Basin council, PRBMP = Pyanj River Basin Management Plan, PRBO = Pyanj River Basin organization, Q = quarter, SCADA = supervisory control and data acquisition, t/ha = tons per hectare, WRM = water resources management, WUA = water users association.

<sup>a</sup> Government of Tajikistan, ALRI. 2016. *Land Reclamation and Irrigation Development Strategy*. Dushanbe.

<sup>b</sup> Government of Tajikistan, MEWR. 2015. *Water Sector Reform Program for 2016–2025*. Dushanbe.

<sup>c</sup> Government of Tajikistan. 2015. Intended Nationally Determined Contribution toward the achievement of the global goal of the UN Framework Convention on Climate Change by the Republic of Tajikistan. Dushanbe.

<sup>d</sup> Wheat (2.96 t/ha), cotton (2.05 t/ha), vegetables (21.00 t/ha), orchard (8.93 t/ha), fodder maize (18.00 t/ha).

<sup>e</sup> Pump efficiency is defined as pumped water volume divided by consumed energy.

<sup>f</sup> Ordinary capital resources (concessional loan).

<sup>g</sup> Equivalent.

<sup>h</sup> Asian Development Fund grant.

Source: Asian Development Bank.

## B. Monitoring

142. Project Performance Monitoring. The EAs will develop comprehensive project performance monitoring system and closely monitor the progress of project activities, outputs, and outcomes based on the project performance monitoring system in accordance with the DMF. In particular, the project performance monitoring system will assess the following outputs and indicators (i) progress of planned activities according to the milestones; (ii) progress in achieving each project output and project outcome according to the performance targets and indicators indicated in the DMF, and (iii) social and economic benefits with focus on the poor and women.

143. Information and data gathered during project implementation period will be analyzed and measured against the targets, and published regularly on the project website. ALRI and MEWR will:

- (i) Submit quarterly progress reports, covering progress and achievements during the period against milestones and indicators in the DMF. Special emphasis will be on the outputs and outcome to (a) increase in irrigated area, water productivity, total agricultural production, irrigation conveyance efficiency, WUAs coverage area in the CIS, collection range of water service fee, water use ratio (i.e., field application efficiency), cropping intensities; and (b) decrease the volume of sediment entry. Social and gender results that need to be monitored include (a) women's representation and participation in PRBO, PRBC, WUAs, and all consultation meetings, (b) installation of water points for household use, and (c) women's participation in trainings, study tours, and demonstration plots;
- (ii) Carry out a satisfactory survey during first year, and on the second to the last year of the project implementation to (a) WUAs including women of WUAs secretariat for the CIS water supply services, (b) the ICS water supply entities for WUAs' responsible services, (c) CIS farmers including women for the WUAs' responsible services, and (d) WUAs for farmer's water use practices; and
- (iii) Produce a project completion report at the last year of project implementation, outlining the achievements and lessons learned.

Hydromet will:

- (i) Submit quarterly progress reports, covering progress and achievements during the period against milestones and indicators in the DMF and GAP. Special emphasis will be on the outputs and outcome to (a) increase stakeholder satisfaction with Hydromet forecasting services; and (b) increase the contribution to Hydromet budget from entrepreneurial sources. Social and gender results that need to be monitored include (a) women's representation and participation in all trainings, consultation, and awareness meetings; (b) women's representation within Hydromet staff and career opportunities; and (c) gender-appropriate facilities in the new Hydromet operations center;
- (ii) Carry out an annual satisfaction survey among government and civil society stakeholders on the use and awareness of Hydromet services, feedback, and quality of forecasting services; and
- (iii) Produce a project completion report at the last year of project implementation, outlining the achievements and lessons learned.

144. All project assurances including policy, legal, financial, economic, physical, environmental, gender, and other safeguard measures will be monitored through quarterly progress reports, and twice a year, during ADB loan review missions. ADB will also monitor the progress of achievement of each output and outcome based on performance indicators with targets, and each activity based on milestones indicated in the DMF through a project management information system (i.e., e-Ops).

145. **Compliance monitoring.** All project assurances including policy, legal, financial, economic, physical, environmental, gender, and other safeguard measures will be monitored through quarterly progress reports and twice a year during ADB loan and grant review missions.

146. **Safeguards monitoring.** Internal environmental monitoring of the EMP implementation will be accomplished by the environmental officer of the contractors. External environmental monitoring will be a responsibility of the Environment Field Inspector of the PIGs. The National and International Environmental Specialists of the implementation consultant will supervise functioning of the project's Environmental Management System including implementation of the EMP. The National and International Environmental Specialists of the implementation consultants will also be responsible for preparation of the semi-annual environmental monitoring reports and inputs into quarterly progress reports that will be submitted to ADB. For involuntary resettlement (Category C), the social and gender officer in PIGs (as applicable) will be responsible for the preparation of the annual monitoring reports that will be submitted to ADB.

147. **Gender and social dimensions monitoring.** The gender and social development consultant (for output 1) and the gender and social development officer in PIG (for outputs 2 and 3) will be responsible for monitoring the implementation of the gender action plan and for the preparation of the semi-annual monitoring reports that will be submitted to ADB.

148. **Contribution to the Pilot Program for Climate Resilience Monitoring and Evaluation Framework.** In addition to project monitoring requirements, the EA will provide data and information on climate change adaptation activities to the Committee for the Environment Committee that is responsible for the monitoring and evaluation of the climate change adaptation activities in Tajikistan in accordance with the modalities developed by the Committee for Environmental Protection.

## C. Evaluation

149. **Inception Mission:** ADB will conduct an inception mission within 3 months of loan and/or grant signing to assess project readiness and implementation arrangements including establishment of PIG, PIOs, opening of an advance (imprest) account, progress of recruitment of three consulting services, status of the development of the project performance monitoring system, and progress of advance procurement actions. **Review Mission:** ADB will field review missions at least once a year to (i) assess the progress of project activities and outputs and effectiveness of implementation arrangements, (ii) monitor the implementation of GAP and safeguard compliance with ADB Safeguard Policy Statement (2009), (iii) review compliance with loan and grant agreements and related matters, (iv) follow up on decisions and actions agreed during previous review missions, and (v) resolve any project implementation issues that may arise. ADB will conduct a midterm review in the third year of project implementation. The midterm review will (i) assess the project performance and achievement against targets and milestones in the DMF; (ii) review the initial outcomes, benefits, and impact of the project, and (iii) identify gaps, if any, and recommend necessary changes to strengthen implementation arrangements or modify project design. **Project Completion Review:** ADB will field a project completion review mission upon physical completion of the project to commence preparation of ADB's project completion report. The mission will (i) assess the project performance against all targets, indicators, and benchmarks (including any revised at the midterm review); (ii) evaluate initial

benefits, and outcome of the project across outputs, and (iii) identify any incomplete activities and agree on the necessary actions.

#### D. Reporting

150. The EAs through the PIGs will submit to ADB the following reports: (i) quarterly progress reports in a format consistent with ADB's standards; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions; (c) updated procurement plan, (d) progress of the gender action plan; (e) issues concerning environment and social safeguards; and (f) updated implementation plan for the next 12 months. The EAs, through the PIG, shall submit the government's project completion report within 6 months of physical completion of the project. The government's project completion report will evaluate the performance and achievements of the project against the indicators, expected benefits, and outcome, and should include information on (a) project implementation, and (b) the use of loan and grant funds to ADB.<sup>36</sup> The EAs will submit regular reports to the Committee of Environmental Protection on project's contribution to the Pilot Program for Climate Resilience national targets, and contribute to national reporting on the Pilot Program.

#### E. Stakeholder Communication Strategy

151. Project information will be strategically disseminated through media at main milestones including loan signing, contract awards and project completion. Grievance redress mechanism will be established at the PIG, by phone and email, and through public consultation events.

**Table 43: ADB Public Communications Strategy**

Project Documents	Means of Communication	Responsible Party	Frequency	Audience(s)
Project data sheet (PDS)	ADB's website	ADB	Initial PDS posted on the website no later than two weeks after approval of the concept paper; updated at least twice a year	General Public
Design and Monitoring Framework (DMF)	ADB's website	ADB	Key information from the draft reflected in project data sheet; final version posted on the website at the same time it is circulated to the Board for approval, subject to the concurrence of the government	General Public
Initial Environmental Examination	ADB's website	ADB	Post fact-finding mission	General Public, project-affected people in particular
Resettlement Planning Documents	ADB's website	ADB	Post fact-finding mission	General Public, project-affected people in particular
Reports and Recommendations of the President	ADB's website	ADB	Posted on the website within two weeks of Board approval of the loan and grant	General Public

<sup>36</sup> Project completion report format is available at: <http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar>.

Project Documents	Means of Communication	Responsible Party	Frequency	Audience(s)
Legal and Grant Agreements	ADB's website	ADB	No later than 14 days of Board approval of the project	General Public
Summary of Poverty Reduction and Social Strategy	ADB's website	ADB	Posted on the website at the same time it is circulated to the Board for approval, subject to concurrence of the government	General Public
Documents Produced under Technical Assistance	ADB's website	ADB	within 2 weeks of completion	General Public
Project Administration Memorandum	ADB's website	ADB	Posted on the website at the same time it is circulated to the Board for approval, subject to concurrence of the government	General Public
Social and Environmental Safeguard Monitoring Reports	ADB's website	ADB	Within 1 month after each 6 month monitoring period	General Public, project-affected people in particular
Audited project financial statements and the auditors' report	ADB's website	ADB	Within 30 days of receipt	General Public
Project Completion Report	ADB's website	ADB	Within two weeks of circulation to the Board for information	General Public
Evaluation Report	ADB's website	ADB	Within two weeks of circulation to Management and the Board	General Public
Project progress information	ALRI's/Hydromet's or Project's website	ALRI/PIG	Quarterly	General Public

Source: Asian Development Bank.

