

Tajikistan

Ministry of Water Resources and Reclamation

**ZARAFSHON IRRIGATION REHABILITATION AND RIVER BASIN
MANAGEMENT PROJECT**

GENERIC ENVIRONMENTAL MANAGEMENT PLAN

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Acronyms

ADB	Asian Development Bank
ALRI	Agency on land reclamation and irrigation
ATC	Agricultural Training Center
CAWMP	Community Agriculture and Watershed Management Project
CPS	Country Partnership Strategy
CEP	Committee for Environmental Protection under the Government of Tajikistan
DATs	Debt Audit Teams
DRMU	Debt Resolution Management Unit
DC	Drainage canals
EAP	Environmental Action Plan
EA	Environmental Assessment
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
FFS	Farmer Field Schools
FIAS	Farmer Information Advisory Service
FPSP	Farm Privatization Support Project
GBAO	Gorno-Badakhshan Autonomous oblast
GDP	Gross Domestic Product
GOT	Government of Tajikistan
ICG	International Crisis Group
IPM	Integrated Pest Management
JDCs	Jamoat Development Committees
IS	Irrigation scheme
IWRM	Integrated water resources management
LRCSPP	Land Registration and Cadaster System for Sustainable Agriculture Project
MAC	Maximum Allowable Concentrations
MIGA	Micro Investment Government Agency
MEWR	Ministry of Energy and Water Resources
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MOH	Ministry of Health
NGO	Non-governmental Organization
OP	Operational Policy
PAU	Poverty Assessment Update
PMU	Project Management Plan
PMP	Pest Management Plan
POP	Persistent Organic Pollutants
RIRP	Rural Infrastructure Rehabilitation Project
RRS	Rayon under Republican Subordination
SEE	State Ecological Expertise
SCLM	State Committee of Land Management
UNDP	United Nations Development Program
WB	World Bank
WUA	Water User Association
WHO	World Health Organization

Executive Summary

1. **Project objective.** The project development objectives are to: (i) strengthen the institutional base for irrigation planning and management in the Zarafshon sub-basin following IWRM principles and (ii) improve the condition and management of irrigation and drainage infrastructure in the Zarafshon sub-basin and adjacent districts in the Syr-Darya basin. The project will improve food security of rural people in the project areas.
2. **Project Beneficiaries** will include: River Basin management authorities, the Agency for Land Reclamation and Irrigation (ALRI), the Ministry of Energy and Water Resources (MEWR), Water User Associations, agricultural producers who benefit from increased productivity and farm incomes, and rural households who benefit from improved food security
3. **Project description.** The project has three main components:
4. **Component I: Rehabilitation of Irrigation and Drainage Infrastructure (9.202 million euros from EU grant funds in accordance with EU Trust Fund Administration Agreement between the World Bank and the European Union¹).**
 5. *Sub-component Ia: Public Works for Rehabilitation of Irrigation Infrastructure (1.0 million euros).* The project will finance a minor public works program in order to replicate PAMP II success in generating temporary employment for food-insecure people through the rehabilitation of secondary and tertiary on-farm irrigation canals. The public works program will be administered jointly by the local irrigation management institutions and representatives of the Agency on Labor, Employment and Migration.
 6. *Sub-component Ib: Mechanized and Other Works (8.202 million euros).* This sub-component will finance major rehabilitation works, the rental and purchase of machinery (excavators, bulldozers), the purchase and installation of irrigation gates, irrigation canal and structure repair works, pipeline network repairs and strategic pump station and vertical drainage well repairs.
7. **Component II: Support for water resource management, including technical assistance for policy and institutional reform in the irrigation sector (3.76 million euros).** This component will finance technical assistance and other support to the MEWR, ALRI and other relevant institutions to support irrigation reform, following the IWRM principles. Sub-components comprise:
 8. *Sub-component IIa: River Basin Management (1.76 million euros).* This sub-component will (i) implement an inventory of irrigation systems and hydraulic structures in the sub-basin, to be used as the basis for prioritizing operation and maintenance; (ii) establish the irrigation assets database for Zarafshon River Basin and link it to the central level; (iii) support ALRI in development of the I&D operation and maintenance procedures for better planning and management at the sub-basin level and (iv) provide required support to the MEWR in establishing its offices in Zarafshon River Basin through provision of goods, works, training and technical assistance complementary to the activities directly funded by the EU through technical assistance.
 9. *Sub-component IIb: Develop and Strengthen Irrigation and Drainage Institutions (2.0 million euros).* A set of three interlinked organizations are expected to manage the water sector in

