

**WATER SECTOR PROJECTS IMPLEMENTATION UNIT
STATE INSTITUTION**

E4177 V2

IRRIGATION SYSTEM ENHANCEMENT PROJECT

**ENVIRONMENTAL MANAGEMENT
FRAMEWORK**

Yerevan 2013

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LIST OF ACRONYMS

BP	Bank Policy
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMP	Environmental Management Plan
IREP	Irrigation Rehabilitation Emergency Project
ISEP	Irrigation System Enhancement Project
MCA	Millennium Challenge Account
MNP	Ministry of Nature Protection
NGO	Non-Governmental Organization
O&M	Operation and Maintenance
OP	Operational Policy
PAP	Project Affected Person
RAP	Resettlement Action Plan
RA	Republic of Armenia
RPF	Resettlement Policy Framework
SCWS	State Committee of Water Systems
SNCO	State Non-Commercial Organization
WB	World Bank
WS PIU	Water Sector Projects Implementation Unit State Institution
WUA	Water User Association

1. INTRODUCTION

The Republic of Armenia requested World Bank assistance for the implementation of the Irrigation System Enhancement Project (ISEP or Project) aimed at construction and rehabilitation of irrigation infrastructure in various regions of Armenia. As the previously implemented Irrigation Rehabilitation Emergency Project (IREP), the ISEP's objectives include improving the sustainability of irrigation system by lowering its operation and maintenance (O&M) costs, bringing back to irrigation currently abandoned land within the schemes' command areas and by ensuring reliable irrigation water supply. ISEP is expected to provide an economic stimulus to rural communities through provision of employment opportunities as well long term benefits of an improved irrigation water supply.

The State Committee of Water Systems of the Ministry of Territorial Administration of the Republic of Armenia (RA) will have the overall responsibility for implementing of the ISEP with implementation functions delegated to the Water Sector Projects Implementation Unit State Institution (WS PIU).

ISEP is classified as environmental category B following the World Bank OP/BP 4.01 Environmental Assessment. The Project will finance similar types of construction and rehabilitation works in multiple locations over the country. Not all of these sub-projects are known in detail at the stage of the project preparation and detailed designs for works are not available at this point, though the types of works to be undertaken and their environmental impacts are generally known upfront. Environmental due diligence in the course of ISEP preparation, therefore, implied Environmental Impact Assessment (EIA) of one pre-defined sub-project, and development of an Environmental Management Framework (EMF) document covering all other expected packages of civil works. The EMF provides general guidelines for applying environmentally sound practices to irrigation infrastructure rehabilitation. According to the EMF for low-risk construction / rehabilitation activities the checklist-type Environmental Management Plans (EMPs) will be developed to ensure that basic good practice measures are recognized and implemented, while designed to be both user friendly and compatible with the WB safeguards requirements. For construction and rehabilitation projects of a higher risk in accordance with the national legislation and WB policies, the EIAs will be carried out and EIA reports produced along with EMPs. EMPs developed for all works packages under ISEP will be included in the tender documents to ensure proper implementation and monitoring of the proposed mitigation measures. Adherence to the EMPs in the course of civil works will allow preventing or minimizing possible adverse impacts and will be sufficient for keeping environmental impacts of the Project at the acceptable minimum level.

2. PROJECT DESCRIPTION

The development objective of ISEP is to improve the sustainability of the irrigation system by lowering its operation and maintenance (O&M) cost, bringing back to irrigation currently abandoned land within the schemes' command areas and by enabling farmers' community to implement sustainable O&M of the system.

That objective will be achieved through the following activities: (i) conversion from pump-based irrigation to gravity, where feasible and to upgrade the efficiency of pump-based irrigation where conversion is not feasible; and (ii) institutional measures and interventions to improve participation and governance in Water Users Associations (WUAs).

The Project comprises three components:

Component 1. Irrigation System Enhancement (US\$33.0 million). The component will finance the following sub-components:

Sub-component 1.1: Conversion of pump-based irrigation to gravity (US\$ 24.5 million). The rationale for this sub-component would be to lower the cost of water by converting pump-based irrigation to gravity irrigation. The Project would provide for the construction of four gravity systems (Meghri, Gegardalich, Baghramyan-Norakert, and Kaghtsrashen); and

Sub-component 1.2: Upgrading of outlet and other canals conveying pumped water (US\$8.5 million). In this sub- component about 52 km of outlet canals of 13 selected pumping schemes will be rehabilitated to minimize losses of high value pumped water.

Component 2. Provision of crucial information for decision making in the irrigation sub-sector (US\$ 1.7 million). The component has two sub-components: 2.1 Technical investigations; and 2.2 Supervisory Control and Data Acquisition (SCADA) system installation.

Sub-component 2.1: Technical investigations (US\$ 0.9 million). The sub-component has two activities: (1) analyses of operation and maintenance (O&M) and extraordinary maintenance (EM) needs (US\$ 0.6 million), and (2) technical audit of irrigation institutions (US\$ 0.3 million). The first activity has the objective of analyzing and making available information on (i) actual O&M needs; (ii) EM; and (iii) trend of O&M expenses if EM is not fully implemented. The objective of the second activity is to provide operational indication of effectiveness of each of the irrigation institutions, namely the two Water Supply Agencies and 44 Water User Associations.

Sub-component 2.2: Supervisory Control and Data Acquisition (SCADA) system installation (0.8 million). The sub-component will introduce an up-to-date water measurement and water flow control model in 71 observation points of the main canals and some other intake points. The objectives of this sub-component are: (i) increasing efficiency of water conveyance and distribution, (ii) specifying water losses, (iii) improving water flow control, (iv) carrying out automated calculation of the volume of water passing through canal, (v) registering other parameters, and (vi) preventing disagreements in WUAs and in future improving water supply of water users.

Component 3. Project Management and WUAs' Support Group and Institutional Activities (US\$ 2.8 million). This component would finance two sub-components: (i) project management, and (ii) WUAs' Support Group.

Sub-component 3.1. Project Management (US\$ 1.5 million). This sub-component would provide for overall project management, coordination of the implementation process, preparation of preliminary design documents, coordination and monitoring of technical supervision of civil works, preparation of tender documents and management of the

procurement process, monitoring project activities, and reporting on progress in project implementation.

Sub-component 3.2. WUAs' Support Group (US\$ 1.3 million). The main objective of this sub-component is to (i) continue WUAs strengthening activities routinely implemented by WUAs' Support Group, and (ii) improve them with the addition of specific activities targeting WUAs executive bodies and water users.

Physical works to be undertaken with the project support will be financed from Component 1 of the project. Component 1 (sub-component 1.1) is designed to provide physical investments into irrigation infrastructure and will finance civil works. Its main objective is to convert existing pump schemes to gravity fed systems, where technically possible, with the purpose of reducing O&M costs, through saving of electricity consumption, lower maintenance costs and higher distribution efficiency. Four proposed schemes are Kaghtsrashen Irrigation System, Meghri Irrigation System, Gegardalich Irrigation System, and Bagramyan-Norakert Gravity Irrigation System. Three of these systems – excluding Kaghtsrashen - have been subject of previous studies by the Millennium Challenge Account (MCA) - Armenia Program, which commissioned the design and tender documents for the Meghri Gravity Irrigation Scheme, and preliminary designs of Gegardalich and Bagramyan-Norakert schemes. The Meghri Gravity Scheme design and tender documents are already available in mature drafts, and will be reviewed and updated under a consultancy services contract within the scope of the ongoing Additional Financing to the IREP, and hence this scheme is not covered by the present EMF.

Gegardalich Gravity Irrigation Scheme: the concept is to replace 3 existing pump stations (Azat - 4 stages, Hatsavan and Gegadir) pumping the water from the Azat River and Reservoir, with a gravity supply from the Gegardalich Reservoir. The main works include heightening of the dam to increase the storage volume to 2.4 Mm³ and construction of a 23.0 km pipeline (design discharge of 639 l/s) and associated structures. The scheme has an irrigated area of approximately 1,000 ha with an annual water demand of 3.4 Mm³ of which 2.4 and 1.0 are supplied from reservoir storage and irrigation season inflows respectively.

Bagramyan-Norakert gravity scheme. As a result of construction of gravity system 573 ha lands will be irrigated with the water supplied from the Tkahan canal. After construction the pump stations Norakert No.1, No.2 and Baghramyam No.1 will be taken out of operation. Water for the gravity system will be withdrawn from the concrete intake structures remaining from the decommissioned pump stations, from where irrigation is performed by tertiary canals. There is sufficient water in headworks of Thakan canal, and after some rehabilitation works, which will allow to increase its capacity, sufficient water amount could be delivered to the system. Gravity irrigation scheme will supply by water 573 ha of Baghramyam and Norakert communities. Tkahan canal will deliver 1.5 m³/sec water for irrigation of 1429 ha, out of which 0.82 m³/sec for 856 ha presently irrigated by the same canal, and the additional 0.68 m³/sec will irrigate another 573 ha. As a result of construction of gravity scheme, there will be annual saving of 1.65 million kWh electricity at an amount of 44.55 million AMD (USD 0.11 million) and of USD 38,000 in O&M costs (excluding electricity cost).

Kaghtsrashen Irrigation Scheme. Kaghtsrashen pump station receives water from Artashat canal, which is supplied by water from Hrazdan River and Azat Reservoir constructed on Azat River. The proposed pipeline scheme would enable gravity irrigation of lands under command of Kaghtsrashen pump station pumping water from Azat River. The intake structure will be located on Azat River about 9 km upstream from Azat Reservoir. The overall length of the pipeline will be 23.5 km. It will start from the level elevation of 1230 m and end up at the level elevation of 1131 m. The pipeline will have a diameter of 900 mm and will take the water until the discharge basin of Kaghtsrashen pump station. Annual electricity saving is 10.35 M KW*hrs, currently irrigated area is 957 ha, additional hectares (previously irrigated privatized lands) comprise 425 ha.

Component 1 (sub-component 1.2) includes rehabilitation of canals on the estimated 13 existing pumped systems. These systems currently have a combined irrigated area of approximately 8,595 ha. The proposed works cover rehabilitation of approximately 51 km of the 107 km of diversion canals on these systems. Water losses along the canal sections proposed for rehabilitation, as measured by the operators, are of the order of 33.09 Mm³ per year. The annual water savings from the proposed works are estimated to be 20.4 Mm³. As a result of the works, the total irrigated area will increase by about 310 ha. The preliminary cost for the works would be approximately USD 7.92 million. The selection process for the 13 systems in addition to being based on their importance and technical parameters, also included economic analysis. All selected canals had high ERRs. Implementation of this component would result in saving of about 12.6 million KW*hrs electricity per year (ADM 392.0 million or USD 0.98 million) and reduction of O&M costs by about USD 730,000 per year (electricity excluded).