## X. ANTICORRUPTION POLICY

152. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.<sup>37</sup> All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agencies and all project contractors, suppliers, consultants and other service providers. Individuals and/or entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.<sup>38</sup>

153. To support these efforts, relevant provisions are included in the loan and grant agreements and the bidding documents for the project. The Government, through ALRI, MEWR, Hydromet and MOF, will ensure that the anticorruption provisions acceptable to ADB are included in all bidding documents and contracts including provisions specifying the right of ADB to audit and examine the records and accounts of the executing agencies and all contractors, suppliers, consultants, and other service providers as they relate to the Project.

<sup>37</sup> Available at: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf>

<sup>38</sup> ADB's Integrity Office web site is available at: <http://www.adb.org/integrity/unit.asp>

154. The EAs will provide updated information on the project on their websites, including information on the performance of the project, business opportunities, bidding process and guidelines, outcome of biddings and summary progress reports of the project.

### **XI.ACCOUNTABILITY MECHANISM**

155. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The accountability mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the accountability mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the accountability mechanism.<sup>39</sup>

### **XII.RECORD OF PAM CHANGES**

156. All revisions and/or updates during the course of implementation should be retained in this Section to provide a chronological history of changes to implemented arrangements recorded in the PAM.

<b>Version</b>	<b>Date</b>	<b>Comment</b>
Original project	November 2016	At ADB Board approval
V2	December 2017	Updated procurement plan and agreed arrangement of PIG's taking up of PMO's role during Inception Mission
V3 - Additional Financing	February 2018	Fact-finding mission
V4 – Additional Financing	April 2018	Grant Negotiation

<sup>39</sup> For further information see: <http://www.adb.org/Accountability-Mechanism/default.asp>.

## ANNEX 1

**DETAILED CONSULTING SERVICES (OUTPUT 1, ORIGINAL PROJECT)**

1. The required consulting services will be provided under the capacity development delegated JFPR technical assistance as outlined in the Linked Document Attached Technical Assistant. The detailed terms of reference for each required specialist is provided in the following paragraphs. Under the arrangement of delegated technical assistance, the Ministry of Energy and Water Resources (MEWR) will be responsible for advertisement, selecting, supervising the consultant while ADB will retain the responsibility for negotiating and signing the contract with the consultant, issuing the notice to proceed.

2. **Water Resources Institutional Specialists (international [Team Leader]: 6 person-months, national: 24 person-months).** The international water resources institutional specialist will be the team leader and thus responsible for overall project management, team coordination, and delivery of quality and timely outputs. These specialists, with the assistance of the regional river basin management specialists, will perform the following tasks.

- (i) Prepare and monitor the overall project work plan and work plans for all specialists, keeping in view the overall objective of improving water resources management in the Pyanj River Basin (PRB) by prevention and reduction of damages, and improvement of irrigation benefits; Help establish an intra-governmental working group in Tajikistan;
- (ii) Closely coordinate with working groups in the different fields of work cooperation;
- (iii) Develop an organization structure and draft agreement for the establishment of the JPRBC;
- (iv) Facilitate Joint Afghanistan-Tajikistan Intergovernmental Working Group meetings to discuss and finalize revisions, and signing of the bilateral agreement for the establishment of the JPRBC, and approval of its organization structure;
- (v) Facilitate approval of the draft agreement by the country delegations at the final meeting;
- (vi) Facilitate signing of the bilateral agreement by the countries (sectoral ministries and Ministry of Foreign Affairs) for the establishment of the JPRBC;
- (vii) Prepare action plan for implementation of the bilateral agreement and technical and capacity development support;
- (viii) In the Tajikistan portion of the PRB, facilitate establishment of River Basin Organizations (RBOs) and its sub-office, and River Basin Councils (RBCs);
- (ix) Formulate regulations on operational procedures and other tasks of the Joint Commission (for approval by the two governments), the RBO and its sub-office;
- (x) Coordinate with other development partners in Tajikistan's water sector reform projects being implemented in other river basins, and incorporate lessons learnt from their activities in developing RBOs and RBCs; and
- (xi) Provide hands-on capacity building to RBOs and its sub-office by expediting their tasks.

3. **Regional River Basin Management Specialists (international: 6 person-months, national: 18 person-months).** These specialists will work jointly with the water resources institutional specialists in performing their tasks. In particular, s/he will perform the following tasks with support from other specialists:

- (i) Facilitate implementation of river basin management approach, monitoring, and coordination among institutions in the basin following integrated WRM principles;

- (ii) For the Tajikistan portion of the PRB, develop River Basin Management Plans (RBMPs) which include drought management plan and flood risk management plan;
- (iii) Development of RBMPs should include a description of existing situation, impact analysis, objectives to address the priority issues, and timed and costed program of measures;
- (iv) Develop measurable indicators to monitor implementation of the PRBMP which may include but not limited to modernization/improvement of water infrastructure, improvement of WRM practices, and protection of water resources;
- (v) Identify the bodies responsible for implementing and monitoring the RBMP;
- (vi) Coordinate with other development partners of Tajikistan's water sector reform projects being implemented in other river basins, and incorporate lessons learnt from their activities in developing the PRBMP; and
- (vii) The PRBMP should be developed in line with IWRM principles and should take into account the national water policy and international obligations, specificity, measurability, and practicality.

**4. Water Law Specialists (international: 3 person-months, national: 12 person-months).** These specialists will provide support to Team Leader and other team members on the legal aspects to ensure that the proposed organizational structures, and management and monitoring plans are in line with international water laws, in line with national water policies, and not in conflict with the existing agreements where the participating countries are signatories. Their tasks will include but not limited to the following.

- (i) Facilitate preparation of draft agreements on the formation of a RBO and RBCs, and their institutional structures based on international law, regional experience, and national laws;
- (ii) Assist in presentation of the draft agreement to the two countries and gather feedback and incorporate necessary revisions;
- (iii) Facilitate preparation of the capacity building plan for the PRBO and RBCs; and
- (iv) Facilitate implementation of the capacity building activities through trainings and workshops.

**5. Hydrometeorologist/Climate Change Specialists (international: 6 person-months, national: 18 person-months).** These specialists will work closely with the Team Leader and other team members and ensure that all relevant hydrological, hydro-meteorological, and climate change aspect are given due consideration in the development of organization structure, management plans, and monitoring plans for both JPRBC and RBO. The task would include but not limited to the following.

- (i) Identify the gaps of the capacities of river discharge, water allocation, hydrological and hydrometeorological data collection, monitoring, processing currently done by the MEWR local offices;
- (ii) Facilitate establishment of a practical system for regular river discharge, water allocation, hydrological and hydrometeorological data monitoring to be processed by the RBO, its sub-office, and the MEWR local offices, and other national agencies for the use of developing RBMPs and other national agencies, and data exchange between Afghanistan and Tajikistan;
- (iii) Establish minimum quality requirements for the data to be monitored by the RBO and its sub-office, the MEWR local offices and other national agencies and for the data to be exchanged and communicated between two countries, identify timing

- and the exact locations of the Pyanj River discharge, water allocation, hydrological and hydrometeorological stations for data collection, monitoring, and exchange;
- (iv) Identify monitoring parameter suggested for data collecting, monitoring, and exchange;
  - (v) Develop practical operational framework for the collecting, monitoring, and exchange of river discharge, water allocation, hydrological and hydrometeorological data and other water and environmental information;
  - (vi) Propose required set of data collection and monitoring equipment, and required recalibration, repair, and/or installation of data collection and monitoring stations with cost estimations, and procure and/or contracting them out;
  - (vii) Train the RBO, its sub-office, the MEWWR local staff to improve their data collection, monitoring capacities, and monitor and evaluation their performance against established baseline indicated in the design and monitoring framework; and
  - (viii) Facilitate improved understanding of river hydrology, hydrometeorology, and hydro-morphology of the basin among the various institutions associated with the project.

**6. Water Resources Economists (international: 2 person-months, national: 12 person-months).** These economists will work closely with the Team Leader and other team members to facilitate integration of economic aspects in preparation of the RBMP and in development of the monitoring and evaluation indicators. Their involvement will include but not limited to:

- (i) Assist the RBOs and RBCs to analyze and evaluate the current water situation to plan basin WRM for different periods keeping in view the economic developments, demographic forecasts, effects of climate change, and other factors affecting the basin development.

**7. Information Technology Specialist (national: 9 person-months).** This specialist will:

- (i) Assess the data processing and database requirements for RBO and its sub-office, the MEWR local offices and other national agencies, and in JPRBC, keeping in view specific requirements and functions they are required to perform;
- (ii) Develop practical data processing system, and design and assess the equipment required for data processing, establishing the databases, prepare equipment specifications, and procure and install the equipment;
- (iii) Procure and/or develop the software to run the data processing and data bases;
- (iv) Develop operation manuals for the operators regarding use of databases;
- (v) Key in the information and make the databases operational;
- (vi) Develop database for each sub-basin to help improve quality of decision making;
- (vii) Develop procedures on updating of information, future system upgrade, and network expansion for data exchange;
- (viii) Develop capacity of the RBO and its sub-office with respect to IT; and
- (ix) Train the RBO and its sub-office, and the JPRBC staff to run the databases.

**8. Environment Specialist (national: 12 person-months).** This specialist will work closely with the Team Leader and other team members and ensure that all relevant environmental aspect are given due consideration in the development of organization structure for both the JPRBC and RBO, and in the development of the RBMP. Assist the RBOs, RBCs, and JPRBC to analyze and evaluate the current and likely environmental situation to plan basin WRM for different periods.

9. **Gender and Social Development/Communication Facilitation Specialist (national: 12 person-months).** This specialist will work closely with the Team Leader and other team members and ensure that all relevant water use and water supply stakeholders are involved in the consultation, review, and approval process of the RBMP in the platform of the RBC. S/he will be responsible for implementing required activities included in the Gender Action Plan, monitoring and evaluating achievements against targets in the Plan, and reporting to the team leader.