¹ The full amount of the EU finding also includes administration fees and Bank-executed budget for support in preparation and supervision of the project, as well as for preparation of the Implementation Completion Report.

the future². These include (i) resource-level management by a Basin Management Organization, (ii) irrigation system (off-farm) management by system-based ALRI units, and (iii) local level (on-farm) management by WUAs. Resource-level management is just getting underway in Tajikistan. At the same time, local level management has a decade-long history of trial and error, assisted by a variety of donor organizations, including USAID and the World Bank. These efforts have now evolved into a mature model for establishing, training and supporting WUAs and for their operation. Many of the remaining challenges facing the WUAs are related to their relationship with ALRI and with ALRI's performance as a main system service provider, and with the financial realities of irrigation system O&M.

10. Following the new institutional framework, the project will assist the Government to: (i) help transform ALRI into a lean and responsive service provider responsible for the management and maintenance of the off-farm irrigation and drainage infrastructure and for water delivery to WUAs; (ii) to delineate hydraulic boundaries and establish system-based service organizations in the project area, conduct a functional analysis of their operational and administrative activities, review water fees, orient and train ALRI staff to work with WUAs; and (iii) establish and strengthen the capacity of these institutions through provision of technical assistance, goods, works and training. Support to these institutions will also include training and capacity building of WUAs in the areas where necessary, and GIS mapping of the on-farm assets in WUA areas.

11. **Component III: Project Management (1.0 million euros).** A project management unit (PMU) to be managed under the World Bank-financed PAMP II project will be the main implementation agency. It will be responsible for: implementation and coordination, financial management and procurement, communication and awareness programs, environmental management and safeguards, and monitoring and evaluation. The PMU will also ensure that the communication and visibility measures required by the European Union are implemented. This component will also be responsible for the design, implementation, and analysis and reporting of the baseline and project completion surveys.

12. **Project location.** The project will be implemented in 6 selected districts in the Zarafshon sub-basin and adjacent high potential agricultural areas, which are located in Sugd region (Province) of Tajikistan: Panjakent, Ayni, Mastchoi Kuhi, Gonchi, Shahrison, Istaravshan. The Zarafshon sub-basin, which has a population of 360,000 people and an arable land area of approximately 38,000 ha, forms part of the larger Syr Daryo river basin in northern Tajikistan. It is characterized as rather dry climate with hot dry summers and cool winters. Sugd region has a population of about 2.4 million people. The vast majority of its residents live in rural areas, about 1,848,3 thousand people versus about 184,83 thousand people urban settlers. Due to deforestation, improper irrigation and excessive use of agricultural lands land resources are affected by wind/water erosion and water logging. Most of the irrigation and drainage infrastructure is rundown and in danger of collapse.

13. **Potential impacts.** The project activities (small scale earth moving, civil works for strengthening of the embankments, repairing of water gates and intakes, cleaning up existing main and on farms irrigation canal structures and rehabilitation of water intakes; replacement of old pumps as well as rehabilitation of pumping stations), might generate some environmental risks and impacts: soil erosion; dumping of excavated sediments and other materials from irrigation and drainage canal structures and from the implemented civil works; labor safety issues; etc. No significant and irreversible adverse environmental and social impacts are expected – all of them are temporary and site specific. The project will also bring valuable environmental and social

² From the irrigation perspective. Other water use sectors, such as hydropower and municipal water supply, will involve additional organizations.

benefits, including: reduced water logging and losses; improved and expanded distribution of water for irrigation; increased agricultural yields; and poverty reduction of rural population.