The proposed Project will be implemented by the existing Water Sector Development and Institutional Improvement Projects Implementation Unit State Institution (WS PIU). The WS PIU has vast experience in cooperating with the World Bank and other donors. The WS PIU is adequately staffed and has the capacity to address all aspects of the Project implementation, including safeguard compliance. The civil works will be supervised by a consulting company (Technical Supervisor) commissioned by WS PIU. Along with other responsibilities, this firm will be assigned to track compliance of civil works contractors with the EMPs and will monitor implementation of the prescribed mitigation measures.

3. LEGAL AND REGULATORY FRAMEWORK

3.1. Legal Framework

The Article 10 of the Constitution of the Republic of Armenia (adopted in 1995 and amended in 2005) stipulates that the State is responsible for environmental protection, reproduction and wise use of natural resources. Since 1991 more than 25 codes and laws as well as numerous by-laws and regulations have been adopted to protect the environment. The list of key environmental laws regulating the field of nature protection of the RA is presented below:

- Law on Ensuring Sanitary-epidemiological Security of the RA Population (1992);
- Law on Atmospheric Air Protection (1994);
- Law on Environmental Impact Assessment (1995);
- Law on the Protection and Use of Fixed Cultural and Historic Monuments and Historic Environment (1998);
- Law on Environmental and Nature Use Charges (1998);
- Law on Flora (1999);
- Law on Fauna (2000);
- Land Code (2001);
- Law on Environmental Education (2001);
- RA Law on Lake Sevan (2001)
- RA Law on Complex Program for the Lake Sevan Ecosystem Restoration, Conservation, Reproduction and Use (2001)
- Water Code (2002);
- RA Law on Water Users' Associations and Federations of the Water Users Associations (2002)
- Law on Wastes (2004);
- Law on Environmental Monitoring (2005);
- Law on Environmental Oversight (2005);
- RA Law on Fundamental Provisions of the National Water Policy (2005)
- Forest Code (2005);
- Law on Specially Protected Natural Areas (2006);
- RA Law on the National Water Program (2006)
- Law on Rates of Environmental Charges (2006);
- RA Law on Inspection of Use and Protection of Land (2008)
- Code on Underground (2011);
- Order N2-III-11.3 on establishing sanitary norms for "Noise in workplaces, residential and public buildings, and residential development areas" in force 13.04.2002.

Summaries of several laws from the list, which are most relevant to the ISEP are presented below:

Law on Environmental Impact Assessment (1995)

The Law on Environmental Impact Assessment (EIA), adopted in 1995, provides legal basis for implementation and introduction of state expertise of planned activities and concept frameworks as well as presents the standard steps of the EIA process for various projects and activities in Armenia. It establishes in Articles 2-5, the general legal, economic, and organizational principles for conducting mandatory state EIA of various types of projects and “concepts” of sectoral development (e.g., energy, mining, chemical industry, construction, metallurgy, pulp and paper, agriculture, food and fishery, water, electronics, infrastructure, services, tourism and recreation, etc.). The Law also stipulates provisions directly related to water sector, particularly in the Article 4 “Intended Activities Subject to Expertise” the Law enumerates the types of planned activities subject to environmental impact assessment. In fact, only activities exceeding the respective thresholds are subject of environmental impact assessment (“thresholds” were set by the Governmental Decree N193 issued on March 30, 1999). The Law forbids any economic unit to operate or any concept, program and plan to be implemented without a positive conclusion of an EIA (if deemed necessary by provisions of this law). In addition, an EIA may be also initiated for projects that do not meet the “threshold” requirements. According to the Article 4, the right to request conducting of EIA was given to local authorities, ministries, local communities and NGOs. Other national legislation that determines the “special status” of a particular territory may also trigger a review of environmental impact. The Ministry of Nature Protection can initiate a review of environmental impact when it deems it to be necessary. The EIA Law specifies notification, documentation, public consultations, and appeal procedures and requirements. The Law on EIA law also provides for public involvement and participation. The Law demands that for the operation of any economic unit, or implementation of a plan or programs, a positive conclusion on an environmental impact assessment must be obtained from the State Environmental Expertise State Non Commercial Organization of the RA Ministry of Nature Protection.

The Law on EIA is generally consistent with the EIA approaches followed by international conventions and development assistance agencies (e.g., WB, USAID, EU, and MCC). The law is applicable for the following activities: construction, replacement, expansion, technical re-equipment and closure. In such cases, for implementation of a plan or programs, a positive conclusion of an environmental impact assessment must be obtained from the State Environmental Expertise SNCO of the Ministry of Nature Protection. The Law on EIA law also provides for public involvement and participation at all stages of the EIA.

Law on the Protection and Use of Fixed Cultural and Historic Monuments and Historic Environment (1998)

The Law provides the legal and policy basis for the protection and use of such monuments in Armenia and regulates the relations among protection and use activities. Article 15 of the Law describes procedures for - amongst other things - the discovery and state registration of monuments, the assessment of protection zones around them and the creation of historic-cultural reserves. Article 22 requires the approval of the authorized body (Department of Historic and Cultural Monuments Preservation) before land can be allocated for construction, agricultural and other types of activities in areas containing monuments.

Law on Flora (1999) and Law on Fauna (2000)

The Laws on Flora and Fauna outline the Republic’s policies for the conservation, protection, use, regeneration, and management of natural populations of plants and animals, and for regulating the impact of human activities on biodiversity. These laws aim for the sustainable protection and use of flora/fauna and the conservation of biodiversity. There are provisions for assessing and monitoring species, especially rare and threatened species.

Law on Atmospheric Air Protection (1994 and last amended in 2007)

This Law regulates the emission licenses and provides maximum allowed loads/concentrations for atmospheric air pollution, etc. There is secondary legislation that establishes sanitary norms

for noise in workplaces, residential and public buildings, residential development areas as well as construction sites.

Land Code (2001)

The Land Code defines the main directives for management use of the state lands, included those allocated for various purposes, such as agriculture, urban construction, industry and mining, energy production, transmission and communication lines, transport and other purposes. The areas used under river, other water bodies and water infrastructure, as well as their relevant alienation zone are considered as water lands. The Code defines the lands under the specially protected areas as well as forested, watered and reserved lands. It also establishes the measures aimed to the lands protection, as well as the rights of state bodies, local authorities and citizens towards the land.

Code on Underground Resources (2002)

This Code contains the main directives for use and protection of mineral resources and underground water, including the sanitary protection zones for the underground water resources.

Water Code (2002)

The main purpose of the Water Code is to provide the legal basis for the protection of the country's water resources, the satisfaction of water needs of citizens and economic sectors through effective management of water resources and safeguarding the protection of water resources for future generations. The Water Code addresses the following key issues: responsibilities of state/local authorities and public, development of the national water policy and national water program, water cadaster and monitoring system, public access to the relevant information, water use and water system use permitting systems, trans-boundary water resources use, water quality standards, hydraulic structures operation safety issues, protection of water resources and state supervision.

Adoption of the Water Code in 2002 generated the need for development of a number of Governmental regulations and procedures, including permitting procedures, environmental flows, drainage water use, water alternative accounting, access to information on trans-boundary water, water use for fishery purposes, reservation of underground water sources, registration of documents in state water cadaster, public awareness and publicity of the documents developed by WRMA and other normative documents which provide guidelines directly linked with water and environmental issues.

Law on Water Users' Associations (WUA) and Federations of the WUAs (2002)

The WUAs and federations of WUAs are established to effectively operate and maintain the irrigation infrastructure and provide for reliable irrigation water supply to members of the WUA, collect water payments and present and protect the rights of member water users. Within the objectives of the Association and Federation (Article 4) the following important issues from an environmental perspective could be mentioned: operation and maintenance of irrigation system; implementation of construction works and restoration of watercourses and irrigation systems; water supply management and pollution prevention; implementation of activities necessary to improve the quality of land, supporting the drainage system; providing ecological safety through preventing land erosion, prevention from salinisation, over-watering and promoting the protection of irrigation system.

Law on Wastes (2004)

The law regulates legal and economic relations connected to the collection, transfer, maintenance, development, reduction of volumes, prevention of negative impact on human health and environment. The law defines objects of waste usage, the main principles and directions of state policy, the principles of state standardization, inventory, and introduction of statistical data, the implementation of their requirements and mechanisms, the principles of wastes processing, the requirements for presenting wastes for the state monitoring, activities to

decrease the amount of the wastes, including nature utilization payments, as well as the compensation for the damages caused to the human health and environment by the legal entities and individuals, using the wastes, as well as requirements for state monitoring and legal violations. The law defines the rights and obligations of the state governmental and local governmental bodies, as legal entities and individuals.

Law on Environmental Oversight (2005)

The Law regulates the issues of organization and enforcement of oversight over the implementation of environmental legislation of the Republic of Armenia, and defines the legal and economic bases underlying the specifics of oversight, the relevant procedures, conditions and relations, as well as environmental oversight in the Republic of Armenia.

Law on Fundamental Provisions of the National Water Policy (2005)

The Law defines a long-term development concept for protection, strategic management and use of water resources and water systems of Armenia. It spells out the key principles for integrated management and planning of Armenia's water sector by defining priorities and approaches to be addressed.

Law on National Water Program (2006)

The overall goal of the Law is to provide short-term (until 2010), medium-term (2010-2015) and long-term (2015-2021) measures for achieving the goals and objectives defined by the Water Code, National Water Policy and Program. The National Water Program Law is a "living" document to be updated regularly. The law defines the following key measures: development of measures aimed at definition of the national water reserve; strategic water reserve; useable water resources and conservation and enhancement of the national water reserve; classification of water systems; development of criteria for defining the water systems of state significance; assessment of water demand and supply; development of a strategy for storage, distribution and use of water resources; definition of measures aimed at development of water standards; volumes of ecological/minimum flow volumes and maximum permissible quantities of water withdrawn for consumption; determination of specially protected basin areas and zones of ecological emergencies and ecological disasters; prevention of negative impact on water ecosystems; improvement of water resources monitoring and pollution prevention; determination of financial requirements and proposed funding sources suggested for implementation of the National Water Program; ensuring public awareness; etc.

Law on Inspection of Use and Protection of Land (2008)

This newly adopted law provides objectives and types of effective use and protection of lands of the Republic of Armenia, inspection related to enforcement of land legislation and institutions, procedures of control, rights and responsibilities of entities controlling land use and protection. The law applies to all lands of the Republic of Armenia Land Fund, irrespective of purpose, ownership and/or right to use.