## ANNEX 2

**SCOPE OF SERVICES FOR PROJECT IMPLEMENTATION CONSULTANT (PIC) FOR  
(OUTPUT 2, ORIGINAL PROJECT)**

1. The PIC will support ALRI, PIG and the PIOs to manage project implementation. The scope of services and detailed tasks of the PIC are given in the following paragraphs. The proposed positions and person-month inputs for each position are provided in Table A2.1. The total consultant cost is estimated at \$1.66 million excluding contingencies, and taxes and duties.

**Table A2.1: Proposed Position, inputs, and Estimated Costs<sup>a</sup>**

Sr. No.	Scope of Services	Position	International Staff			National Staff		
			Person-Months	Unit Cost	Total Cost (,000 \$)	Person-Months	Unit Cost	Total Cost (,000 \$)
1	Project Management and Monitoring and Evaluation	Project Manager/Team Leader (TL) (int.) and deputy TL	12.0	21.0	252.0	40.0	3.2	128.0
		M&E Specialist	1.5	19.0	28.5	15.0	3.0	45.0
		Social Safeguards Specialist (s)	0.5	19.0	9.5	7.0	2.7	18.9
		Procurement and Contract Specialist	2.0	19.0	38.0	18.0	3.0	54.0
		Environmental Specialist	0.5	19.0	9.5	7.0	2.7	18.9
		O&M Specialist	2.0	19.0	38.0	9.0	3.0	27.0
		Financial Mmanagement Specialist	0.0	19.0	0.0	4.0	3.0	12.0
	<b>Sub- Total</b>		<b>18.5</b>		<b>375.5</b>	<b>100.0</b>	<b>303.8</b>	
2	Review of Feasibility Design/Detailed Design and Preparation of Bidding Documents	Hydraulic Design Engineer/Deputy TL	2.0	20.0	40.0	4.0	3.0	12.0
		Structural Design Engineering Specialist	2.0	19.0	38.0	4.0	3.0	12.0
		Geotechnical Engineering Specialist	0.0		0.0	1.5	3.0	4.5
		Telecommunication Specialist	0.0	19.0	0.0	2.0	3.0	6.0
		Sedimentation/Hydrology Specialist	1.0	19.0	19.0	2.0	3.0	6.0
		Climate Change Specialist	1.0	19.0	19.0	2.0	3.0	6.0
		Mechanical Engineer (Pumping Stations, Gates and Gearing)	1.0	19.0	19.0	5.0	3.0	15.0
		Electrical Engineer (Pumping Stations)	1.0	19.0	19.0	3.0	3.0	9.0
	<b>Sub- Total</b>		<b>8.0</b>		<b>154.0</b>	<b>23.5</b>	<b>70.5</b>	
3	Construction Supervision Activities	Planning & Scheeduling/ Costing Engineer	0.5	19.0	9.5	6.0	3.0	18.0
		Contract/ Claims Specialist	0.5	19.0	9.5	10.0	3.0	30.0
		Quality Control Engineer	3.0	19.0	57.0	20.0	3.0	60.0
		Field Engineers - 3				60.0	2.0	120.0
		Laboratory Engineer				6.0	2.0	12.0
	<b>Sub- Total</b>		<b>4.0</b>		<b>76.0</b>	<b>102.0</b>	<b>240.0</b>	
4	Capacity Development to ALRI and WUASU Local Staff	Irrigation Engineer	2.0	19.0	38.0	14.0	2.7	37.8
		WUA Specialist	2.0	19.0	38.0	6.0	2.7	16.2
		<b>Sub- Total</b>						
	<b>Total</b>		<b>34.5</b>		<b>681.5</b>	<b>245.5</b>	<b>668.3</b>	

**A. Project Management and Coordination**

2. The scope of services will be:

- (i) Assist in coordinating all matters related to project implementation with relevant authorities of the government, the local administration, ADB, and other organizations;
- (ii) Provide on-the-job training in implementing ADB guidelines and procedures, efficient project implementation and scheduling techniques;
- (iii) Assist in programming project activities, estimating the financial requirements for these activities and the release of funds on time;
- (iv) Assist in coordination with other agencies concerned to ensure that procurement of works, goods, and services follow ADB's guidelines and procedures, and that all steps are taken expeditiously and in a transparent manner;
- (v) Assist in ensuring that the accounting standards for the project meet ADB's requirements and that the withdrawal applications sent to ADB are complete, accurate and are sent on a timely basis;
- (vi) Assist in ALRI's development of CIS asset and O&M plan to comply with the loan covenant;
- (vii) Assist in coordination with the PIOs to ensure that all periodic reports are prepared systematically, submitted on time, reflect the real picture of project implementation; that major issues relating to project implementation are brought to the attention of the concerned parties and the necessary remedial measures are implemented; and
- (viii) Assist in maintaining detailed financial accounts and other project records, and prepare other documentation as may be required by the PIG Director or ADB.

**B. Monitoring and Evaluation**

- (i) In coordination with the PIG and PIOs develop a project monitoring and evaluation (M&E) system, including: (a) long-term environmental and social impact monitoring programs, (b) quantifiable indicators to monitor and measure the performance, level of maintenance and efficiency of the rehabilitated system, and (c) benefit monitoring systems, including economic benefits and beneficiary household financial incomes attributable to the project, among others;
- (ii) Ensure that such an evaluation system will be compatible with or improve the existing government's system to monitor development progress in the agricultural sector so that the project impact monitoring can be performed effectively by the Government after project completion;
- (iii) Develop in coordination with PIG and PIOs a standard format for reports that will clearly reflect project progress in the context of each of its components;
- (iv) Assist in ALRI's collection of necessary information to develop CIS asset management and O&M plan to comply with the loan covenant;
- (v) Prepare manuals and conduct training for the EA, PIG and PIO staff who will be responsible for project M&E to conduct regular monitoring of the project activities and prepare project progress reports;
- (vi) Assist the EA and IAs to establish and implement Grievance Redress Mechanism;
- (vii) Assist the EA and IAs to (a) update as necessary the EMP implementation cost provided in the IEE, (b) include the EMP in bidding documents, (c) monitor and review the EMP in line with ADB's SPS and as provided in the bidding document, (d) effectively implement and carry out activities related to implementation of the

- EMP, and (e) assist the EA and IAs in preparing the environmental monitoring report on a bi-annual basis for submission to ADB. In this respect, the consultant will ensure that all project components are implemented as required by the environmental laws of the Government of Tajikistan and ADB's SPS;
- (viii) Assist the EA and IAs to assess the environmental impacts of all required works under the project;
  - (ix) Assist the EA and IAs to identify environmental sensitivities in the project area requiring further investigations and prepare plan on environmental mitigation measures;
  - (x) Assist the EA and IAs to evaluate the requirements for environmental monitoring and prepare a long-term environmental monitoring program;
  - (xi) Assist the EA and IAs to (a) update as necessary the EMP implementation cost provided in the EIA, (b) include the EMP in bidding documents, (c) monitor and review the EMP in line with ADB's SPS and as provided in the bidding document, (d) effectively implement and carry out activities related to implementation of the EMP, and (e) assist the EA and IAs in preparing the environmental monitoring report on a bi-annual basis for submission to ADB. In this respect, the consultant will ensure that all project components are implemented as required by the environmental laws of the Government of Tajikistan and ADB's SPS;
  - (xii) Assist in reviewing and updating, as necessary social and gender studies, and preliminary resettlement due diligence report prepared by PPTA Consultants;
  - (xiii) Assist in preparing Environment Health Safety Plan, Change Management Statement if required and Resettlement Plans for all locations where project civil works will involve land acquisition and/or livelihood disruption on rights of way.
  - (xiv) Assist ALRI, PIG and PIOs in disclosing and implementing the Resettlement Plans and in the conduct of due diligence and formulation of corrective actions for activities or land acquisition assessment not covered in the PPTA in accordance with the ADBs SPS;
  - (xv) Support ALRI, PIG and PIOs in monitoring and carrying out activities related to implementation of the LARP in line with relevant ADB guidelines;
  - (xvi) Assist in planning and conducting a midterm socioeconomic survey that updates the survey prepared by the PPTA for the project area;
  - (xvii) Assist in reviewing the analyses of the midterm socio-economic survey data collected and reported for the Social Impact Assessment, and provide comments and recommendations;
  - (xviii) Support the Specialists to incorporate social and gender dimensions in preparing the relevant training programs for water users;
  - (xix) In coordination with the EA, IAs and the consultants engaged for output 3 (i.e., NGOs and/or local universities), lead the collection data and information related to (a) crop land use, crop patterns, cropping intensity, crop yields, etc., and (b) economic surplus parameters to assist the Government and ADB to conduct the project economic and financial reevaluation by the project's midterm review. Data and information requirements for surveys/collection led/coordinated by M&E Specialists are in Annex Table 3 of the Detailed Economic and Financial Analysis;
  - (xx) Implement the Gender Action Plan (developed during PPTA) or other actions integrated in the project design that addresses the gender issues identified in the social and gender analysis done during PPTA, which includes, among other things, actions that promote women's involvement in the project implementation including efficient water use; and
  - (xxi) Prepare the project completion report at the end of project implementation for finalization by the PIG and ALRI.

### **C. Review of Feasibility-Level Designs**

3. The PIC shall review the feasibility level designs prepared under the PPTA and where necessary revise or elaborate to incorporate any newly introduced operational procedures, changes in the design of the project works and additional data that may have become available after the preparation of the original documents. The PIC shall also review the bidding documents of modernization of pumps prepared under the PPTA and incorporate any changes as may be required in the light of available additional information.