14. **Triggered WB OPs.** The project will trigger mainly WB OP 4.01 on Environmental Assessment as it involves activities with some environmental and social impacts. The project will not trigger other OPs on Forests, Physical and Cultural Resources, or Natural Habitats as all activities will be implemented within the existing irrigation areas. The OP 4.09 on Pest Management is also not triggered as the project doesn't require purchasing and/or use of pesticides, and based on previous experience in the country, improved irrigation infrastructure will not lead to changes in the crops production which would require increased amount of pesticides. The main crop varieties that will be supported through the current irrigation and water management project will be field crops, fruits and vegetables, - no cotton is grown in the proposed project area. As the project area includes an irrigation and drainage network that draws water from Zarafshan River which is a tributary of the Amu Darya River and then discharges water back into the river and thence to the Aral Sea, it also triggers World Bank OP 7.50 on International Waterways. The proposed investments for the public works component are not expected to change the volume of extraction/discharge water or quality of water of the Zarafshan River and its tributaries, but rather will lead to more efficient irrigation and drainage. As an exemption was obtained for notification requirement under OP 7.50 on International Waterways in the original PUMP II project, an equivalent exemption has been obtained for the current repeater project on the ground that it has the same design and so a similar impact on international waterways. Lastly, the project activities will not trigger this Involuntary Resettlement OP/BP 4.12 as all activities will be done within existing irrigated areas as thus there will be no any land acquisition and/or other resettlement issues. Furthermore, the practice of initial project shows there will be no need for cutting fruit trees which belongs to private farmers.

15. **Project category.** In accordance with the Bank's safeguard policies and procedures, including OP/BP/GP 4.01 Environmental Assessment, the project relates to the Bank's B Category. For such projects it is necessary to conduct an Environmental Assessment and to prepare a site specific Environmental Management Plan. Taking into account the proposed rehabilitation activities would be similar at all Irrigation Schemes and Drainage Networks to be included in the project, it is proposed to prepare a Generic Environmental Management Plan (GEMP). Such GEMP was prepared for the initial project and will be used for the repeater project. Based on the GEMP there will be prepared site-specific EMPs, taking into account the concrete conditions of the selected irrigation scheme and/or drainage network as well as for the pumping stations, after the detailed design of each sub-project will be done.

16. **Purpose of GEMP.** The purpose of the GEMP is to provide the World Bank's and national rules and procedures for project Environmental Impact Assessments (EIAs), identify potential environmental impacts of the project (both positive and negative), specifying appropriate preventive actions and mitigation measures (including appropriate monitoring scheme) to prevent, eliminate or minimize any anticipated environment and social adverse impacts. The GEMP prepared by a local consultant for the initial project is based on the following: (i) analysis of the existing EA national legal documents, regulations and guidelines; (ii) World Bank safeguard policies, as well as other guiding materials; (iii) existing EMPs for similar World Bank projects; (iv) field investigations on the project site; and (v) results of consultations with the representatives of stakeholders and all interested parties. The GEMP was updated taking into account proposed minor changes for the repeater project (repairing of: pipeline networks; main pump stations; (iii) vertical drainage wells).

17. **Contents of the GEMP.** The GEMP ensures that the proposed prevention/mitigation measures and monitoring activities identified during the subprojects EA will be properly

undertaken during the project implementation. The GEMP includes the following: (a) short description of applicable laws, policies on environment procedures for EA as well as EA institutions and responsibilities; (b) Environmental Guidelines (EG) specifying: (i) potential environmental and social impacts of the rehabilitation of irrigation canals, improvements of drainage infrastructure activities; (ii) proposed mitigation and monitoring measures to be applied during the project implementation; (iii) description of the EMP Checklist which will be applied for activities related to pumping stations; (c) description of implementing arrangements, including supervision and monitoring, as well as reporting; and (d) analysis of the EA institutional capacity of the implementing agencies along with the proposed technical assistance to adequately implement the EA requirements for the subprojects to be supported. The GEMP also specifies necessary steps for preparing site-specific EMP of the selected Irrigation Schemes (ISs) and/or of the canals as well as for EMP Checklist for mentioned above activities. Furthermore, it specifies the project will support only rehabilitation of the on farm irrigation infrastructure when land acquisition is not necessary and there are no any resettlement issues.