3.2. Regulatory Framework

This section briefly presents the roles of entities that may have involvement in the ISEP, primarily but not exclusively from an environment perspective.

Ministry of Nature Protection

The Ministry of Nature Protection (MNP) is responsible for the protection, sustainable use, and regeneration of natural resources as well as the improvement of the environment in the Republic of Armenia. In those areas, the MNP authority includes overseeing national policy development, developing environmental standards and guidelines, and enforcement. The MNP implements those functions through the following structural departments:

- Normative-methodological Department (including Division of Legislation and Division of Standards and Technical Regulations);

- Department of International Cooperation;
- Department of Environmental Protection (including Division of Biodiversity and Water Resources Protection and Division of Land and Atmosphere Protection);
- Department of Hazardous Substances and Waste Management;
- Department of Nature Protection and Environmental Economics;
- Department of Underground Resources Protection;
- Department of Meteorology and Monitoring of Atmosphere Pollution.

The MNP also undertakes several functions through the following bodies:

- *Water Resources Management Agency* with its five Basin Management Organizations is the key institution responsible for the water resources management including, but not limited to, the development and implementation of the National Water Policy, National Water Program and basin Management Plans; regulation of water use by issuance of permits for use of surface and ground water resources; assessment and classification of water resources by their use; participation in development of water standards and control of application, etc.
- *State Environmental Expertise SNCO* conducts environmental assessments of designs for construction, reconstruction, rehabilitation and maintenance of water infrastructures according to the requirements of the Armenian legislation and ratified International Agreements and issues experts' conclusions;
- *State Environmental Inspectorate* with its 11 regional offices oversees the implementation of legislative and regulatory standards in natural resources protection, use and renewal;
- *Environmental Impact Monitoring Centre* monitors water and air quality of Armenia through its network of observation points;
- *Bio-resources Management Agency* participates in the environmental impact assessment of designs for construction, reconstruction, rehabilitation and maintenance of water infrastructures, as well as the:
 - *Information Analytical Center*
 - *Center for Waste Investigation SNCO, and*
 - *Center for Hydro-geological Monitoring SNCO, etc.*

Ministry of Energy and Natural Resources

The Ministry of Energy and Natural Resources is a republican body of executive authority, which elaborates and implements the policies of the Republic of Armenia Government in the energy sector. The ministry is also responsible for the protection, sustainable use, and regeneration of natural resources, and implements its functions through the following bodies:

- Agency of Mineral Resources;
- Subsoil Concession Agency.

Ministry of Emergency Situations

The Ministry of Emergency Situations elaborates and implements the policies of the Republic of Armenia Government in the area of civil defense and protection of population in emergency situations. *Armenian State Hydro-meteorological and Monitoring Service SNCO* is among the structural entities acting within the Ministry of Emergency Situations and conducts regular monitoring of meteorological and hydrological conditions of Armenia through its network of meteorological and hydrological stations and posts.

Ministry of Territorial Administration

Marzpetarans (regional administration bodies) are responsible for administration of public infrastructure falling under the regional jurisdiction. Bodies of local self-government (communities) are responsible for administration of public infrastructure of local significance registered as ownership of communities.

The State Committee of Water Systems (SCWS) under the Ministry of Territorial Administration has a mandate of improving the management of companies engaged in water activities. Amongst other objectives, the SCWS promotes improvement of water services to the consumers and implementation of further reforms in the water infrastructure and service delivery. SCWS has the following functions: participates in the development and implementation of the National Water Policy and Water National Program of the RA; submits to the RA Government annual reports on water utilization by a breakdown of sources and user companies; executes authorized management of state stocks in companies engaged in commercial activities, such as construction of hydro-technical structures, technical operation, water supply and sewerage services in the areas of irrigation, drinking water, sewerage as well as in state entities which implement investment projects in natural and artificial water basins in the above mentioned areas with foreign funding.

Ministry of Health. Within the structure of the Ministry of Health the *State Hygienic and Anti-epidemiological Survey* is responsible for coordination of all issues related to health (including those on noise and vibration) and for supervision over implementation of sanitary norms, hygienic and anti-epidemiological measures implementation by organizations and citizens.

Ministry of Agriculture with its *Melioration Development Department* is responsible for the development, implementation and coordination of annual projects on construction, operation, rehabilitation and cleaning of collector-drainage systems.

The Ministry of Labor and Social Affairs among other things is responsible for development and implementation of the state policy, legislation and programs in the following areas: social security, labor and employment, social assistance, social assistance to disabled and aged people, social protection of families, women and children, etc.

National Water Council with its *Dispute Resolution Commission* is the highest advisory body within the water sector. It comprises representatives of major stakeholders from several ministries and is chaired by the Prime Minister. The role of the Council is the development of recommendations on the National Water Policy and Program and measures for implementation.

Public Services Regulatory Commission of the Republic of Armenia is responsible for establishment of tariff policy in water relations and issuing of permits for the use of water systems.

4. TECHNICAL AND ENVIRONMENTAL STANDARDS AND REGULATIONS

4.1. World Bank Safeguard Policies

WB OP 4.01 Environmental Assessment is considered to be the umbrella policy for the Bank's environmental safeguard policies. These policies are critical for ensuring that potentially adverse environmental and social consequences are identified, minimized, and properly mitigated. These policies receive particular attention during the project preparation and approval process. The World Bank carries out screening of each proposed project to determine the appropriate extent and type of EA to be undertaken and whether or not the project may trigger other safeguard policies. The Borrower is responsible for any assessment required by the Safeguard Policies, with general advice provided by the World Bank staff. The safeguard policies and triggers for each policy are presented in the table below:

Operational Policy	Triggers
Environmental Assessment (OP 4.01)	If a project is likely to have potential (adverse) environmental risks and impacts in its area of influence.
Forests (OP 4.36)	Forest sector activities and other Bank sponsored interventions which have potential to impact significantly upon forested areas.
Involuntary Resettlement (OP 4.12)	Physical relocation and land loss resulting in: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; (iii) loss of income sources or means of livelihood, whether or not the affected people must move to another location.
Indigenous Peoples (OP 4.10)	If there are indigenous peoples in the project area, and potential adverse impacts on indigenous peoples are anticipated, and indigenous peoples are among the intended beneficiaries.
Safety of Dams (OP 4.37)	If a project involves construction of a large dam (15 m or higher) or a high hazard dam; If a project is dependent upon an existing dam, or dam under construction.
Pest Management (OP 4.09)	If procurement of pesticides is envisaged; If the project may affect pest management in the way that harm could be done, even though the project is not envisaged to procure pesticides. This includes projects that may (i) lead to substantially increased pesticide use and subsequent increase in health and environmental risk, (ii) maintain or expand present pest management practices that are unsustainable, not based on an IPM approach, and/or pose significant health or environmental risks.
Physical Cultural Resources (OP 4.11)	The policy is triggered by projects which, prima facie, entail the risk of damaging cultural property (e.g. any project that includes large scale excavations, movement of earth, surface environmental changes or demolition).
Natural Habitats (OP 4.04)	The policy is triggered by any project with the potential to cause significant conversion (loss) or degradation of natural habitats whether directly (through construction) or indirectly (through human activities induced by the project).
Projects in Disputed Areas (OP 7.60)	The policy is triggered if the proposed project will be in a "disputed area".
Projects on International Waterways (OP 7.50)	If the project is on international waterway such as: any river, canal, lake, or similar body of water that forms a boundary between, or any river or body of surface water that flows through, two or more states (or any tributary or other body of surface water that is a component of this waterway); any bay, gulf, strait, or channel bounded by two or more states or, if within one state, re-recognized as a necessary channel of communication between the open sea and other states- and any river flowing into such waters.

The requirements of RA environmental legislation, as it pertains to the procedures required for the ISEP implementation, are in general comparable to WB policy approaches. However, there are also several differences between local legislation and WB policy requirements, most tangibles of which are summarized below. Armenian EIA terminology considers “environmental assessment” as the review process carried out by the Environmental Expertise of the Ministry of Nature Protection performed on the application of a project proponent for obtaining of the expert conclusion clearing the proposed activities, while the WB OP/BP 4.01 uses this term to describe the environmental impact study carried out by the project proponent. Armenian EIA legislation does not require classification of activities into environmental categories A, B, and C as it is established in OP/BP 4.01, though it distinguishes between activities that require an EIA and those that do not. The national legislation does not provide definition of the EMP and envisage its development, but it does require that the EIA document carries a list of environmental mitigation measures and describes procedures of their implementation. The national legislation is mostly similar to WB requirements with respect to public disclosure of the EIA documents, however does not include the requirement of at least 2 public consultations for Category A projects, which is the case with WB OP. Nonetheless, RA is a party to Aarhus convention, thus the public consultation process is carried out in line with the guiding principles of the Aarhus convention.

4.2. International Agreements

In addition to the aforementioned legal acts, the Republic of Armenia has signed and ratified a number of environmental conventions and protocols which are presented in the table below:

No	Convention or Protocol, Name and Place	In Force	Signed	Ratified	Comment
1	Convention on Wetlands of International Significance especially as Waterfowl Habitat (Ramsar, 1971)	1975	1993	Ratified by USSR	
2	Convention on Biological Diversity (Rio-De-Janeiro, 1992)	1993	1992	1993	Re-registered in UN 1993
3	Cartagena Protocol on Biological Safety (Cartagena, 2000)		2000	2004	
4	UN Framework Convention on Climate Change (New York, 1992)	1994	1992	1993	Re-registered in UN 1993
5	Kyoto Protocol (Kyoto, 1997)			2002	Re-registered in UN 2003
6	Convention on Long-range Transboundary Air Pollution (Geneva, 1979)	1983		1996	Re-registered in UN 1997
7	Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, 1991)	1997		1996	Re-registered in UN 1997
	Protocol on Strategic Environmental Assessment (Kiev, 2003)		2003		
8	Convention on the Transboundary Effects of Industrial Accidents (Helsinki, 1992)	2000		1996	Re-registered in UN 1997
	Protocol on Civil Liability and Compensation for Damage caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters (Kiev, 2003)		2003		
9	UN Convention to Combat Desertification (Paris, 1994)	1996	1994	1997	Re-registered in UN 1997

No	Convention or Protocol, Name and Place	In Force	Signed	Ratified	Comment
10	Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel, 1989)	1992		1999	Re-registered in UN 1999
11	Convention for the protection of Ozone Layer (Vienna, 1985)	1988		1999	Re-registered in UN 1999
	Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal, 1987)	1989		1999	Re-registered in UN 1999
12	Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus, 1998)	2001	1998	2001	
13	Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam, 1998)		1998	2003	
14	Convention on Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 1992)	1996	1999		
	Protocol on Water and Health (London, 1999)		1999		
15	Stockholm Convention on Persistent Organic Pollutants (Stockholm, 2001)		2001	2003	
16	Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques (Geneva, 1976)	1978		2001	Re-registered in UN 2002
17	European Convention on Landscape (Florence, 2000)			2004	
18	Convention on Protection of the World Cultural and Natural Heritage (Paris 1972)			1993	
19	Energy Charter Treaty (Lisbon, 1994)			1997	
	Energy Charter Protocol on Energy efficiency and Related Environmental Aspects (Lisbon, 1994)			1997	
20	European Convention on Protection of Wild Nature and Habitat (Bern, 1979)	1982	2006		

International Conventions and Protocols signed and ratified by the Republic of Armenia, which are most relevant to the ISEP are presented in the list below:

- Convention on Biological Diversity (Rio-De-Janeiro, 1992);
- UN Framework Convention on Climate Change (New-York, 1992) and Kyoto Protocol (Kyoto, 1997);
- UN Convention to Combat Desertification (Paris, 1994);
- Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus, 1998).