### **D. Detail Design and Preparation of Bidding Documents**

4. The general scope of services for the consultants comprises but is not limited to:
- (i) Carry out additional surveys, geotechnical investigations, hydrological analysis and other such activities where necessary to provide a basis for design of all the hydraulic structures and water supply schemes;
  - (ii) Prepare capacity and command statements for the main canal, interfarm canals and on farm canals and firm-up location of each hydraulic structure including outlets;
  - (iii) Design and prepare longitudinal profiles and cross sections for irrigation channels;
  - (iv) Prepare hydraulic, structural, electro-mechanical and geotechnical design criteria;
  - (v) Undertake detailed design of all proposed project works with complete drawings for I&D infrastructure, sediment excluding basin, rehabilitation and modernization of pumps. The irrigation conveyance distribution system will include the canals, control structures, bridges, falls, outlets and all associated cross drainage works including electro-mechanical works will be designed in strict accordance with accepted state of the art methods of irrigation science, hydraulics, soil mechanics and structural engineering;
  - (vi) Prepare suitable ICB and NCB contract packages, with the cost estimates and complete bidding documents;
  - (vii) Evaluate and incorporate the impact of climate change risks on agriculture and cross drainage flows for the Project; and
  - (viii) Prepare operation and maintenance (O&M) manuals for all the major structures, ensuring optimization of water deliveries.

### **E. Support in Procurement**

- (i) Familiarize ALRI, PIG and PIO staff on project procurement requirements, including ADB guidelines and procedures on procurement and use of consultants;
- (ii) Enhance contracting capacity at ALRI, paying particular attention to on-the-job transfer of knowledge, as well as organizational and management considerations;
- (iii) Assist ALRI, PIG, PIOs prepare detailed procurement plans and packages, and determine realistic time-bound schedules for procurement, including parallel and sequential steps for completing procurement activities from initial planning to delivery of goods and services;
- (iv) Prepare bidding documents for procurement of works, goods and equipment, in consultation and coordination with the PIG;
- (v) Assist in the conduct of prequalification, issuance, bid opening, and evaluation of bids, leading to the award of contracts; and

- (vi) Assist the PIG and ALRI in preparing bid evaluation reports, discussions during pre-contract award meetings and finalization of the contract for ADB's approval.

## **F. Construction Supervision**

5. The construction works will be executed under the International Federation of Consulting Engineers (FIDIC) Conditions of Contract for Works of Civil Engineering Construction. Accordingly, ALRI will be the Employer and the consultant will function as the Engineer. The consultant will administer the civil and mechanical works contracts and ensure that the project is constructed in accordance with the provision of the civil and mechanical works contracts. The consultant will be required to nominate an engineer's representative who will be a full-time resident in the project area. The responsibility of the Engineer includes, but is not limited to, the following tasks:

- (i) Give the order to commence the works;
- (ii) Review and approve proposed personnel for positions nominated in the Contract;
- (iii) Inspect and approve all material sources identified by the Contractor;
- (iv) Review and approve the Contractor's implementation schedule, and supervise the progress of construction works. The Consultant will keep the Employer informed of any delay or potential delays in the work schedule of the Contract, and will take all necessary actions to prevent potential delays;
- (v) Review, approve and monitor the construction plan to ensure the un-interrupted flow of traffic during construction, and to ensure that construction activities do not endanger safety of the public;
- (vi) Regularly monitor and inspect the contractor's quality control and assurance program to ensure that quality of the finished works meet the contract standards and specifications. This includes regular checking of the materials testing program;
- (vii) Advise and assist the Employer with respect to arbitration or litigation relating to the works, whenever required;
- (viii) Monitor progress of the construction works through computer- aided project management techniques;
- (ix) Convene regular site meetings with the Contractor to discuss issues and problems affecting the progress, and brief the Employer;
- (x) Coordinate with the relevant local government authorities / agencies so as to minimize disruption to the works program, as required by the Contractor;
- (xi) Review the contractor's insurance cover to ensure that the contractor has provided all the insurance required by the contract and such insurance are maintained throughout the contract period;
- (xii) Prepare any required variation orders requested by the Employer and review any variation order proposed by the contractor and provide their advice to the Employer in accordance with the contract;
- (xiii) Review all claims submitted by the Contractor and provide advice to the Employer of the validity of the claim, the effect of such claim on the construction schedule and the cost of the project;
- (xiv) Review and comment on the monthly progress reports submitted by the contractor detailing the work undertaken during the previous month, the progress of the work against the approved schedule, the problems and difficulties encountered by the contractor and other issues requested by the Employer;
- (xv) Issue completion certificate after satisfactory completion of the works in accordance with the contract provisions;

- (xvi) Prepare detailed social screening and mitigation plans, if necessary, and develop poverty monitoring impact monitoring systems;
- (xvii) Ensure that the construction methods as proposed by the contractor for carrying out the works are satisfactory, with particular references to the technical requirements of (a) the EMP, (b) inspection of contractor's construction equipment, (c) safety of the works, property, personnel, and general public;
- (xviii) Assess and check the laboratory and field tests carried out by the contractor, and carry out independent tests.
- (xix) Issue orders to the Contractor to remove or improve any works that are not in accordance with the drawings and/or specifications;
- (xx) Maintain records of all testing work, including cross-referencing of items of work to which each test refers and location from which any samples were obtained for testing;
- (xxi) At the completion of the contract, verify the contractor's "as-built drawings" as a true record of the works as constructed;
- (xxii) Measure the completed works and keep detailed records, including the measurement books;
- (xxiii) Prepare quarterly cash flow projections for the Employer in an acceptable format, in which cash flow should identify budget estimates for all outstanding works;
- (xxiv) Maintain records of all plant, labour and materials used in the construction of the works;
- (xxv) Process interim and final payments to the Contractor (interim monthly payment shall be based on interim payment certificate processed by the Consultant following claims filed by the Contractor);
- (xxvi) The Consultant will be responsible for checking and monitoring the performance requirements in the Contract and ensuring the criteria and limits are met;
- (xxvii) Maintain a day-to-day diary, which shall record all events pertaining to the administration of the contract, request forms, and order given to the contractor, and any other information which may at a later date be of assistance in resolving queries which may arise connecting execution of the works; and
- (xxviii) Develop and implement training programs for ALRI staff at the site on project management including quality assurance and contract administration.

## **G. Capacity Development**

6. Part of consulting services will facilitate capacity development of field offices of the Agency for Land Reclamation and Irrigation (ALRI), and Water Users' Associations Support Unit (WUASU), to enable them to perform their duties more efficiently and effectively. The scope of services will include the design of office and field equipment, training of the staff, and study tours, detailed as follows.

- (i) Assist in the procurement of discharge and sediment measurement equipment, modernization/construction of the required infrastructure for measurement, and training of staff on the use of equipment;
- (ii) Training of (a) the ALRI local staff in three target districts in discharging their duties, and (b) WUASU staff in Khatlon province and three districts to enable them to organize new WUAs on hydrological boundaries and train and guide existing WUAs to undertake their assigned task efficiently; and
- (iii) Overseas study tour for 24 staff of ALRI field offices and WUASU.

7. Below are the required consulting services for capacity development and its respective tasks.

8. **Irrigation Engineer (Irrigation) (international 2 person-months, national 14 person-months).** The international and national specialists will carry out the following:

- (i) Prepare a list of discharge and sediment measurement equipment required for the ALRI field offices in the project area, prepare their specification, and assist in the procurement of the equipment;
- (ii) Together with ALRI staff, locate suitable sites for discharge measurement and sediment sampling, and facilitate modernization/construction of any infrastructure required (like cable cross the canal and modernization/establishment of sediment analysis laboratory);
- (iii) Prepare capacity development modules for ALRI field staff in discharging their duties including estimation of diversion requirement, efficient distribution and management of water resources, coordination with all stakeholders, preparation of program and implementation of proper operation and maintenance, and discharge and sediment measurement;
- (iv) Carry out above capacity development program for ALRI field staff;
- (v) Prepare guidelines for M&E of project implementation and performance, and train relevant staff in undertaking M&E; and
- (vi) Arrange and facilitate an overseas study tour for 24 ALRI field staff and WUASU field staff (Khatlon province and three districts) in two groups that would enhance their capacities to undertake their assigned duties.

9. **Water Users' Associations (WUA) Specialist (international: 2 person-months, national: 6 person-months).** These specialists will focus on capacity development and training of the WUASU including:

- (i) Review of current responsibilities, institutional structure, budgetary allocations, linkages with relevant organizations, and achievements in the recent past of WUASUs, identify constraints, and prepare recommendations for improved performance of the unit;
- (ii) Discuss findings and recommendation with Head, WUASU and higher officials of ALRI, and prepare an agreed line of action for improvement;
- (iii) Prepare recommendations for procurement of field equipment, prepare specifications, and assist in procurement;
- (iv) Prepare various modules for training of the WUASU staff to (a) mobilize beneficiaries to organize new WUAs in area where none exists and assist them to organize on hydrological boundaries, (b) reorganize existing WUAs on hydrological boundaries, (c) train and guide the WUAs in water measurement, on-farm water management, running WUAs, and record keeping of financial and office proceedings;
- (v) The WUASU staff will also be trained to help WUAs undertake O&M efficiently which would include (a) assistance in preparation of annual O&M plans, and (b) undertake routine maintenance, preventive maintenance, deferred maintenance; and modernization of works during routine maintenance;
- (vi) On financing, the WUASU staff will be trained to help WUAs in (a) preparing water indents, (b) keeping water delivery records, (c) preparing bills for irrigation service fees and WUA service charges, (d) collecting receivable, issuing receipts, and

- keeping record of all receipts and expenditure, and (d) keeping record of the inventories; and
- (vii) Together with other consultants under this component, prepare overseas study tour which would include WUASU staff as well.

## ANNEX 3

**CONSULTING SERVICES FOR FARM MANAGEMENT AND WATER USE CAPACITIES  
DEVELOPMENT (OUTPUT 3, ORIGINAL PROJECT)**

1. **General Scope of Work.** The services of a nongovernment organization (NGO) with possible university specialists will be hired to facilitate the Agency for Land Reclamation and Irrigation (ALRI), executing agency (EA) of the project, in implementing the following three components of Output 3.

- (i) Demonstration to promote profitable farm management and efficient water use. It includes promotion of (a) improved seeds, (b) efficient farm operations and management, (c) balanced use of agricultural inputs, (d) high-efficiency irrigation system, and (e) promotion of value addition and value chain. It will also conduct periodic short training session to introduce new practices and technologies employed under the project;
- (ii) Production of high-quality seeds; and
- (iii) Establishment and possible reorganization of water users' associations (WUAs), and capacity development of WUAs and beneficiaries.