18. EA Institutional capacities to perform environmental safeguards. The project will be implemented by the Fergana Valley Water Resource Management Project Management Unit (PMU). Overall responsibility for the proposed project will remain with the Agency for Land Reclamation and Irrigation (ALRI) and the Administration of Sughd Oblast. The current governor of Sughd Oblast is well aware of the potential benefits of the proposed project as he provided strong support for PAMP and PAMP II while he was the Deputy Governor of Khatlon. The Ferghana Water Resource Management Project Management Unit (PMU) will be the leading operational institution for the implementation of the proposed project and carry out all project implementation in accordance with the Operations Manual (OM). The PMU also will ensure that the EMP provisions are fully integrated into implementation of the project, including monitoring and reporting required by the World Bank. Proper implementation of the EMP provisions and field monitoring are the main responsibilities of the PMU at the regional level. Contractors will be responsible for implementation of the rehabilitation works in accordance with environmental requirements specified in the bidding documents and the EMP. PMU will work closely with CEP in implementing the EMPs. The existing PMU has previous experience in dealing with safeguards issues as it implemented several WB including the first project. The WB supervision missions done in -2015 show the EMPs implementation is at satisfactory level. The main safeguards responsibilities within the initial project were assigned to the PMU which conducted site inspections prior to, and during the rehabilitation activities to ensure compliance with the contract conditions and the EMP. The supervision and monitoring of proper implementation of the measures required by the EMP was the responsibility of the RPIU, - located on the project site. The RPIU conducted regular site visits to verify that the appropriate environmental preventive actions and/or mitigation measures have been implemented. Such environmental monitoring included observations of soil and water within and around the rehabilitation sites as well as of potential impacts on vegetation and on workers safety. Furthermore, in these supervision and monitoring activities have been involved also the local Ecological Inspectors. The status of compliance with agreed environmental preventive and mitigation measures was periodically reported by the RPIU to the PMU which included them in their regular reports on project implementation.

19. EA capacity building and public outreach campaign. In order to ensure proper implementation of the various environmental activities (preventive actions/mitigation measures, monitoring and evaluation) recommended in the EMPs, the project will continue supporting the necessary institutional strengthening in the Sugd Oblast CEP and WRMD on environmental management. This institutional strengthening will comprise the delivery of training and development of essential public outreach and awareness campaigns. A training program to develop and expand professional skills and capacity in environmental management issues for staff involved

in project implementation will be organized under the project through the PMU. The training program will reinforce existing capacity within the Sugd Oblast CEP (and district-level staff) by providing specialized training to enhance environmental assessment, management and monitoring skills and practices. The project will organize a community outreach and public awareness campaign on environmental management issues with special attention given to preventing water and soil pollution, and labor safety measures in conducting civil works. For this purpose the project will hire an environmental NGO with relevant experience in conducting capacity building and information dissemination activities.

20. **GEMP disclosure and consultation.** The Project Management Unit (PMU) has disseminated the updated GEMP to the Agency for Land Reclamation and Irrigation (ALRI), Administration of Sughd Oblast, Ministry of Agriculture, Committee for Environmental Protection under the Government of Tajikistan, and other relevant ministries for their review and comments, and also, on September 26, 2016, the document was posted on websites of the CAREC (www.carececo.org) and Aarhus center in Dushanbe and disseminated via tajcnet@googlegroups.com for its access to wide public. On October 4-5, 2016 the PMU will organize a consultation on the draft document. After the consultation, the document will be revised to consider inputs from consulted parties. In October, 2016 the final draft GEMP will be posted on the website of the Agency for Land Reclamation and Irrigation (ALRI) (www.alri.tj) and submitted to the World Bank for its disclosure in Infoshop.