4.3. Permitting

Various permits necessary for accomplishing the works envisaged by the ISEP, including data on issuing authorities and tentative timing of obtaining the permit, are summarized in the below table:

Name of permit	Issuing authority	Permit obtaining stage
Water use permit	Ministry of Nature Protection	After design stage, prior to bidding
Technical Expertise	State Expertise	After design stage, prior to bidding
Environmental Expertise	Ministry of Nature Protection	After design stage, prior to bidding
Construction license	Ministry of Urban Development	After design stage, prior to bidding <i>(to be possessed by construction contractors submitting their bids)</i>
State Traffic Police Permit	Traffic Police of RA	During the design stage, approval of the traffic management plan <i>(if deemed necessary)</i>
Construction permit	Head of the appropriate community	Prior to construction
Lease agreement or ownership documents for construction site	Property owner	Before establishment of the construction site
Mining license *	Ministry of Economy	During construction stage
Purchase documents for purchased crushed stone	Authorized seller	During construction stage - purchase of the materials
Maximum permissible discharge permit	Ministry of Nature Protection	During construction stage
Agreement for disposal of construction waste	Head of the appropriate community	Before disposal of the waste off-site, at least 3 months prior to issuance of the final certificate

* If construction materials are purchased, owner of the quarry must have a valid permit from the MNP

All of the above permits are relevant for the ISEP implementation; however some of them might not be necessary depending on the nature of works and their organization (e.g. contractor is not requested to have a mining license in case the crushed stone is purchased, however the company producing the crashed stone should possess a valid mining license).

5. ENVIRONMENTAL SCREENING

The main purpose of environmental screening is to ensure that all environmental issues are properly assessed and adequate solutions to those issues have been provided. Part of the works envisaged by the proposed Project is of construction nature, while the other part of proposed improvements is of rehabilitation nature and will be implemented on existing infrastructure.

The ISEP will finance construction and rehabilitation works on the irrigation schemes and will have certain social and environmental impacts. The project, therefore, triggers World Bank OP/BP 4.01 Environmental Assessment.

Component 1a of the ISEP includes construction of three schemes aimed at conversion from pumped irrigation to gravity fed systems. All three schemes were previously screened and studied under the MCA-Armenia Program (for two of the schemes feasibility studies were carried out, while for the third one the final design, including environmental and social analysis, was developed). Based on these studies, works under Component 1a, including new construction, are not expected to have significant and irreversible negative impact on the environment. To meet the requirements of the national legislation and the World Bank OP/BP 4.01, for all three gravity schemes the EIAs shall be carried out and the positive conclusions shall be obtained from the Environmental Expertise of the Ministry of Nature Protection. Under Component 1b of the ISEP mostly rehabilitation works are envisaged, which are expected to have minor environmental and social impacts, thus for the works covered by this component development of site-specific EMPs should be sufficient (no need for the full scale EIA and permitting). However, in exceptional cases, for some of the activities (depending on the solutions proposed in final designs) the environmental assessment and issuance of a positive conclusion by the Environmental Expertise of the Ministry of Nature Protection may also be required, depending on the detailed designs of individual activities. Component 2 covers capacity building and project management activities and is not associated with potential environmental and social risks.

Overall, the long term social and environmental impacts of the ISEP are expected to be positive, while negative impacts will be limited to the construction phase, and be of the limited scope. Based on the nature and scope of the proposed activities, the Project is classified through environmental screening as environmental Category B. All of the possible negative impacts may be effectively mitigated through application of standard good environmental practices. Site-specific EIAs and/or EMPs will be prepared for all infrastructure activities included in the Project. They will specify environmental risks associated with construction and rehabilitation works to be carried out at the respective project sites, recommend respective mitigation measures, and provide monitoring schemes for tracking adherence to the mitigation plans. Adherence to the EMPs in the course of civil works will be sufficient for keeping environmental impacts of the project at the acceptable minimum level. In addition, the construction contractors shall carry out civil works in accordance with the Environmental Management Guidelines presented in Attachment III.

Some of the ISEP activities may require temporary and/or permanent land acquisition / physical relocation of households and businesses, uprooting of trees and/or standing crops leading to loss of income. Although the design solutions will strive to minimize resettlement needs, they may not be entirely excluded or ruled out. Therefore, the ISEP triggers WB OP/BP 4.12 Involuntary Resettlement. The Resettlement Policy Framework (RPF) is prepared, disclosed, and discussed with stakeholders. Site-specific Resettlement Action Plans (RAPs) will be prepared, as required, once the detailed designs are available and the resettlement needs are clear. Works will be allowed only after the RAPs are implemented and compensations delivered to the affected people.

Heightening of the dam required for upgrading a reservoir feeding the Gegardalich scheme triggers WB OP/BP 4.37 Safety of Dams. Based on the requirements of this policy, the design of the dam will undergo a specialized professional scrutiny to ensure its quality. A system of regular monitoring of the technical condition of the dam will also be worked out to ensure that any faults in its operation are revealed at the early stage and corrective measures are taken on time to exclude tangible damage to the hydraulic structures and risk to the population and the national environment. .

OP 4.09 Pest Management is triggered, because some agricultural areas, which had been out of irrigation due to deteriorated infrastructure, will be brought back to irrigation as a result of IEEP and that would most likely imply increased use of pesticides. While there is no need of developing a Pest Management Plan, promotion of sound pesticide use practices will be included into the project design.

OP/BP 7.50 Projects on International Waterways is triggered, because conversion of Meghri scheme implies construction of a new water intake point from river Meghri - a tributary of an international river Araks. Once this new intake becomes operational, the existing several intakes from river Araks will be decommissioned. According to the available design documents, the volume of water abstraction from the new intake point on river Meghri will be the same as the total designed capacity of present abstraction points on river Araks. IEEP intervention is not designed to increase volume of water abstraction from river Araks, but will rather substitute several points of abstraction from Araks with one point of abstraction from a tributary of river Araks. Therefore, approval from the RVP will be sought in order to except the proposed activities from the riparian notification requirement under OP 7.50 para 7(a).

6. SENSITIVE RECEPTORS AND POTENTIAL IMPACTS

ISEP activities will be carried out in Kotayk, Armavir, Aragatsohn, Ararat, Tavush, Syunik marzes of the Republic of Armenia. Part of the project activities will be implemented on the existing infrastructure, however, the other part of works will include new construction.

Construction of irrigation gravity systems and subsequent decommissioning of the existing pumping stations will bring positive changes to delivery of irrigation water and water users will more easily obtain the required quantity of irrigation water in a timely manner. In addition, there will be significant cost savings from reduction in energy use, including ecological benefits through prevention of atmospheric pollution associated with energy consumption. The replacement of the worn out pumping stations by gravity systems will increase reliability of irrigation water resources, thereby increasing farmers' incentives to cultivate high value crops. The expected overall positive environmental and social impacts from the ISEP will be long-term and cumulative in nature, ultimately contributing to the increased social and economic benefits of the communities affected.

The potential adverse environmental and social impacts are described below for the construction and operation phases of ISEP. In general, the potential adverse environmental impacts associated with construction and rehabilitation works carried out on infrastructure are expected to be construction-associated, short-term and localized. The vast majority of the potential adverse impacts will be observed during the construction / rehabilitation period only and will mainly occur within the corridor of works implementation.

Construction phase impacts

Degradation of landscapes and soil erosion. Some of the areas are sensitive to soil erosion; therefore, when ditches and slopes along the canals and pipelines and other infrastructure are restored anti-erosive measures shall be implemented during the re-cultivation period.

Pollution by construction run-offs. As a result of oil leakage from machinery and stock piled construction materials, oil products and chemicals can penetrate to the ground water or run off to water recipients.

Impacts on the biodiversity of the project region. During the construction period there might be damages to the vegetation cover and the habitat for wild life could be disturbed in the cutting and filling areas close to the project sites. Earth borrowing, mining of local aggregates and spoils disposal sites will have a temporary negative impact on the environment. For these sites already used quarries should be selected to minimize the impact both during the construction and later during operation.

Noise, vibration, and emissions. Noise, vibration, and emissions will be generated in the course of the transportation of construction materials and truck traffic. Emission of inorganic dust from digging-loading works and emission of harmful substances and dust from combustion of diesel used by transportation means and machinery occur during the construction works. Asphalt and bitumen laying works result in hydrocarbon emissions, petrol use for bitumen thinning causes petrol fume emissions. Welding works cause welding aerosol and manganese monoxide emissions. Concrete mixers work result in concrete dust emissions.

Dust and the bitumen smoke arising from construction works will have negative impact on the ambient air quality, and it is necessary to take effective protective measures to minimize the negative impact, especially in settlements and protected areas. The Law on Atmospheric Air pollution (adopted 1994 and revised 08.05.2001, 01.01.2006 and 05.05 2007) and RA Government Resolution No 192 concerning emission licenses, norms of maximum permitted hazardous atmospheric air pollution emissions from 30.03.1999 deal with these issues.

Disposal of excavated materials and construction wastes. Demolition debris will be generated during construction and rehabilitation works. These effects will be localized, and will be minimized by means of appropriate removal and disposal procedures, which may include but not be limited to careful selection of waste temporary accumulation sites, clear delineation of these sites to exclude their expansion, prevention of washout of such sites, obtaining written agreement on permanent disposal site with local authorities and timely transportation of waste to the designated dump site.