2. The required consulting services and scope of services are given in the following paragraphs.

3. **Farm Management Specialists (international: 4 person-months, national: 18 person-months).** This specialist (and in his/her absence the national farm management specialist) will be the Team Leader and will manage the overall components (including arrangements for renting of vehicles and farm equipment where required) together with other specialists. The specialists will design, manage, administer, and disseminate results of the demonstration plots and train the farmers. Specifically, their tasks will be:

- (i) Together with seed specialists, select crops, their varieties, farming systems, farm operations, crops inputs and methods of irrigation for demonstration giving priority to new crops and technologies and those with high potential of improvement;
- (ii) Decide regarding distribution of various demonstration variable in various parts of the project area, and their distribution between gravity- and pump-fed systems;
- (iii) Together with high efficiency irrigation specialist, select farms and the crops for demonstration of the high efficiency irrigation system in the pump-fed systems;
- (iv) Selection of farmers where demonstration will take place, designing share of responsibilities of the farmers and the project, and finalization of agreements;
- (v) Train the selected farmers in keeping proper records relevant to the demonstration farms and keeping accounts (e.g., develop balance sheet and its evaluation and assessment);
- (vi) Prepare technical specifications for the equipment to be procured for demonstration plots, and the agricultural machineries to be procured for suitable and resourceful farmers (i.e., seed growers), if necessary, with the help of other specialists, and assist the PIG in procurement;
- (vii) Where farm equipment needs to be rented and agricultural service providers are sought, prepare specifications, make suitable arrangements for renting and obtaining services, finalize the rates and schedule for their use, enter into contracts with the potential suppliers and service providers, and monitor and certify their use for payment;

- (viii) Prepare design for seed storage bins and coordinate with the implementation consultants for their contract award and construction;
- (ix) Manage timely inputs from the project, and monitoring inputs and management by the farmers;
- (x) Facilitate and monitor proper recording of the input, crop development, yield, and other information which may be considered necessary;
- (xi) Disseminate results of the demonstration farms and any improvement which could be incorporated in future crop production;
- (xii) Using the results of the demonstration farms, train the project area farmers on improved farm management practices; and
- (xiii) With the seed specialist, develop the system of reproduction and redistribution of the seeds that recipient farmers will return to the project one-and-a-half times, in principle the seeds they received for further multiplication.

**4. High Efficiency Irrigation Specialist (international 2 person-months, national 12 person-months).** This specialist will:

- (i) Together with farm management specialists, select the type of crops suitable for high efficiency irrigation system, and schedule its distribution during the implementation period for demonstration in the pump-fed project area;
- (ii) Together with farm management specialists, prepare an implementation plan with shares of farmer's and project's responsibilities;
- (iii) Prepare a complete design of the proposed high efficiency irrigation system(s), prepare their technical specification, estimate costs, and facilitate procurement and installation of the systems at the selected farms;
- (iv) Monitor performance of the systems during the growing period and rectify any problems encountered;
- (v) Ensure proper keeping of demonstration farms records which may be of interest to other farmers who may like to install the system on their farms;
- (vi) Disseminate results of the demonstration farms and any improvement which could be incorporated in future crop production; and
- (vii) Monitor, update, and evaluate the conveyance and field application irrigation efficiencies (also called water use ratio) in the CIS area, and in various parts of the project area segregated by the gravity- and pump-fed areas using the flow measurement data, and the remote sensing technology employed under the project preparatory technical assistance in the project area and the crops grown. This will be compared with the baseline data (indicated in the design and monitoring framework) produced based on ALRI's records and remote sensing technology. The cost to employ the remote sensing technology is available in the survey and study line item of the consultant contract. Calibration of results obtained by remote sensing with those obtained by actual field observation will facilitate wide use of the efficient and economical way of using remote sensing for estimating field efficiency in other parts of the country.

**5. Seed Specialist (international 4 person-months, national 18 person-months).** The tasks of this specialist are to:

- (i) Prepare a list with technical specifications of field equipment and equipment required for modernization of seed laboratories in Hamadoni, Farkhor, and Vose and facilitate their procurement and installation;

- (ii) Train the laboratory staff on the use of laboratory equipment and procedure for certification of the seed;
- (iii) With due consideration to availability, importance, potential, suitability of the agro-climatic conditions of the project area, and need for promotion; select the crops and varieties for which seed need to be produced at the project area;
- (iv) Identify suitable sources for procurement of foundation seed of the selected crops and varieties and facilitate procurement;
- (v) Select suitable and resourceful farmers, preferably with previous record and experience of growing seeds for seed production in the project area;
- (vi) Prepare contracts with clearly laid down conditions, responsibilities, and liabilities of both parties;
- (vii) Sign contracts with selected farmers for production of seeds;
- (viii) Prepare design and assist the bidding and construction of seed storage bins at selected seed growing farms;
- (ix) Train the selected seed grower on various steps and precautions to be taken, recording of information, and monitoring of various stages;
- (x) Monitor crop growth and advice any remedial/corrective measures that must be taken to ensure the quality and targeted yields; and
- (xi) Monitor the quality of seed in the seed testing laboratory and pack the certified seed with certification for distribution among the project area farmers.

**6. Institutional Development Specialist (international 1 person-month).** The specialist shall have (i) rich relevant technical experiences in relation to WUAs particularly in Central Asian countries, (ii) familiarity with WUA taxation issues, and (iii) experience in strengthening WUA operational, organizational, and financial management capacities. The tasks of this specialist are as follows:

- (i) Review the current legislation governing the organization and operation of WUAs in Tajikistan, the current institutional arrangement for their organization and training, taxation status, and their actual operation and historical performance;
- (ii) Identify legal, institutional, and operational constraints, and propose remedial measures; and
- (iii) The recommended remedial measures may include but not limited to those relating to amendments in the legal framework, changes in the status (like which may exempt them from taxation), write-off of previous liabilities to let them start with a clean slate, capacity development, curriculum and schedule of periodic trainings.

**7. Water Users Associations Training Specialists (international: 4 person-months, national: 18 person-months).** These specialists should have rich experience for strengthening WUAs particularly in Central Asia. They will work closely with and build capacity of the WUAs. Where more than one consultant is required for a task, the proportion of male and female staff will be equal. Their tasks would include the following.

- (i) Review the organization structure and geographic coverage of the existing WUAs and identify areas not covered by WUAs and those where WUAs have been organized on administrative rather than hydrological boundaries;
- (ii) Through community mobilizers, convey to the members of existing WUAs the benefits and motivate them to reorganize on hydrological boundaries;
- (iii) Through community mobilizers, motivate the communities to organize WUAs in parts of the project area where none exists currently;

- (iv) Identify capacity development requirements in light of technical, financial management, and organization of the WUA, and build their capacity using available resources;
- (v) Review current WUA membership fee and collection rate in each WUA's membership fee and irrigation service fee, by cash and in-kind; assess the required and current WUAs' tasks, and the available resources to identify the financial gap, and, with the community mobilizers, propose new membership fee, if necessary to sustain WUAs' tasks;
- (vi) Follow up with various government agencies on relevant recommendations of the institutional development specialist for better organized, and operational WUAs;
- (vii) Following recommendations of the institutional development specialist, prepare a detailed curriculum for training of the office holders and staff of the WUAs and a plan for implementation;
- (viii) Carry out training of WUA technical officials and staff in estimating water requirements and preparing indent for ALRI, timely and equitable distribution of water, measurement and water delivered, and keeping of record, preparation of bills for irrigation service fees (ISF), collection of ISF and WUA membership fee and maintaining records of all receipts and expenses;
- (ix) Carry out training of WUAs in preparing operation and maintenance plans and in carrying out regular, preventive, and emergency maintenance and repairs;
- (x) Specific training courses will be conducted to train the farmers on how to maintain the on-farm facilities on their farm and the joint maintenance of the inter-farm canals in the WUA coverage area;
- (xi) Carryout special training courses for accountant in book-keeping, maintenance of record and inventory, issuance of bill and receipts, and overall management of the accounts;
- (xii) With community mobilizers, carry out campaigns to WUAs members to inform the responsibility of WUA's members; and
- (xiii) Together with the farm management, high efficiency irrigation, and value addition and value chain specialists, carry out training sessions of the project area farmers on the choice of crops and their varieties, farm operations, agricultural input, post-harvesting operation, value addition and value chain, and marketing.

**8. Social and Gender/Community Mobilizing Specialists (national: 36 person-months for two mobilizers).** The community mobilizers will work closely with the farming communities (female community mobilizer with female farmers) to convey to them the benefits of community organization particularly on hydrologic boundary. Where more than one consultant is required for a task, the proportion of male and female staff will be equal. Their tasks would include the following.

- (i) Arrange farmer group meetings at the demonstration farms to disseminate results of the demonstration farms and any improvement which could be incorporated in future crop production;
- (ii) Arrange workshops to train the project area farmers on improved farm management practices;
- (iii) Facilitate dissemination of information through farmer groups, posters, brochures, print, and electronic media;
- (iv) Conduct consultations with local community associations for selection of farmers where demonstration will take place, designing share of responsibilities of the farmers and the project, and finalization of agreements;

- (v) Conduct consultations with local authorities, community associations, WUAs, and other NGOs to select suitable and resourceful farmers, preferably with previous record and experience in growing seeds for seed production in the project area;
- (vi) With the WUA training specialists, convey to the members of existing WUAs the benefits and motivate them to reorganize on hydrological boundaries;
- (vii) With WUA training specialists, motivate the communities to organize WUAs in parts of project area where none exists currently;
- (viii) With WUA training specialists, carry out campaigns to WUAs members to inform the responsibility of WUA's members;
- (ix) Implement required activities included in the gender action plan, monitor and evaluate achievements against targets in the plan, and report to the team leader; and
- (x) Work together with the WUA specialist in the establishment of WUAs in areas currently not covered, and reorganization of existing WUAs on hydrological boundaries.