VII. Generic Environmental Management Plan

1. *Scope of GEMP.* Taking into account the proposed activities on all selected irrigation schemes are similar, for the purpose of EA of selected irrigation schemes and of pumping stations and flood channel repairing it is proposed to apply the updated Generic Environmental Management Plan that was prepared for the initial project. Based on the updated GEMP sites specific EMPs will be prepared, taking into account concrete conditions of the selected irrigation scheme of the drainage collector, as well as of pumping stations. The purpose of the GEMP is to identify potential environmental impacts of the project (both positive and negative), specifying appropriate preventive actions and mitigation measures (including appropriate monitoring scheme) to prevent, eliminate or minimize any anticipated adverse impacts on environment.

2. *Mitigation measures.* Table 4 present the summary of the main potential impacts on the environment and on the health of population, along with the proposed mitigation measures. The plan identifies these measures according to the phase of project implementation in which the potential impacts are likely to occur:

- the rehabilitation phase, which covers the actual civil works financed by the project in the irrigation and drainage systems and involves the immediate rehabilitation impacts and sediment/waste disposal impacts described in above; and
- the operational phase, which covers the rest of the project after actual rehabilitation works has been completed and involves the continuing and longer-term impacts on water and soil quality, biodiversity and habitat, and public health.

Most of stipulated measures are related to capacity building since most of the potential impacts are indirect and could be prevented and/or mitigated by strengthening institutional and human capacities, by applying best practices in rehabilitation/construction activities.

Table 4. Project activities, potential impacts and proposed mitigation measures

Phase	Issue	Preventive Action/ Mitigation Measure	Cost	Institutional Responsibility	Supervision
I. Construction/Rehabilitation					
a. Cleaning of on farm irrigation channels (secondary and tertiary)	Construction impacts Sediment management	Environmental covenants; Environmental Management Guidelines for workers; Collection of sediments, silts Appropriate disposal of the wastes and sediments	No additional costs	PMU, PCU Involved workers	PMU, PCU site inspections to ensure compliance
b. Cleaning of Drainage collectors (on-farm)	Dumping of excavated sediments from drainage canals; Damage to adjacent vegetation; Water pollution	Minimize damage to vegetative cover; Collection of sediments, silts Proper disposal of sediments;	No additional costs	Contractors	Site inspections
c. Rehabilitation of irrigation channels	Waste water discharges, Surface and ground water pollution Air emissions of dust and cement Noise	Wastewater, including those from aggregate processing and concrete batching, must not enter streams without settling ponds Dust from the handling or transporting of aggregates, cement, etc., should be minimized by sprinkling or other methods. Prevent air pollution by dust, emissions from transport vehicles; Limit construction activities in time (from 8 a.m. to 18 p.m.)	The costs will be covered by contractors	Contractors	Site inspections

	Solid wastes Accidental spillages Occupational hazards	Appropriate waste management during construction works; Prevention of spillage of contaminants, debris, or other pollutants, into streams or underground water resources. Such pollutants include untreated sewage and sanitary waste and petroleum products; Apply good practices for occupational health and safety.			
<i>d. Pumping stations and vertical drainage wells repairs</i>	Waste water discharges Air pollution with dust and cement Accidental spillage Noise Construction waste (asbestos slates, non-	Wastewater, including those from aggregate processing and concrete batching, must not enter streams without settling ponds; Sediment pools arrangement Dust from the handling or transporting of aggregates, cement, etc., should be minimized by watering appropriate sites, roads (during the transportation of materials) or other methods, if needed; Prevent air pollution by dust, emissions from transport vehicles; Appropriate waste management during construction works; Prevention of spillage of contaminants, debris, or other pollutants, into streams or underground water resources. Such pollutants include untreated sewage and sanitary waste and petroleum products;	The costs will be covered by contractors - to be included in the Project Costs	Contractors	PMU Site inspections

	serviceable doors and windows, destroyed hydro-mechanical and electrical equipment, etc.)	Adhere to the applicable IFC (2007) guidelines for asbestos-containing materials (ACM):³ (i) ACM will not be used as a new material in rehabilitation works or new buildings. (ii) Existing asbestos-cement roofing sheets will be removed and disposed of following the internationally-recognized <i>Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products</i> (American Society for Testing and Materials [ASTM] E 2394).⁴ (iii) Timely disposal of construction waste Identify landfill area in coordination with environmental departments Limitation of works time Apply good practices for occupational health and safety, including regular training, orientation and instructions.			
	Occupational hazards				