Safety hazards from construction activities. No major hazards are expected during construction of the proposed project elements as long as proper construction practices and safety procedures are applied.

Land acquisition and resettlement impacts. Negative social and economic impacts may occur once it is clarified that the temporary and/or permanent use of private and community or state owned lands is required during the construction / operation of the proposed infrastructure. If land acquisition and / or resettlement is required, the RPF prepared for ISEP will be followed. After the approval of the final designs for individual project sites and setting of an official cut-off date, the RAPs will be developed if required and discussed with affected people. RAPs will be developed and implemented in a participatory manner, involving affected men and women, as it is required by the applicable RA legislation and WB policies. Compensation packages for the affected people will be worked out according to the guiding principles of RPF and be delivered prior to mobilization of works contractors to the given project site. A grievance procedure will be established to address cases of disputed compensation and any other grievances that PAPs might have with land and/or assets to be alienated by the project.

Impacts on historic-cultural and archaeological monuments. Limited risk of encountering archaeological sites is expected during the project implementation, because some of its activities imply earth works for the new construction. If any archaeological finds are encountered while conduct of earth excavation work, the contractor must immediately take activity on hold and inform the client. The client shall contact the State Agency for Protection of Historical and Cultural Monuments and seek guidance on the further course of action. Works may resume only after receiving formal permission from the State Agency for Protection of Historical and Cultural Monuments.

Operation phase impacts

Safety hazards from operation activities. No major hazards are expected during operation of the ISEP infrastructure as long as proper operation practices and safety procedures are applied. During the operation period proper O&M shall be ensured.

Impacts on population. Impacts on population and occupation are expected to be in general positive. Construction and rehabilitation of irrigation infrastructure will have certain impacts on demographic structure of labor force in the areas affected by the proposed project improvements. The project would create both temporary and permanent job opportunities for the local population, as they could be employed during construction / rehabilitation and operation. While more men would find employment during construction / rehabilitation works, both men and women would have equal opportunities with new jobs created due to improvements in irrigation infrastructure and capacity building. The project would be able to monitor these impacts by applying gender-disaggregated indicators. The increased productivity would also make agriculture more profitable and allow more people (including young people) to stay in the village.

Impact on agro-production. Rehabilitation of the irrigation infrastructure will result in better yields, may lead to diversification of crops, and eventually increase incomes of rural families from agriculture. Along with highly positive social impacts of the above, activation of agro-production in better irrigated areas and land plots brought back to production as a result of

resumed irrigation services may lead to increase in use of agrochemicals. Handling and application of pesticides carries risks to the health of people exposed to pesticides, consumers of the products farmed with the use of pesticides, and may damage environment with hazardous pollutants.

7. IMPACT MITIGATION

Mitigation measures that could be used where appropriate (depending on type of infrastructure, volume and type of works, surrounding area, etc.) are separately defined for the design, construction and operation phases. Appropriate measures will be included in the EIAs and EMPs.

Design phase

Environmental and social mitigation requirements shall be incorporated in the final designs, technical specifications, and bidding documents to be implemented by the construction contractor(s) and the system operating entity to avoid, prevent, minimize, or rehabilitate the potential impacts. The final design documents package shall include a list suggesting approved borrow pits and agreed spoil disposal sites; permits and agreements to be obtained from the relevant state and local authorities for use of water resources, borrow pits, and sites for disposal of excavated spoils as appropriate; suggested list of construction preparation temporary sites such as access roads, construction camps, transport and machinery sites, storage facilities, etc. The final design documents shall provide such technical solutions that will have minimum impact on the water resources. To avoid or mitigate the negative impact on fauna during the excavation and pipeline laying works as well as anticipated earthworks, the optimal work schedule shall be worked out to mitigate negative impacts on fauna, especially during breeding and seasonal migration periods. It shall be ensured that the temporary impacts from noise of operating machinery and civil works do not cause direct adverse impacts on fauna. The pass ways and bridges are to be appropriately provided along the open stretches of the canals to ensure the migration routes for animals, and fish screens shall be envisaged, as appropriate. During the final designs preparation temporary and permanent land use and resettlement impacts shall be assessed and be minimized. Where needed RAP(s) shall be developed and implemented to properly identify, assess and compensate the parties affected by the proposed project activities. The RAP(s) shall be fully implemented prior to commencement of construction / rehabilitation works.

Construction phase

Measures to prevent and/or minimize degradation of landscapes and soil erosion, pollution of surface and groundwater resources and soils by construction run-off shall be implemented by the contractor(s) during the construction phase. This may include, but not be limited to the use of already existing quarries and disposal sites to the extent possible or carrying out borrowing, disposal of access material and waste strictly based on the licenses and permits obtained by works contractor. Zones of preliminary accumulation of wastes that will cause no damage to the vegetation cover and other components of the environment shall be maintained by the contractor. Steep slopes shall be strengthened by vegetation, grass and plants, concrete plates or gabions to avoid erosion. All vegetative cover shall be restored to its original condition preceded with appropriate stripping and storage of the top-soils in the preliminary approved sites; sites for storage of oil and lubricants shall be properly equipped to minimize the risks of polluting soils and waters. Dust and noise from the construction site shall be minimized especially in residential areas, public places, near schools, by using closed/covered trucks for transportation of construction materials and debris. All earth works are expected to be carried out by machinery and equipment supplied with dust collectors. The vehicles and machinery must be regularly checked, tuned up and equipped with effective exhaust mufflers. The septic tanks to be placed in the construction camp(s) must be made of impermeable material and shall be emptied in accordance with applicable rules. The wastewater shall be transported by a special truck to a centralized wastewater collector, based on the agreement obtained from the local authorities during the design phase.

To avoid or mitigate the direct impact on natural vegetation during trench digging construction works the following re-cultivation works will be undertaken:

- the topsoil layer with vegetative cover must be preliminary stripped and stored in the nearest areas without vegetation, either within the alienation zone or at the sites

specifically designated by local authorities, anticipating its taking back after troughs backfilling and flattening;

- the fertile soil layer of the tramped and vegetation free areas must be excavated by excavators and stored on some other area without vegetation, and after backfilling and flattening the trough lines to be replaced with the excavated earth;
- the excavated earth from the pipeline conduit must be stored on vegetation free area, and after pipe laying be used for troughs backfilling;
- the top soil layer of the area where the envisaged pipelines are to be installed will be preliminary stripped and stored on vegetation free area (for conservation and rational use of vegetation cover), and used for planting of greenery in the very community or in other sites necessary (in case of lack of necessity in the very community).

Construction camps, if required, are to be placed in areas without vegetative cover. It is expected that the temporary structures are to be placed parallel to the stretches on the abutments, and construction waste disposal shall be regularly provided. Construction concrete rubbles, debris and spoils shall be transported and disposed in approved dump sites.

If historical and/or cultural monuments and artifacts are unexpectedly found during construction activities the construction contractors must cease the works and provide relevant information to the State Agency for Protection of Historical and Cultural Monuments which, after due consideration of the findings, and the Agency experts after determining the significance of the chance finds shall recommend whether the works can be continued or the design must be revised.

Construction works (i.e., construction of head water intake structure, installation of pipes, lining of canals, etc.) will be carried out in consultation with impacted farmers to minimize the adverse economic impacts. While there may be some minor impacts during the planting season during the construction works, these will be short-term and localized.

Construction works shall be implemented in conformity with relevant requirements and safety procedures defined by the RA legislation, as well as requirements presented in separate sections of this document. Workers should have safety equipment needed for their personnel security.

After completion of construction and rehabilitation works landscape shall be restored to quasi-original conditions to the extent possible.

Operation phase

During operation it is essential that the head water intake structures, dams, pipelines, canals and other structures be regularly inspected and be periodically maintained to ensure proper conveyance of water, avoid stagnation and prevent flooding and damages.

To prevent the erosion of lands in the command area of the ISEP infrastructure it is important to undertake anti-erosion measures on arable lands first, during the cultivation. It is recommended to sow the crops by horizontal slopes, apply dense sowing of the crops, furrowing and bedding, to irrigate by short furrows according to the established norms.

In order to prevent salinization, alkalization and pollution of agricultural lands by toxic compounds it is recommended that water supply agencies and WUAs regularly obtain and check relevant surface water quality data available from the hydrological monitoring posts operating in the country. If the standard for toxic compounds is exceeded, water supply agencies should address relevant national authorities to have the appropriate measures taken

for identification and elimination of the source of pollution and mitigation of any damage occurred to the extent possible.

Improving irrigation services is likely to enhance intensity of agriculture and to bring back to cultivation some areas abandoned due to discontinued irrigation as a result of deteriorated infrastructure. This may lead to increased use of fertilizers and pesticides. In order to reduce public health and environmental risks of excessive, unsafe, or improper use of pesticides the project beneficiary farmers will be provided with information on the principles of the Integrated Pest Management and guidelines on safe storing, handling, and application of pesticides. WUAs will play key role in the dissemination of information to the farmer communities. A basic library of public awareness building materials is already compiled by accumulating outputs from several rural development projects implemented with the international support in Armenia. This material is readily available for reproduction under the ISEP.

The following specific measures are proposed to enhance the positive impacts expected as a result of the implementation of ISEP activities:

- Involve the local population in project related activities (e.g. work force for construction phase, etc.)
- Increase local water users' knowledge on more efficient water management through providing training and practice, distribution of information brochures, etc. (if relevant).
- Support capacity building of Water Users Associations.

8. STAKEHOLDER CONSULTATION

The RA environmental legislation and international agreements regulating public consultation and coordination, as well as information availability to public are listed below:

- The Law on the Environmental Impact Assessment (1995) ensures citizen's right to obtain information concerning the activities that may cause environmental impacts;
- UN/ECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus, 1998; the Republic of Armenia has joined to the Convention on the 14-th of May, 2001).

The EMF for ISEP will be publicly disclosed and consulted with stakeholders in early 2013. Participants from the State agencies, professional organizations, NGOs, stakeholders and beneficiary communities will be invited to attend the public consultation meeting. The comments and suggestions made during the consultation meeting will be taken into account in the final version of the EMF. Minutes of stakeholder consultation meeting will be developed and included in the final version of EMF. The site-specific EIAs and/or EMPs will be publicly disclosed and affected communities will be consulted on the environmental and social implications of the individual Project activities prior to tending of works.