**9. Value Addition and Value Chain Specialists (international: 3 person-months, national: 9 person-months).** The specialists will:

- (i) Identify areas of value addition keeping in view the crops grown in the project area, marketing situation, and potential of adoption in the community particularly women;
- (ii) Procure the equipment and material required for training of the selected initiative for value addition;
- (iii) Prepare a training program schedule keeping in view the time when potential trainees would be available, and carryout training;
- (iv) For promotion of value chain, identify potential areas suitable for value chain initiative keeping in view the comparative advantage of agro-climatic conditions of the project area in growing specific crops and interest of the potential investors;
- (v) After consultation with the government, project beneficiaries, and other specialists, zero in on few value chain areas for further perusal;
- (vi) Coordinate with potential international and national investors to gauge their interest;
- (vii) Hold a three-day conference preferably close to the project area with participation of the potential investors, government officials from relevant department, project area farmers, local administration, and ADB officials. The consultant would describe in detail the potential areas of value chain and would facilitate free communication among the participants; and
- (viii) A clearer picture of potential of value chain is likely to emerge at the end of the conference which could ultimately lead to contract farming and investment in the project area by various investors which would benefit all stakeholders.

**10. Monitoring and Evaluation (M&E) Specialist**

**11. <sup>1</sup> (national 18 person-months).** This specialist will work closely with the PIG M&E officer in keeping track of the project performance and benefits. This specialist will:

- (i) Develop M&E dataset using baseline data and targets indicated in design and monitoring framework, GAP, and other project documents, and develop practical M&E tool and system for the use of consultant team members;

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<sup>1</sup> The cost of this item is shown as a separate item in the cost estimate and not in consultant input.

- (ii) Consolidate and update consolidated data collected from respective specialists;
- (iii) Evaluate the progress of achievement against each target, and keep informing the respective specialist for their remedial actions;
- (iv) If the initial data collected are substantially different from baseline data, inform the magnitude to the team leader for necessary action;
- (v) Develop M&E report periodically and report it to the PIG M&E officer.

12. The total cost is estimated at \$1,293,400.<sup>2</sup> Estimated cost and the financing plan are given in Table A3.1.

**Table A3.1: Cost Estimates and Financing Plan**  
(\$'000)

Item	Total Cost
<b>A. Asian Development Bank (JFPR Grant)</b>	
1. Consultants	
a. Remuneration and per diem	
i. International consultants (18 person-months)	450.0
ii. National consultants (111 person-months)	373.9
b. International and local travel	80.0
c. Reports and communications	25.0
2. Workshops, training, seminars, and conferences	78.0
3. Survey, study and design (M&E of water use ratio)	152.0
4. Miscellaneous administrative and support costs (vehicle rental and office administration)	50.0
5. Contingencies	84.5
<b>Total</b>	<b>1,293.4</b>

Source: ADB estimates.

13. The details of estimated costs are given in Table A3.2.

**Table A3.2: Details of Estimated Costs**

Specialist	Person-months	Rate (\$)	Total (\$)
<b>International</b>			
1. Farm Management Specialist	4	20,000	80,000
2. High Efficiency Irrigation Specialist	2	20,000	40,000
3. Seed Specialist	4	20,000	80,000
4. Institutional Development Specialist	1	20,000	20,000
5. Water User's Association Training Specialist	4	20,000	80,000
6. Value Addition and Value Chain Specialist	3	20,000	60,000
<b>Subtotal (A)</b>	<b>18</b>		<b>360,000</b>
<b>National</b>			
1. Farm Management Specialist	18	2,700	48,600
2. High Efficiency Irrigation Specialist	12	2,700	32,400
3. Seed Specialist	18	2,700	48,600
4. Water User's Association Training Specialist	18	2,700	48,600

<sup>2</sup> The cost include the consulting services (\$0.98 million), survey, study and design (\$0.152 million), training and workshops (\$0.078 million) as indicated in Table 8 of the PAM, and contingencies.

	<b>Specialist</b>	<b>Person-months</b>	<b>Rate (\$)</b>	<b>Total (\$)</b>
5.	Social and Gender/Community Mobilizer (male)	18	2,700	48,600
6.	Social and Gender/Community Mobilizer (female)	18	2,700	48,600
7.	Value Addition and Value Chain Specialist	9	2,700	24,300
8.	M&E Specialist	18	2,700	48,600
	<b>Subtotal (B)</b>	<b>129</b>		<b>348,300</b>
	<b>TOTAL (A+B)</b>			<b>708,300</b>
1.	International and Local Travel			80,000
2.	Per diem (international specialists)			90,000
3.	Per diem (national specialists)			25,600
4.	Reports and Communications			25,000
5.	Workshops, trainings, conferences and seminars			78,000
6.	Survey, study and design (M&E of water use ratio)			152,000
7.	Miscellaneous administrative and support costs (vehicle rental and office administration)			50,000
8.	Contingencies			84,500
	<b>Subtotal (C)</b>			<b>585,100</b>
	<b>GRAND TOTAL</b>			<b>1,293,400</b>

Source: ADB estimates.

**SCOPE OF SERVICES FOR PROJECT IMPLEMENTATION CONSULTANT (PIC) FOR ADDITIONAL FINANCING**

1. The PIC will support Hydromet and newly established Hydromet project implementation group (PIG) to manage project implementation. The scope of services and detailed tasks of the PIC are given in the following paragraphs. The total consultant cost is estimated at \$1.9 million. This estimate will be updated during implementation as required.

<b>Category</b>	<b>Inputs</b>
International Consultants	44 PM
National Consultants	158 PM
Travel and Per Diem	\$0.38 million
Other Reimbursable Expenses <sup>1</sup>	\$0.05 million
Contingency	\$0.10 million

PM = person-months

<sup>1</sup>Includes communication, report preparation, office admin, transport, office equipment and facilities.

**H. Scope of Services**

2. The PIC will support the efficient and timely implementation by the PIG of the four key project components: (i) modernization of the Hydromet operations center [Component A], (ii) legal and organizational transformation [Component B], (iii) forecasting and warning of extreme weather [Component C], and (iv) marketing of fee-based services [Component D]. The services will also cover overall project management and coordination, monitoring and evaluation, construction supervision, and procurement support activities.

**B. Key Expertise Required**

3. The consultant team will be led by an international firm with preferably 10 years' experience in designing and preparing similar externally financed projects in the water resources and related sectors, preferably with ADB and in the Central Asia region. It may be advantageous for the lead firm to partner with a local firm or NGO with experience in community consultation, training, and awareness activities.

4. The terms of references are prepared on a performance (output) basis, and thus proposing firms will determine the number and the nature of experts they will require to achieve assignment tasks and deliverables, in accordance with their proposed approach and methodology. However, ADB requires a minimum number of key experts, including a Team Leader and Deputy Team Leader, as tabulated in Table A4-1 below. A time-based contract will be awarded to the winning firm with provisional sums for (i) workshops, seminars, and training, (ii) office O&M and equipment, (iii) studies, surveys, and design, and (iv) contingencies. It is intended that the selected consulting firm will sub-contract a firm to undertake detailed design of civil works.

5. In addition to the required key experts, the proposing entities should also include in their technical proposal, in the personnel work plan, and in their financial proposal all other "non-key experts" required in accordance with their proposed approach and methodology. The proposing entity must also determine and indicate the number of person-months for which each key or non-key expert will be required. For indicative purposes only, the non-key experts might include:

environment specialist, financial management specialist, and procurement specialist. Administrative and support roles (e.g. firm's own financial and contract management) should not be included as non-key experts, and such costs should instead be factored into the overall bid price.

**Table A4-1: Required Key Experts**

Position	Specialist	
	International	National
Institutional Development Specialist <sup>1</sup>	✓	✓
Flood Forecasting Specialist	✓	
Climate Services Specialist	✓	
IT Delivery Specialist	✓	

<sup>1</sup>Institutional Development Specialist international and national specialists will be Team Leader and Deputy Team Leader respectively.

Source: Asian Development Bank.

### C. Detailed Tasks

6. The consultant tasks are expected to include:

#### 7. Project Management and Coordination

- a. Assist in coordinating all matters related to project implementation with relevant authorities of the government, the local administration, ADB, and other organizations;
- b. Develop and provide on-the-job training for the PIG on implementing ADB guidelines and procedures, efficient project implementation and scheduling techniques;
- c. Assist in programming project activities, periodically estimating the financial requirements for these activities and the release of funds on time;
- d. Review the feasibility level studies and designs (including structural audits) prepared under project preparation and where necessary revise or elaborate to incorporate any newly introduced operational procedures, changes in the design of the project works and additional data that may have become available after the preparation of the original documents;
- e. Assist in coordination with other agencies concerned to ensure that procurement of works, goods, and services follow ADB's guidelines and procedures, and that all steps are taken expeditiously and in a transparent manner;
- f. Familiarize and train PIG staff on project financial management requirements, including ADB guidelines and procedures on disbursement;
- g. Assist in ensuring that the financial management and accounting standards for the project meet ADB's requirements and that the withdrawal applications sent to ADB are complete, accurate and are sent on a timely basis;
- h. Assist in coordination with the PIOs to ensure that all periodic reports are prepared systematically, submitted on time, reflect the real picture of project implementation; that major issues relating to project implementation are brought to the attention of the concerned parties and the necessary remedial measures are implemented; and
- i. Assist in maintaining detailed financial accounts and other project records and prepare other documentation as may be required by the PIG Director or ADB.

#### 8. Monitoring and Evaluation

- a. In coordination with Hydromet and the PIG develop a project monitoring and evaluation (M&E) system covering but not limited to the project design and monitoring framework

(DMF), summary poverty reduction and social strategy (SPRSS) and the gender action plan (GAP) targets, including but not limited to: (i) quantifiable indicators to monitor and measure performance and use of Hydromet's forecasting services; (ii) quantifiable indicators to monitor and measure stakeholder feedback and opinion; and (iii) project beneficiaries direct and indirect.