³ International Finance Corporation. Environmental, Health, and Safety Guidelines, 2007. http://www1.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/sustainability+framework/environmental%2C+health%2C+and+safety+guidelines/ehsguidelines

⁴ ASTM International. ASTM E2394-11, Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products. West Conshohocken, PA, 2011. <http://www.astm.org/Standards/E2394.htm>. This standard describes work practices that protect worker and community health within the resources available in developing and industrialized countries. As much as possible it relies on readily-available tools, equipment, and supplies, and techniques that require careful and diligent workmanship but not the services of highly-skilled tradesmen. The standard is written for construction workers and tradesmen, for those involved in the preparation of contracts and tenders, and for government officials involved in developing regulations to protect worker and community health.

II. Operation					
<i>Irrigation schemes</i>	Water pollution from drainage from saline soils Agrochemical contamination Surface soil loss, Salinization Water logging from poor drainage Water pollution Disturbance of aquatic ecosystems Soil erosion, runoff and sedimentation	Training in improved water and soil management practices Proper practices Environmental studies, information dissemination, Information dissemination, small-scale investments Trainings on soil conservation	To be covered by ALRI PMU and Water Users Associations	ALRI PMU	Environmental Protection Committee site inspections

VIII. Environmental Monitoring and Reporting

49. *Generic Monitoring Plan.* Environmental monitoring during the project implementation, which is to be performed by the PMU, has to provide information about key environmental aspects of the subprojects, particularly the project environmental impacts and the effectiveness of taken mitigation measures. Such information enables to evaluate the success of mitigation as part of project supervision, and allows corrective action(s) to be implemented, when needed. In this regard the GEMP identifies monitoring objectives and specifies the type of monitoring, and their link to impacts and mitigation measures. Specifically, the monitoring section of the EMP provides: (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements; and, (b) monitoring and reporting procedures to: (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation. A Generic Monitoring Plan is presented in the *Table 5*.

Table 5. Generic Monitoring plan

A) Environmental monitoring Plan – main requirements

PRE-CONSTRUCTION PERIOD				
Monitoring Aspect	Monitoring Activity / Details / Outputs	Timing	Executing Unit	Reporting Responsibility
Bid documents	Confirm that bid documents contain environmental clauses tailored to the project conditions as well as this EMP	Preparing the bid documents	PMU	PMU
Initial Environmental Examination	Confirm that the IEE covers all the ISSs, DCs, pump stations and vertical drainage wells	Project implementation	Environmental consultant	PMU
Site specific EMP (SSEMP)	Confirm that contractors prepared and submitted for approval the SSEMP	At least 10 days before taking possession of any work site	Contractor	Environmental consultant / PMU

CONSTRUCTION PERIOD				
Monitoring Aspect	Monitoring Activity / Details / Outputs	Timing	Executing Unit	Reporting Responsibility
Noise	Ensure that maximum and equivalent noise levels on the sites are in compliance with the Sanitary Norms and Rules. Ensure that there is no complaints about noise levels	During project implementation	Contractor PMU/Env consultant	Contractor
Dust and VOC	Ensure that air quality on the sites is in compliance with the Sanitary Norms and Rules (weekly instrumental measurements). Ensure that there is no complaints about dust/VOC and other pollutants	During project implementation	Contractor PMU/Env consultant	Contractor
Construction waste	Confirm that solid construction waste is regularly transferred to approved disposal sites.	During project implementation	Contractor PMU/Env consultant	Contractor
ACM	Ensure that Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products is used during removal and disposal of asbestos – concrete roofing.	During project implementation	Contractor PMU/Env consultant	Contractor

Old equipment	Ensure that metal scrap to be sent to collection stations	During project implementation	PMU/Env consultant	ALRI regional departments
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B) Environmental monitoring plan – per project activities and parameters