9. SITE-SPECIFIC ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT PLANNING

For construction and rehabilitation activities associated with risks triggering detailed environmental analysis in accordance with the local legislation and WB policies (e.g. construction of gravity system, etc.), the EIA report(s) will be developed based on the outline provided in Attachment I. For the activities requiring EIA, the EMPs will be developed as part of the EIA process and be included in the EIA reports. For low risk activities not requiring full-scale EIA, the site-specific EMPs will be developed using the checklist format provided in the below Attachment II of the present EMF, For all works packages the EMPs will be included in the tender documents and will later be made part of works contracts.

Responsibilities of various organizations with respect to EMP implementation and monitoring are briefly summarized below:

Design Consultants will be responsible for taking into account environmental and social aspects in the process of their work and strive for minimizing negative impacts through the design solutions. If conduct of EIAs and development of EMPs is made part of the design consultant tasks, the consultant will also be responsible for conducting this part of work in a participatory manner in consultation with local stakeholders, and for incorporation of stakeholder comments as well as the feedback from the client (PIU) and the World Bank into the final versions of EIA reports and EMPs.

Environmental Consultants may be hired by PIU for carrying out EIAs and developing EMPs, if these functions are not integrated into the terms of reference of design consultants. Consultants' responsibilities pertaining EIA process are described above.

Works Contractors will be responsible for due incorporation of works and related costs of EMPs implementation into their bids and adherence to all requirements of EMPs throughout the contract term. Contractors shall possess all relevant licenses and permits.

Technical Supervisor(s) will be responsible for oversight over the proper implementation of civil works, including adherence to the measures provided in the EMPs as well as compliance with Environmental Management Guidelines. Technical supervisor will be responsible for identifying any issues, which may arise from inadequate application of mitigation measures provided in EMPs, and recommending corrective actions. Technical Supervisors shall verify that the Contractors possess all relevant licenses and permits. To adequately perform this duties Technical Supervisor(s) must include relevant expertise and skill mix in their team(s).

PIU will organize development of EIAs and EMPs and to ensure their compliance with the requirements of local legislation and relevant WB OPs, share draft EIA and EMP reports with the WB, and conduct public consultation meetings. EIA reports and EMPs will be developed and disclosed in the Armenian and English languages, disclosed nation-wide, and made available for local stakeholders in a convenient format. PIU will also ensure that EMPs are included into the tender documents for civil works, so that potential bidder are able to incorporate costs related to EMP implementation into their bids. EMPs will be integrated into the works contracts and be mandatory for implementation like any other clause of works contracts. PIU also be responsible for monitoring EMP implementation. Monthly field monitoring checklists will be used for regular environmental supervision of works. Progress reports on the outcomes of environmental supervision will be developed by PIU and submitted to the WB as part of the regular project progress reporting.

Ministry of Nature Protection is responsible for the protection, sustainable use, and regeneration of natural resources in the RA. MNP's authority includes participation in the national policy making in the respective field, development of environmental standards and guidelines, and enforcement. MNP, through the State Environmental Inspectorate (which includes Regional Environmental Inspectorates) will exercise the authority of conducting environmental inspections at worksites to oversee compliance with the terms of environmental permits as well as other formal permissions and licenses.

Regional and local authorities approve the technical proposal for construction and issue construction permits. They also regulate transportation, disposal, or recycling of construction waste.

ATTACHMENTS

Attachment I: Proposed Structure of the EIA Report

Executive Summary (*not more than 10 pages*)

Introduction
Technical and Environmental Standards and Regulations
Environmental Screening Outcome
Public Participation
Sensitive Environmental Receptors and Potential Impacts
Project Alternatives
Project Description
Environmental Impact Assessment Methodology
Environmental and Social Baseline
Expected Impacts and Mitigation
Environmental Management Plan
Operation of the Irrigation Schemes

CHAPTER 1. Introduction

CHAPTER 2. Legal and Policy Framework

CHAPTER 3. Technical and Environmental Standards and Regulations

CHAPTER 4. Project Description

CHAPTER 5. Analysis of Alternatives

CHAPTER 6. Environmental Screening

CHAPTER 7. EIA Methodology

CHAPTER 8. Physical and Natural Environment

CHAPTER 9. Sensitive Receptors and Potential Impacts

CHAPTER 10. Impact Mitigation

CHAPTER 11. Environmental Management Plan

Annex 1 Environmental Management Matrix

Annex 2. Public Consultation

Annex 3. References

Annex 4. Maps, Graphs, Pictures

Annex 5. EIA Team Composition

Attachment II: Environmental Management Plan Checklist for Irrigation Reconstruction Activities

Purpose of the IR Checklist

Main purpose of the Irrigation Reconstruction EMP Checklist (IR EMP Checklist) is to provide serve as a simple tool for identification of potential environmental impacts related to rehabilitation of the existing irrigation schemes. The EMP checklist provides a set of associated environmental mitigation measures as well as monitoring measures that will help assess the implementation of the selected mitigation measures.

The design and concept of the EMP Checklist allows for it to be used either by specialists or non-specialists dealing with irrigation reconstruction in cases where environmental due diligence may not be required by the national legislation (existing irrigation systems) or a full scale EIA study is not needed. The checklist-type format has been developed to provide “example good practices” and designed to be user friendly and compatible with the World Bank safeguard requirements.

Description of the IR Checklist

The EMP checklist-type format attempts to cover typical core mitigation approaches to reconstruction works with small, localized impacts on the existing irrigation systems. It provides the key elements of an Environmental Management Plan (EMP) or Environmental Management Framework (EMF) to meet World Bank Environmental Assessment requirements under OP 4.01. The intention of this checklist is that it would be applicable as guidelines for the rehabilitation works contractors and constitute an integral part of bidding documents and contracts for contractors carrying out said works under the Bank-financed projects.

IR EMP Checklist consists of two major sections:

Project Design and Specification: includes a descriptive part that characterizes the project, including institutional and legal requirements, technical project content, capacity building needs and a short overview of the public consultations process. This section could be up to two pages long. Attachments for additional information can be supplemented when needed.

Environmental Management and Monitoring Plan: includes an environmental and social management and monitoring table, where activities and potential environmental issues can be checked in a simple Yes/No format. If any given activity/issue is triggered by checking “yes”, the corresponding mitigation and monitoring measures should also be checked.

Directions for the Checklist use

Project Design and Specification section of the IR Checklist requires knowledge about basic general and technical information on sub-projects. The boxes should be filled with the required data, including information about the sub-project location, nature of the planned works, physical and natural environment around the sub-project site, required clearances to be obtained for the project implementation, and description of the process of public consultation on the sub-projects and its environmental and social implications. Note that some information required in this section of the Checklist will not be available by the time it gets filled out and shall be entered once such information becomes available (e.g. name of works contractor, public consultation outcomes, etc.). Supplemental information can be attached to the document as required.

Environmental Management Plan (EMP) section provides a generic set of potential negative impacts and their mitigation measures which are typical for simple rehabilitation activities performed on the existing irrigation schemes. User of this Checklist may drop, re-formulate, or add mitigation measures to those provided in the readily available table as required based on the specificity of a given sub-project or of a work site.

Environmental Monitoring Plan section should be filled in based on the user's iteration of the EMP. Namely, each mitigation measure should be entered as a separate line item in the Monitoring Plan, explaining where, how, how often, why, and by which entity should application of this measures be monitored. Estimated costs of key monitoring parameters should also be provided. Note that the Monitoring Plan must cover both – construction and operation phases, construction phase meaning project-financed rehabilitation works, and operation means the use of rehabilitation scheme during and beyond the project life.

This EMP Checklist is applicable for existing irrigation systems (earth/concrete canals and piping). In case of any of the following, please seek additional assistance and clarification from the World Bank's Task Team Leader:

- There is a need to acquire or access privately owned land or objects
- A part of the system or the water source is in the vicinity of a protected area or a sensitive natural habitat (wetlands, forests, etc.)
- There are planned changes in the water uptake or in the system going beyond the originally designed parameters.

IR Checklist

SECTION 1: PROJECT DESIGN AND SPECIFICATIONS

Institutional and Administrative Data				
1	Project name	<i>(Name of World Bank financed project)</i>		
2	Sub-project title	<i>(Name of Irrigation System)</i>		
3	Sub-Project location	<i>(Administrative region, province, municipality)</i>		
4	Watershed (river basin)			
Institutional Arrangements				
5	Institutional Arrangements (names and contacts)	<u>WB</u> <i>(Task team leader)</i>	<u>Project Management</u> <i>(PIU)</i>	<u>Local Counterpart or Recipient</u> <i>(water supply agency, users' association)</i>
6	Implementation arrangements (names and contacts)	<u>Safeguard Supervision</u> <i>(WB Safeguards Specialist)</i>	<u>PIU Supervision</u> <i>(Env. Specialist)</i>	<u>Contractor</u>
Site Description				
7	Geographic name of the site			
8	Short description of the sub-project activities (type of planned works)			
8	Short narrative description of site (physical and natural environment):			
9	Locations and distance for the closest existing licensed material sourcing, especially aggregates, water, stones			
Legislation				
10	Information on national legislation governing sub-project activities naming (i) types of permits, licenses, and other clearances to be obtained at the stage of sub-project design, construction, and operation and (ii) entities who apply for and obtain these documents			
Public Disclosure				
11	Data on disclosure of EMP IR Checklist and public consultations (Attach minutes of public consultation to this Checklist once produced)			
Capacity Building				
12	Will there be any capacity building specific to this irrigation scheme and location? Is such capacity building part of the overall project?	[] N or [] Y if Yes., attach the plan of capacity building to this Checklist		