- b. Ensure that such an evaluation system will be compatible with or improve Hydromet's existing system to monitor performance so that the independent monitoring of the project impact and the performance of Hydromet's services can be performed effectively by the Hydromet after project completion;
- c. Develop in coordination with PIG a standard format for reports that can be used on a periodic basis (quarterly and annually) to reflect project progress in each of its components;
- d. Design and mobilize stakeholder opinion survey on Hydromet's services, building on the survey undertaken during project preparation;
- e. Assist the PIG in preparing periodic progress reports (quarterly and annual);
- f. Prepare manuals and conduct training for the Hydromet and PIG staff who will be responsible for project M&E to conduct regular monitoring of the project activities and prepare project progress reports;
- g. Assist the PIG to establish and implement Grievance Redress Mechanism;
- h. Assist PIG to (i) update as necessary the EMP including cost provided in the IEE, (ii) include the EMP in bidding documents, (iii) monitor and review the EMP in line with ADB's SPS and as provided in the bidding document, (iv) effectively implement and carry out activities related to implementation of the EMP, and (v) assist Hydromet in preparing the environmental monitoring report on a bi-annual basis for submission to ADB. In this respect, the consultant will ensure that all project components are implemented as required by the environmental laws of the Government of Tajikistan and ADB's SPS;
- i. Assist the PIG to assess the environmental impacts of all required works under the project;
- j. Assist the PIG to identify environmental, land acquisition, and resettlement sensitivities in the project area requiring further investigations and prepare plan on mitigation measures;
- k. Assist the PIG to evaluate the requirements for environmental monitoring and prepare a long-term environmental monitoring program;
- l. Assist in preparing Environment Health Safety Plan, Change Management Statement if required and Resettlement Plans for all locations where project civil works will involve land acquisition and/or livelihood disruption on rights of way.
- m. If required in line with ADB's SPS, assist PIG in preparing, implementing, and disclosing the Land Acquisition and Resettlement Plans (LARP) and in the conduct of due diligence and formulation of corrective actions for activities or land acquisition assessment not covered in the PPTA in accordance with the ADB's SPS;
- n. If applicable, support PIG in monitoring and carrying out activities related to implementation of the LARP in line with relevant ADB guidelines;
- o. Implement the GAP and/or other actions integrated in the project design that addresses the gender issues identified in the social and gender analysis done during, which includes, among other things, actions that promote women's involvement in the project implementation and receipt of project benefits; and
- p. Prepare the project completion report at the end of project implementation for finalization by the PIG and Hydromet.

## **9. Procurement support**

- a. Familiarize and train PIG staff on project procurement requirements, including ADB guidelines and procedures on procurement and use of consultants;

- b. Enhance contracting capacity at Hydromet, paying particular attention to on-the-job transfer of knowledge, as well as organizational and management considerations;
- c. Assist PIG in preparing and periodically updating detailed procurement plans and packages, and determine realistic time-bound schedules for procurement, including parallel and sequential steps for completing procurement activities from initial planning to delivery of goods and services;
- d. Prepare bidding documents for procurement of works, goods and services, in consultation and coordination with the PIG;
- e. Assist in the conduct of prequalification, issuance, bid opening, and evaluation of bids, leading to the award of contracts, in line with relevant ADB guidelines and project procedures; and
- f. Assist the PIG in preparing: high quality bid evaluation reports in line with ADB guidelines, discussions during pre-contract award meetings, and finalization of the contract for ADB's approval.

## 10. Construction Supervision

11. The PIC will administer the civil works and equipment installation contracts and ensure that the project is constructed in accordance with the provision and intention of these contracts. The construction works will be executed under the International Federation of Consulting Engineers (FIDIC) Conditions of Contract for Works of Civil Engineering Construction. Accordingly, Hydromet will be the Employer and the PIC will function as the Engineer. The PIC will be nominate a supervision representative who will be a full-time resident near the works area. The responsibility of the PIC includes, but is not limited to, the following tasks:

- a. Give the order to commence works. If applicable this should only take place upon ADB's validation of LARP execution;
- b. Review and approve proposed personnel for positions nominated in the Contract;
- c. Inspect and approve all material sources identified by the Contractor;
- d. Review and approve the Contractor's implementation schedule and supervise the progress of construction works. The Consultant will keep the Employer informed of any delay or potential delays in the work schedule of the Contract, and will take all necessary actions to prevent potential delays;
- e. Review, approve and monitor the construction plan to ensure the un-interrupted flow of traffic during construction, and to ensure that construction activities do not endanger safety of the public;
- f. Regularly monitor and inspect the contractor's quality control and assurance program to ensure that quality of the finished works meet the contract standards and specifications. This includes regular checking of the materials testing program;
- g. Advise and assist the Employer with respect to arbitration or litigation relating to the works, whenever required;
- h. Monitor progress of the construction works through computer- aided project management techniques;
- i. Convene regular site meetings with the Contractor to discuss issues and problems affecting the progress, and brief the Employer;
- j. Coordinate with the relevant local government authorities / agencies to minimize disruption to the works program, as required by the Contractor;
- k. Review the contractor's insurance cover to ensure that the contractor has provided all the insurance required by the contract and such insurance are maintained throughout the contract period;

- l. Prepare any required variation orders requested by the Employer and review any variation order proposed by the contractor and provide their advice to the Employer in accordance with the contract;
- m. Review all claims submitted by the Contractor and provide advice to the Employer of the validity of the claim, the effect of such claim on the construction schedule and the cost of the project;
- n. Review and comment on the monthly progress reports submitted by the contractor detailing the work undertaken during the previous month, the progress of the work against the approved schedule, the problems and difficulties encountered by the contractor and other issues requested by the Employer;
- o. Issue completion certificate after satisfactory completion of the works in accordance with the contract provisions;
- p. Prepare detailed social screening and mitigation plans, if necessary, and develop poverty monitoring impact monitoring systems;
- q. Ensure that the construction methods as proposed by the contractor for carrying out the works are satisfactory, with particular references to the technical requirements of (a) the EMP, (b) inspection of contractor's construction equipment, (c) safety of the works, property, personnel, and general public;
- r. Assess and check the laboratory and field tests carried out by the contractor and carry out independent tests.
- s. Issue orders to the Contractor to remove or improve any works that are not in accordance with the drawings and/or specifications;
- t. Maintain records of all testing work, including cross-referencing of items of work to which each test refers and location from which any samples were obtained for testing;
- u. At the completion of the contract, verify the contractor's "as-built drawings" as a true record of the works as constructed;
- v. Measure the completed works and keep detailed records, including the measurement books;
- w. Prepare quarterly cash flow projections for the Employer in an acceptable format, in which cash flow should identify budget estimates for all outstanding works;
- x. Maintain records of all plant, labour and materials used in the construction of the works;
- y. Process interim and final payments to the Contractor (interim monthly payment shall be based on interim payment certificate processed by the Consultant following claims filed by the Contractor);
- z. The Consultant will be responsible for checking and monitoring the performance requirements in the Contract and ensuring the criteria and limits are met;
- aa. Maintain a day-to-day diary, which shall record all events pertaining to the administration of the contract, request forms, and order given to the contractor, and any other information which may at a later date be of assistance in resolving queries which may arise connecting execution of the works; and
- bb. Develop and implement training programs for ALRI staff at the site on project management including quality assurance and contract administration.

## **12. Component A: Hydromet operations center modernization**

- a. With support of sub-consultant undertake detailed design of all proposed project works with complete drawings and specifications for infrastructure and equipment installation including design and integration of core IT systems and building fit-out, in strict accordance with accepted state of the art methods and technology and compatible with Hydromet's existing systems, for sustainable operation;

- b. Support Hydromet obtaining necessary permits and licenses for civil works and equipment installation including preparation of documents and identifying required processes and responsible entities;
- c. Support PIG in implementing GAP targets with respect to operations center modernization;
- d. Conduct appropriate supervision as described above; and
- e. Conduct appropriate testing of civil works and goods against specifications and facilitate handover to Hydromet.

### **13. Component B: Legal and organizational transformation**

- a. Support PIG in establishing business development and transition team;
- b. Prepare detailed transformation program, supported by stakeholder consultation among Hydromet and government and NGO stakeholders;
- c. Ensure that program and its output reflect the project administration manual (PAM), DMF and GAP targets, grant agreement, updated legal structure, and broader intentions of the project including to establish Hydromet as a sustainable institution providing quality services and supported by core government funding supplemented with additional commercial income from rental of facilities, sale of fee-based information products, and consulting services;
- d. Assist PIG in developing and confirming the process for legal transformation including required documentation, review requirements, approval authorities, and
- e. In consultation with Hydromet and government stakeholders, draft necessary documents for legal transformation, expected to include draft government resolution and new Hydromet charter for review and adoption by government;
- f. Assist PIG in ensuring efficient and timely implementation of legal transformation process including monitoring progress, providing advice and guidance to overcome challenges and obstacles, consulting with key stakeholders, preparing responses to comments and requests for clarification, and regularly following up with key agencies or individuals on pending activities;
- g. In consultation with Hydromet and PIG, prepare framework document including implementation plan for an updated Hydromet organizational and business strategy including but not limited to org chart, human resources guidelines, financial management and audit, functions and responsibilities, and forward looking technical work and revenue-generating program for approval by Hydromet Director and where applicable endorsement by the Project Steering Committee or Board of Directors;
- h. In consultation with Hydromet and PIG, establish institutional-level user feedback and service quality M&E system for Hydromet with framework and implementation manual to support improved quality management in Hydromet, consistent with project-level M&E system;
- i. Support Hydromet in developing strategy and implementation plan for facilities rental including pricing, vendors, and partnerships with prospective real estate and retail firms;
- j. In consultation with Hydromet and PIG, prepare or update Hydromet manuals for management (including financial management), administration, and control including staff salary guidelines and career pathways and reflecting above strategy and M&E systems;
- k. Assist in Hydromet collection of necessary information and prepare sustainable O&M plan including budget forecasting and annual update to comply with the loan covenant;
- l. Provide training to Hydromet senior and mid-level staff on strategy, management (including financial management), administration, control in line with developed strategies and documents;

- m. Establish time-bound action plan for Hydromet's future ISO 9001 certification, and where feasible and appropriate commence implementation;
- n. Develop regional partnerships and mobilize regional knowledge sharing event;
- o. Prepare and mobilize annual stakeholder opinion survey including undertaking appropriate quality control measures; and
- p. Prepare and mobilize annual stakeholder workshop and short workshop report.