Project activities	Parameter	Location	Method/ Equipment	Frequency	Purpose	Cost	Responsibility
I. Construction/Rehabilitation							
a. Cleaning of On farm irrigation channels	EMP environmental requirements Sediments and Wastes disposal	Rehabilitation sites	Visual Site inspections	Once during and once upon completion	Ensure compliance	Covered by PMU	PMU
b. Cleaning of Drainage collectors	EMP environmental requirements Sediments and Wastes disposal; Impacts on vegetative cover.	Rehabilitation sites	Visual Field investigations; Ecological Inspection Environmental enforcement and compliance reports; MoH data;	Once at beginning of construction	Determine quality for sediment management and minimization of vegetative cover impacts	Covered by PMU	PMU; CEP
c. Rehabilitation of Irrigation channels	Waste generation and management (m ³); Dust; Noise; Spillages; Accidents. Dust	Rehabilitation sites	Visual inspections; Ecological Inspection Environmental enforcement and	Once a month and at the completion of works	Determine fulfillment of environmental requirements during civil works in terms of prevention of	Covered by contractors	PMU; CEP

			compliance reports; MoH data; Contractors records on implemented civil works.		air pollution; solid waste management and occupational hazards		
d. Rehabilitati on of Pumping stations and deep wells	Waste generation and management (m ³); Dust; Noise; Spillages; Accidents. Dust	Rehabilitation sites	Visual inspections; Ecological Inspection Environmental enforcement and compliance reports; MoH data; Contractors records on implemented civil works	Once a month and at the completion of works	Determine fulfillment of environmental requirements during civil works in terms of prevention of air pollution; solid waste management and occupational hazards	Covered by contractors	PMU; CEP
II. Operation							
Irrigation schemes and drainage canals	Soil salinity and humus content Groundwater levels Public health statistics	Rehabilitated on farm and drainage canals	Soil sampling/analysis Water gauge measurement Review of public health Reports	Semi-annually	Determine any improvements in soil quality Determine water levels Monitor public Health	Covered by CEP; WRMD MOH	CEP; WRMD MOH

XII. Capacity building

61. *Proposed TA activities.* In order to ensure proper implementation of the various environmental activities (preventive actions/mitigation measures, monitoring and evaluation) recommended in the EMPs, the project will continue supporting the necessary institutional strengthening in the Sughd Oblast CEP and WRMD on environmental management. This institutional strengthening will comprise the delivery of training and development of essential public outreach and awareness campaigns.

62. *Training in environmental management issues.* A training program to develop and expand professional skills and capacity in environmental management issues for staff involved in project implementation will be organized under the project through the PMU. The training program will reinforce existing capacity within the Sughd Oblast CEP (and district-level staff) by providing specialized training to enhance environmental assessment, management and monitoring skills and practices. The program will also provide environmental outreach and consultations with local population in order to improve the existing situation and to enable it to take full responsibility for keeping their irrigation networks in good condition long after rehabilitation. Trainees would be dekhans, specialists of the head-quarters and field offices of the CEP, ALRI, MEWR, MOA, Water User Associations (WUAs), if exist, and rayon officials.

63. *Public outreach campaign.* As the GEMP recommends preventive actions rather than mitigation measures to address these potential sources of water pollution, it is important to ensure that farmers in the project area receive information and training, on proper irrigation and agricultural practices in order to minimize impacts of drainage from saline soils, on proper management and disposal of sediments, fuels and wastes generated at concrete rehabilitation sites, and on safe pest management practices, including integrated pest management (IPM). Taking this into account the project will organize a community outreach and public awareness campaigns on water conservation and environmental management issues. A special attention will be also paid to labor safety measures in conducting civil works and in operating the rehabilitated irrigation schemes. In order to implement this project it will be necessary to attract not only state institutions but also hukumates, communities, jamoats, villages and individual households. The CEP has experience with such public awareness campaigns and appears willing to support project initiatives in this regard. Local environmental NGOs may also play a role in public awareness raising and will be considered in the development of local programs.