SECTION 2: ENVIRONMENTAL MANAGEMENT PLAN

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
General	Notification	<ul style="list-style-type: none"> (a) Public notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works) (b) All legally required permits, agreements, licenses, and clearances acquired for the project activities (c) The Contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment.
	Worker Safety	<ul style="list-style-type: none"> (a) Workers' PPE will comply with international good practice (hardhats, masks, safety glasses, harnesses and safety boots, tec.) (b) First aide medical kits and fire extinguishers available at work site (c) Contact information for emergency services (medical, fire) posted on the information board at work site
Pollution Management	Air Quality	<ul style="list-style-type: none"> (a) Construction machinery and equipment maintained in adequate working condition on regular basis (b) Spoils storage piles compacted (c) Dust sources watered to minimize discomfort to nearby residents (d) Materials and wastes are transported under a covered hood of a truck (e) Vehicle speed under control to lessen suspension of road dust
	Noise	<ul style="list-style-type: none"> (a) Construction noise limited to working hours in the vicinity of settlements (b) Engine covers of generators, air compressors, and other powered mechanical equipment closed during operation, and equipment placed as far away from residential areas as possible
	Waste	<ul style="list-style-type: none"> (a) Sites for permanent waste disposal identified and agreed with local officials (b) Sites for temporary storage of waste allocated to prevent scattered dumping of waste on and around the work site (c) Reuse and recycle construction waste whenever feasible (except asbestos) (d) Arrangements made with licensed companies, as available, for removal and recycling of used tires and filters of construction vehicles and machinery (e) No open air burning of waste on and off the work site
Erosion Control		<ul style="list-style-type: none"> (a) Slope protection provided through bank compaction, rip-rapping on critical sections, or vegetative stabilization (b) Topsoil remove and stored aside for later use in site restoration (c) Excess material used for restoration of degraded areas
Handling Chance Finds		<ul style="list-style-type: none"> (a) In case of chance finds during earth works - all activity taken on hold, a State entity in charge of cultural heritage preservation notified in written, and work resumed upon formal permission received from the above entity
Protection of Water Bodies	Turbidity	<ul style="list-style-type: none"> (a) Sediment traps set up along rivers and/or gabions along banks to filter out eroded sediments (b) Erosion control measures applied as provided above
	Pollution	<ul style="list-style-type: none"> (a) Vehicle and machinery servicing prohibited in the immediate proximity to water bodies (b) Servicing and fueling of vehicles and machinery limited to an allocated site with non-permeable floor and capacity to contain spills if occurred (c) Arrangements made with licensed companies, as available, for removal and recycling/deactivation of used oils and sand/gravel saturated with oil products
Nuisance to Local Communities		<ul style="list-style-type: none"> (a) Project works are scheduled beyond irrigation season to the extent possible in order to avoid/minimize service disruption (b) Work site is properly marked and fenced as appropriate (c) No temporary storage of construction materials and waste occurs within cultivated land plots or any type of private property (d) Areas for temporary storage of construction materials and waste allocated so that free movement of traffic and pedestrians is not hindered

SECTION 3: ENVIRONMENTAL MONITORING PLAN

What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency or continuous?)	Why (Is the parameter being monitored?)	Cost (if not included in project budget)	Who (Is responsible for monitoring?)
CONSTRUCTION PHASE						
1.						
2.						
3.						
...						
x.						
OPERATION PHASE						
1.						
2.						
3.						
....						
x.						

Attachment III: Environmental Management Guidelines for Contractors

Roads and footpaths

In order to carry out the rehabilitation works, it may be necessary to close or divert certain motorways and/or footpaths, either permanently or temporarily during the construction period. The contractor should arrange diversions for providing alternative route for transport and/or pedestrians in the course of works.

After breaking up, closing or otherwise interfering with any street or footpath to which the public has access, the Contractor shall make such arrangements as may be reasonably necessary so as to cause as little interference with the traffic in that street or footpath during construction of the rehabilitation works as shall be reasonably practicable.

Wherever the rehabilitation works interfere with existing public or private roads or other ways over which there is a public or private right of way for any traffic, the Contractor shall construct diversion ways wherever possible. The standard of construction and lighting shall be suitable in all respects for any class of traffic using the existing ways, and the widths of the diversions shall not be less than that of the existing way wherever possible. Diversion ways shall be constructed in advance of any interference with the existing ways and shall be maintained to provide adequately for the traffic flows.

The Contractor shall be responsible for supplying, erecting and maintaining for the requisite periods all statutory and public information notices.

Movement of trucks and construction machinery

The Contractor moving solid or liquid construction materials and waste shall take strict measures to minimize littering of roads by ensuring that vehicles are loaded in such a manner as to prevent falling off or spilling of construction materials and by sheeting the sides and tops of all vehicles carrying mud, sand, other materials and debris.

The Contractor shall also take all reasonable measures to avoid to the extent possible that delivery vehicles park on the highways prior to entering the construction site.

Traffic safety measures

The Contractor shall provide, erect and maintain such traffic signs, road markings, lamps, barriers and traffic control signals and such other measures as may be necessary for ensuring traffic safety around the rehabilitation site. The Contractor shall not commence any work that affects the public motor roads and highways until all traffic safety measures necessitated by the work are fully operational.

Access across the construction site and to frontages

In carrying out the rehabilitation works, the Contractor shall take all reasonable precautions to prevent or reduce any disturbance or inconvenience to the owners, tenants or occupiers of the adjacent properties, and to the public generally. The Contractor shall maintain any existing right of way across the whole or part of the rehabilitation site and public and private access to adjoining frontages in a safe condition and to a standard not less than that pertaining at the commencement of the contract. If required, the Contractor shall provide acceptable alternative means of passage or access to the satisfaction of the persons affected.

Protection of the existing installations

The Contractor shall properly safeguard all buildings, structures, works, services or installations from harm, disturbance or deterioration during the concession period. The Contractor shall take all necessary measures required for the support and protection of all buildings, structures, pipes, cables, sewers, railways and other apparatus during the concession period. In case of

damage incurred in the course of works to the existing infrastructure, the Contractor must absorb responsibility for its restoration.

Use of existing structures

The Contractor shall not locate stockpiles for materials, stores, plant or temporary works upon or adjacent to or under existing structures such as bridges, viaducts, towpaths, walls and embankments in such a way as to endanger these structures.

Noise and dust control

The Contractor shall take all practicable measures to minimize nuisance from dust and noise from the rehabilitation sites. This includes:

- Respecting normal working hours in or close to residential areas;
- Maintaining equipment in a good working order to minimize extraneous noise from mechanical vibration, creaking and squeaking, as well as emissions or fumes from the machinery;
- Shutting down equipment when it is not directly in use.

Water supply conflicts

The Contractor must ensure that the workforce have adequate access to a safe water supply, which is not provided to the detriment of services to the local population. If there is a risk of competition for limited water resources, then the Contractor must ensure that the local supply is not affected, and that workforce is provided with an alternative source if necessary (e.g. tankered and stored water).

Waste disposal

The Contractor must agree with the Client municipality about arrangements for construction waste disposal. The municipality shall designate a dumping site or landfill for the disposal of solid waste. Should any hazardous waste be involved and unexpectedly encountered, the Contractor must inform the Client municipality on the above and strictly follow the Client's guidance for disposal of such waste.

Soil protection

The Contractor must take all practicable measures to avoid degradation and erosion of soil. The use of heavy machinery must be limited to the extent possible for avoiding land compaction. Soil erosion and slope instability should be addressed through hillside terracing, tree planting and construction of check dams.

Protection of trees and other vegetation

The Contractor shall avoid loss of trees and damage to other vegetation wherever possible. Adverse effects on green cover within or in the vicinity of the rehabilitation site shall be minimized by adequate selection of access routes, piling and storage locations for construction materials and parking lots for heavy machinery.

Emergency contacts and procedures

The Contractor shall prepare and maintain emergency contact information for each rehabilitation site, which shall be displayed prominently and accessible for all personnel. Emergency contact information shall contain phone numbers and the method of notifying local authorities/services for action in case of fire, health emergencies, disorder in communications, emergency release of hazardous materials, etc.

Clearance of rehabilitation site on completion

The Contractor shall clear up all working areas both within and outside the rehabilitation site and accesses as work proceeds and when no longer required for the carrying out of the Rehabilitation works. All surplus soil and materials, temporary roads, plant, sheds, offices and

temporary fencing shall be removed, post holes filled and the surface of the ground restored as near to its original condition to the extent conditions permitting.

Attachment IV: Monthly Field Environmental Monitoring Checklist

Site location					
Name of contractor					
Name of supervisor					
Date of site visit					
Status of civil works					
Documents and activities to be examined	Status				Comments
	Yes	Partially	No	N/A	
Contractor holds license for extraction of natural resources					
Contractor holds permit for operating concrete/asphalt plant					
Contractor holds agreement for final disposal of waste					
Contractor holds agreement with service provider for removal of household waste from site					
Work site is fenced and warning signs installed					
Works do not impede pedestrian access and motor traffic, or temporary alternative access is provided					
Working hours are observed					
Construction machinery and equipment is in standard technical condition (no excessive exhaust and noise, no leakage of fuels and lubricants)					
Construction materials and waste are transported under the covered hood					
Construction site is watered in case of excessively dusty works					
Contractor's camp or work base is fenced; sites for temporary storage of waste and for vehicle/equipment servicing are designated					

Contractor's camp is supplied with water and sanitation is provided					
Contractor's camp or work base is equipped with first medical aid and fire fighting kits					
Workers wear uniforms and protective gear adequate for technological processes (gloves, helmets, respirators, eye-glasses, etc.)					
Servicing and fuelling of vehicles and machinery is undertaken on an impermeable surface in a confined space which can contain operational and emergency spills					
Vehicles and machinery are washed away from natural water bodies in the way preventing direct discharge of runoff into the water bodies					
Construction waste is being disposed exclusively in the designated locations					
Extraction of natural construction material takes place strictly under conditions specified in the license					
Excess material and topsoil generated from soil excavation are stored separately and used for backfilling / site reinstatement as required					
Works taken on hold if chance find encountered and communication made to the State agencies responsible for cultural heritage preservation					
Upon completion of physical activity on site, the site and contractor's camp/base cleared of any remaining left-over from works and harmonized with surrounding landscape					

Attachment V: Minutes of the Combined Public Consultation on the EMF and RAP

Date: February 25, 2013

Venue: Water Sector Projects Implementation Unit, Yerevan, Armenia

The meeting was summoned at 16:00.

25 participants attended the meeting, including representatives of the water users associations, water users associations support group, Water Sector Projects Implementation Unit (WS PIU), donor agencies, including ADB funded North-South Corridor Investment Program and MCA-Armenia Program, local design companies. Participants of the public consultation have registered in the List of Participants and provided their contact details (Appendix I). Photographs made during public consultation are presented in the Appendix II. Appendix III presents an announcement posted in the building of the WS PIU on a day of public consultation.

Mr. Ghazaryan, Director of WS PIU opened the meeting, presented the purpose of public consultation and briefly provided details on Irrigation System Enhancement Project (ISEP) preparation and implementation. He emphasized the importance of environmental and social analyses conducted during the preparatory phase of the project. Mr. Ghazaryan noted that the documents to be discussed were posted at the web-site of the State Committee of Water System and can be also requested from WS PIU in electronic and/or printed copy whenever is needed. The announcement on public consultation was posted at the web-site of the State Committee of Water System and circulated through mailing lists. In addition, the representatives of water users associations located in the ISEP area were contacted by phone and invited to attend the public consultation. Mr. Ghazaryan welcomed participants and briefly presented the key information regarding the ISEP, including works planned under the various components of the proposed project.