#### **14. Component C: Forecasting and warning of extreme weather**

- a. Prepare gap analysis, detailed design, and implement program for flood forecasting and warning in line with the PAM, DMF, GAP, and project objectives including data collection and specifications for equipment, software, services, data storage, infrastructure/installation, and system integration, in strict accordance with accepted state of the art methods and technology (considering cloud-based options) and building upon Hydromet's existing monitoring and forecasting systems, for sustainable operation;
- b. Design and mobilize gender-sensitive stakeholder consultation, awareness and preparedness, and training program in the Pyanj River Basin area to support the design and implementation of flood forecasting and warning seeking to include Disaster Risk Management Committees, Water User Associations, River Basin Organizations, Joint Pyanj River Basin Commission, and other stakeholder entities associated with ongoing ADB projects in the Pyanj River Basin;
- c. Conduct flood mapping of Pyanj River Basin to support prioritization and selection of pilot districts for flood forecasting and warning (at least 6 sites);
- d. Identify and design sites for installation of monitoring and warning equipment (e.g. river gauges, weather stations, flow measurements, and early warning) considering forecasting and warning needs;
- e. As necessary, support PIG in obtaining necessary permits and licenses for ancillary works and equipment installation including preparation of documents and identifying required processes and responsible entities;
- f. As required, evaluate and incorporate risk mitigation against potential future hazards (natural or otherwise) on design and equipment;
- g. Prepare and mobilize training for Hydromet staff to operate and maintain flood forecasting and warning, including both classroom training and on-the-job training;
- h. Prepare operations manuals, ensuring appropriate linkages with project and institutional-level M&E systems such that the timeliness and accuracy of flood forecasting and warning may be monitored; and
- a. Assist in the selection and procurement of portable monitoring equipment to support sustainable O&M.

#### **15. Component D: Marketing of fee-based services**

- a. Prepare gap analysis, detailed design and implement proposed capacity building program for marketing and sale of fee-based services in line with the PAM, DMF, GAP, and project objectives including specifications for equipment, software, services, data storage, infrastructure/installation, and system integration. The system should be developed strict accordance with accepted state of the art methods and technology (considering cloud-based options) and compatible with Hydromet's existing systems, for sustainable operation;
- b. Design and mobilize gender-sensitive stakeholder consultation, awareness, and training program in the Pyanj River Basin area for the design and implementation of platform and fee-based services seeking to include Disaster Risk Management Committees, Water

User Associations, River Basin Organizations, Joint Pyanj River Basin Commission, and other stakeholder entities associated with ongoing ADB projects in the Pyanj River Basin – building on the opinion survey conducted during project preparation;

- c. As necessary, support PIG in obtaining necessary permits and licenses for equipment installation including preparation of documents and identifying required processes and responsible entities;
- d. Support PIG in identifying potential vendors of IT equipment and services;
- e. As required, evaluate and incorporate risk mitigation against potential future hazards (natural or otherwise) on design and equipment;
- f. Establish, prepare, and document Hydromet fee-based services marketing framework and implementation plan including business strategy, pricing, staff responsibilities, maintenance of equipment and services, financial management and audit;
- g. Clarify and establish any necessary additional legal basis for implementation of Hydromet’s marketing of fee based services, including agreement of pricing, taxation and use of funds within Hydromet, and sale of services to other government entities;
- h. Prepare operations manual in English and Russian language, ensuring appropriate linkages with project and institutional-level M&E systems;
- i. Design, procure, install and start up IT platform for fee-based services available on subscription or on-time basis through commonly used telecommunication services, with appropriate linkages through financial services and bank accounts;
- j. Establish customer service desk at Hydromet operations center for “offline” sales and other issues;
- k. Mobilize training for Hydromet staff including both classroom training and on-the-job training, covering but not limited to business development, marketing, market research, system maintenance, product development, and pricing;
- l. Mobilize training for Hydromet staff on operation and maintenance of IT system, packaging of information products, dissemination and broadcast of services;
- m. Establish or enhance Hydromet’s online presence including main website and social media;
- n. Design and mobilize mass-media marketing campaign for fee-based information systems; and
- o. Identify and package information products for sale through the platform, including one product to be marketed to stakeholders in PRB region.

#### **D. Key (Required) Experts**

16. In addition to the technical inputs specified below, each expert will support the team leader in (i) identifying relevant developments in government strategy, policy, and legislation; (ii) identifying best-practice techniques and lessons learned from previous and ongoing studies and projects<sup>1</sup> of the relevant sectors as well as options to improve the project design; (iii) identifying capacity building requirements specific to his/her field of expertise; and (iv) preparing relevant sections in the reports.

**17. Institutional Development Specialist** (international/team leader; national/deputy team leader). The international specialist must have at least a graduate degree (preferably post graduate degree) in institutional development, public management, law, or related field, with at least 12 years of longer experience in similar development project. Regional experience is preferred, as well as experience with legal transformation and organizational change. The national specialist must hold an advanced degree in law with 10 years professional practicing legal

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<sup>1</sup> Documentation from recent ADB studies and projects is available on request.

experience in Tajikistan, with experience in constitutional law and general business law strongly preferred. The international specialist will lead (supported by national specialist) the consultant team, manage relationships with Hydromet, ADB, and other stakeholders and coordinate all project inputs and outputs. The specialists' tasks and direct responsibilities are expected to include but not be limited to: (i) design and implementation of legal and organizational transformation activities; (ii) legal analysis and document preparation; (iii) staff and stakeholder consultation and training; (iv) project oversight, coordination, and reporting.

**18. Flood Forecasting Specialist** (international). The specialist must have at least a graduate degree (preferably post graduate degree) in hydrology, meteorology, or related field, with at least 7 and preferably 10 years' experience in designing and/or running flood forecasting systems. Regional experience is highly preferred. The specialist's tasks are expected to include but not be limited to: (i) designing flood forecasting and warning capacity building program including specifications of equipment and services; (ii) consultations and training with staff and stakeholders including operations manuals; and (iii) developing M&E indicators and system for forecasting performance.

**19. Climate Services Development Specialist** (international). The specialist must have at least a graduate degree (preferably post graduate degree) in meteorology, climatology, business development or related field, with at least 7 and preferably 10 years' experience in development and implementation of quality climate services delivery including fee-based services. Regional experience is highly preferred. The specialist's tasks are expected to include but not be limited to: (i) designing and implementing program for fee-based services including specifications of equipment and services; (ii) development and documentation of business framework and plan; (iii) consultation and training of stakeholders and staff including operations manuals; (iv) design and packaging information products and marketing campaigns; and (v) developing M&E indicators and system for use of and user feedback on forecasting products.

**20. IT Delivery Specialist** (international). The specialist must have at least a graduate degree (preferably post graduate degree) in computer science or related field, with at least 7 and preferably 10 years' experience in development and administration of IT systems, including for scientific and research institutions, and provision of information services through multiple channels. Regional experience is strongly preferred. The specialist's tasks are expected to include but not be limited to: (i) designing core IT systems for new Hydromet operations center including system integration and specifications; (ii) designing IT systems and services for flood forecasting and warning and platform for sale of fee-based services; (iii) preparing necessary documentation; and (iv) training for staff on operation and maintenance.

## **E. Preparation of Proposal**

21. Shortlisted entities are requested to prepare a proposal. The proposal should include a detailed description of how they propose to deliver on the outputs of the contract in the section of their proposal called "Approach and Methodology". In this narrative, entities should be explicit in explaining how they will achieve the outputs and include any information on their existing activities upon which they may eventually build as well as the details of what staff will comprise the project team.

22. Entities must also describe their experience in Tajikistan and Central Asia, and their ability to operate in Russian language.

23. Only one curriculum vitae (CV) must be submitted for each key and non-key expert included in the proposal. Only the CVs of key experts will be scored as part of the technical evaluation of proposals. The CVs of non-key experts will not be scored, however ADB will review and individually approve or reject each CV for each non-key expert position in the proposal.

24. All positions under the contract, both key and non-key experts, must be included and budgeted for in the financial proposal in accordance with the person-month allocation required for each as defined by the proposing organization.

#### **F. Reporting requirements**

25. **Reports.** The consulting firm will prepare and submit as a minimum the reports specified: inception report (within one month of mobilization), midterm report (by year 2 of contract), final report (one month prior to contract close).

26. **Meetings and workshops.** The consulting team will organize and participate in meetings and workshops with ADB, the government counterparts, local community organizations and other stakeholders, and development partners in order to foster quality project outputs and stakeholder ownership. The meetings and workshops listed below are the minimum such sessions expected. If appropriate, the consultant firm is encouraged to conduct additional workshops and stakeholder sessions as deemed necessary.

27. **Language and formats.** All reports to ADB shall be produced in English. Reports shall be provided in both printed and electronic form. The consulting firm shall provide to each the two project implementing agencies 3 copies of each report in Russian and 1 copy in English. The consulting firm shall provide to ADB with electronic versions of the reports and associated outputs/deliverables/analysis. All handouts, slide presentations, and related material for meetings and workshops must be in both English and Russian. The consulting firm will be expected to procure all interpretation and translation services.

#### **G. Terms of the assignment**

28. Experts will mainly be based in Dushanbe for the duration of the assignment. The expected duration of the assignment is 45 months from the start date, expected to be in December 2018, and the assignment of experts is intermittent in nature. The terms will be revised based on consultations between the parties involved in the assignment per changes and/or additional requirements identified during implementation.