Following opening remarks, Ms. Simonyan, Environmental and Social Consultant of WS PIU, presented the Environmental Management Framework and Resettlement Policy Framework developed for ISEP.

Presentation on Environmental Management Framework (EMF) covered the purpose of EMF development, its objectives and issues addressed in the document. Information was also provided on World Bank's Safeguard Policies and triggers for each policy, relevant legislation of the Republic of Armenia and institutions that may be involved in the current project. The potential environmental impacts associated with construction and rehabilitation works, as well as major mitigation measures that could be used to prevent or minimize the impacts were presented. At the end of presentation the information was provided on Environmental Management Plan format to be applied for the rehabilitation of the existing irrigation schemes.

Presentation on Resettlement Policy Framework (RPF) covered the purpose of RPF development, its objectives and approaches presented in the document. Information was also provided on World Bank's Operation Policy (WB OP) 4.12 on Involuntary Resettlement and relevant Armenian legislation, gaps identified and approaches recommended in order to address gaps, eligibility and compensation mechanism to be applied for the project, as well main entities to be involved in development, review, approval and implementation of land acquisition / resettlement process. Steps of development and implementation of Resettlement Action Plan (RAP) were also presented, and followed by presentation of details on monitoring and grievance redress approaches. It was emphasized that though no resettlement is expected to be caused by the ISEP works, the RPF is developed to serve as a tool in case the land acquisition / resettlement is required for any of the irrigation schemes to be constructed and rehabilitated as a part of the project activities.

Afterwards, the participants were invited for a question-and-answer session. The main questions raised during the consultation and responses provided are briefly summarized below.

Question 1

Whether the RAP is required for any project that has resettlement and land acquisition impacts, and whether the type and level of details required for the RAP are same in all cases?

Reply

According to WB OP 4.12, all projects that entail resettlement require a RAP. The scope and level of detail of the resettlement plan depends on the magnitude and complexity of resettlement. For example, a full RAP is required whenever land acquisition in a project affects more than 200 people, takes more than 10 % of any holding, and involves physical relocation of population. An abbreviated RAP is acceptable if fewer than 200 people are displaced. Even if more than 200 people are affected, if all land acquisition is minor (10 % or less of all holdings is taken) and no physical relocation is involved, an abbreviated RAP is acceptable. If fewer than 200 people are displaced but some physical relocation is involved, the abbreviated RAP is expanded to include a rehabilitation program.

Question 2

Whether the RPF provide details for compensation principles applied for various land types?

Reply

RPF includes Provisional Entitlement and Compensation Matrix specifying the entitlements for different types of loss. The matrix includes provisions for entitlement and compensation principles for permanent and temporary loss of agricultural and residential lands. The affected parties will be compensated at full replacement and substitution costs (for any improvement made before the cut-off date) without depreciation. All fees and taxes on land transfer will be waived or, otherwise, fees and taxes will be included in a compensation package for land. The competent government authorities will support affected parties in obtaining the property titles and certificates.

Question 3

What happens if relocation of utilities is required? Whether the costs for utility relocation will be included in the project?

Reply

Relocation of utilities will be considered during design stage and requirement for relocation will be included in the final design. The budget required for utility relocation will be calculated by design consultant and included in the contract for construction works. Moreover, in case the land is required for installation of relocated utilities, the land acquisition will be carried out prior to commencement of relocations works.

Question 4

What if the project requires a fruit tree to be cut?

Reply

The compensation is envisaged not only for the lost land, houses, other structures, employment and income, but also for the lost assets, such as crops and trees, thus the trees and crops will be also compensated. RPF includes a Provisional Entitlement and Compensation Matrix specifying the entitlements for tree loss. In case of the trees, the compensation shall reflect income replacement. Fruit trees will be valued at gross market value of one-year income multiplied by the number of years needed to grow trees of the same productivity.

Question 5

Who will be responsible for development of RAPs?

Reply

Full or abbreviated RAPs (as needed) for ISEP components / sub-components will be developed by Design Consultant(s) under the WS PIU supervision. Each completed RAP will be submitted by WS PIU to the Project Management Board and World Bank (WB) for approval. After approval has been obtained, compensation, resettlement and rehabilitation activities will be initiated, and will be completed before awarding contracts of civil works for respective component / sub-component of ISEP.

Question 6

How the asset valuation will be undertaken and who will be involved in valuation?

Reply

During RAP preparation, the design consultant(s) will engage the services of a competent and acknowledged independent assessor, responsible for determining replacement cost of affected land and assets. During the valuation process, affected parties, local officials and relevant government offices (including the State Committee for Real Estate Cadastre under the Government of Armenia) will be consulted. Subsequently, compensation and rehabilitation measures will be developed by design consultant(s) with support from WS PIU, based on the valuation details. In determining the replacement cost to be compensated to the affected parties, depreciation of the asset and the value of salvage materials will not be taken into account, and the value of benefits to be derived from the project will not be deducted from the valuation of the affected assets. Compensation for land, structures, business, fixed improvements and other temporary assets will be based on market valuation, productivity valuation, negotiated settlements, material and labour valuation, disposition of salvage materials and other fees paid. It should be noted that lack of title, license or permit is not a bar to compensation.

Question 7

What happens if person does not agree to provide his land plot for project needs?

Reply

Under the supervision of the Project Management Board and WB, the RAP Implementation Unit (RIU) will make every effort to achieve an amicable settlement of all identified resettlement issues raised by the affected parties. If this attempt fails, the affected parties will be provided with the option of addressing their issues to the Grievance Redress Committee, which will be established to informally address complaints/disagreements, and will include WS PIU staff, representatives of the relevant state authorities and/or Marzpetaran in the project area, and representatives of local non-governmental organization and communities affected by the particular component / sub-component of the ISEP. However, if at the end the RIU and the affected parties fail to reach an agreement on the acquisition of assets, the Government of Armenia will pursue the expropriation proceedings in accordance with the Law on property alienation for social/public and state needs. The Government of Armenia will submit to the court a request for expropriation, and upon its approval and following prescribed procedures, it will take over the concerned property.

Question 8

Would it be possible to develop one checklist format EMP for a number of projects, or each project should have its own EMP?

Reply

The EMP Checklist format provided in the EMF will be applied for the irrigation schemes to be rehabilitated as a part of the project, and serves as a simple tool for identification of potential environmental impacts related to rehabilitation works. The EMP checklist provides a set of environmental mitigation and monitoring measures specific for the particular irrigation scheme.

Taking into account the site-specific nature of the EMP, it is recommended to have a separate EMP for each irrigation scheme to be rehabilitated with the framework of ISEP.

Question 9

Whether any further public consultations will be carried out as a part of ISEP activities?

Reply

Public involvement and consultation is considered to be an important aspect of ISEP. The information will be provided regularly and stakeholders will be consulted on proposed activities early in the design stage. Project stakeholders and public will be provided with detailed information on the project, including its environmental and social impacts and the proposed mitigation activities. They will also be provided with an opportunity of presenting their ideas and suggestions prior for finalization of design documents. The site-specific Environmental Impact Assessments and/or Environmental Management Plans will be publicly disclosed and affected communities will be consulted on the environmental and social implications of the individual Project activities prior to tending of works. In case the project requires resettlement, the affected parties will be duly consulted and involved in all stages of RAP preparation and implementation process.

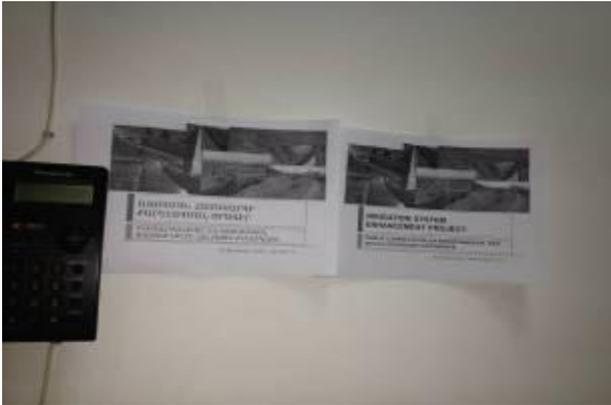
The meeting closed at 17:25.

Minutes taken by A. Simonyan, Environmental and Social Consultant of the Water Sector PIU.

APPENDIX I. LIST OF PARTICIPANTS

NN	Name, Surname	Occupation / position	Contact details	Signature
1	Varuzhan Sahakyan	WUA general director		
2	Arshavir Hayrapetyan	Merdzapnya WUA, director		
3	Sedrak Yesayan	Noyemberyan WUA, director		
4	Arsen Khachatryan	Ashtarak WUA, director		
5	Tadevos Tadevosyan	Artashat WUA, director		
6	Hamlet Harutyunyan	WS PIU engineer		
7	Varuzhan Hovasapyan	HGSN design organization, director		
8	Vram Tevosyan	HGSN, environmental specialist		
9	Tigran Ishkhanyan	Coordinator of support group, WS PIU		
10	Ara Grigoryan	Technical translator, WS PIU		
11	Vahan Geghamyan	Gerni-Geghard WUA, director		
12	Kamo Sargsyan	HGSN, head of design unit		
13	Eduard Ghazaryan	Construction supervision engineer		
14	Vardan Movsisyan	WUA management group, WS PIU		
15	Varazdat Mkrtchyan	Construction supervision engineer		
16	Armen Yepremyan	Construction supervision engineer		
17	Marzpet Tonoyan	Construction supervision engineer		
18	Viktor Bakhtamyan	Environmental specialist		
19	Khachik Harutyunyan	Ararat WUA, executive director		
20	Khachik Sargsyan	Sev-Jur Akhtamar WUA, director		
21	Anahit Petrosyan	Ministry of Finance, FPPMC, MCA-A		
22	Arthur Khachatryan	Talin WUA, chief engineer		
23	Karen Grigoryan	WS PIU, deputy director		
24	Tigran Kalantaryan	UNDP-GEF Kura-Araks Project, coordinator		
25	Armine Simonyan	WS PIU, Environmental and Social Consultant		

PHOTO MATERIAL FROM THE PUBLIC CONSULTATION MEETING



ANNOUNCEMENT OF THE PUBLIC CONSULTATION MEETING



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25 փետրվարի 2013թ., ՋՏ ԾԻԳ ՊՀ



IRRIGATION SYSTEM ENHANCEMENT PROJECT

PUBLIC CONSULTATION ON ENVIRONMENTAL AND
SOCIAL SAFEGUARD DOCUMENTS

25 February 2013, Water Sector PIU