



FEASIBILITY STUDY FOR PROTECTION OF IBER LEPENC CANAL KOSOVO

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FRAMEWORK (ESIAF)

WITH

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

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TABLE OF CONTENTS

1	INTR	ODUCTION	6
	1.1 (CONTEXT AND OBJECTIVES OF ESIAF	6
	1.2 (CONTENT OF THE PROGRAM FOR THE WATER SECTOR	8
	1.3 \$	TUDY AREA	.11
	1.3.1	Protection and upgrading works along the open air sections of the canal	. 12
	1.3.2	Emergency reservoir Mihaliq (ERM) project area	. 12
2	LEGA	L FRAMEWORK	.13
	2.1 V	VORLD BANK POLICIES	.13
	2.1.1	Environmental Assessment (OP/BP 4.01)	. 13
	2.1.2	Involuntary Resettlement (OP/BP 4.12)	. 14
	2.1.3	Natural Habitats (OP/BP 4.04)	. 15
	2.1.1	Physical Cultural Resources (OP/BP 4.11)	. 15
	2.2 H	XOSOVO NATIONAL LEGISLATION	. 15
	2.2.1	Environmental laws	. 15
	2.2.2	Social laws	. 16
	2.3 N	JATIONAL POLICIES AND STRATEGIES	.16
	2.3.1	Environment	. 16
	2.4 I	ROGRESS STILL TO BE DONE TO MEET EU STANDARDS	. 18
	2.4.1	Environmental policies	. 18
		\cdots \boldsymbol{F} \cdots \boldsymbol{F}	
3	DESC	RIPTION OF EXISTING ENVIRONMENT	. 20
3	DESC 3.1 H	RIPTION OF EXISTING ENVIRONMENT	. 20 . 20
3	DESC 3.1 H <i>3.1.1</i>	RIPTION OF EXISTING ENVIRONMENT PROJECT LOCATION IL canal location and geographical context	. 20 .20 .20
3	DESC 3.1 H 3.1.1 3.1.2	RIPTION OF EXISTING ENVIRONMENT PROJECT LOCATION IL canal location and geographical context Gazivoda dam location and geographical context	.20 .20 .20 .22
3	DESC 3.1 H 3.1.1 3.1.2 3.1.1	RIPTION OF EXISTING ENVIRONMENT ROJECT LOCATION IL canal location and geographical context	.20 .20 .20 .22 .23
3	DESC 3.1 H 3.1.1 3.1.2 3.1.1 3.1.2	RIPTION OF EXISTING ENVIRONMENT PROJECT LOCATION IL canal location and geographical context Gazivoda dam location and geographical context Operation rules Hydropower production	.20 .20 .20 .22 .23 .23
3	DESC 3.1 H 3.1.1 3.1.2 3.1.1 3.1.2 3.1.3	RIPTION OF EXISTING ENVIRONMENT PROJECT LOCATION IL canal location and geographical context Gazivoda dam location and geographical context Operation rules Hydropower production Mihaliq reservoir location and geographical context	.20 .20 .22 .23 .23 .23
3	DESC 3.1 H 3.1.1 3.1.2 3.1.1 3.1.2 3.1.3 PURPOSE	RIPTION OF EXISTING ENVIRONMENT ROJECT LOCATION IL canal location and geographical context Gazivoda dam location and geographical context Operation rules Hydropower production Mihaliq reservoir location and geographical context OF THE RESERVOIR	.20 .20 .22 .23 .23 .23 .23
3	DESC 3.1 F 3.1.1 3.1.2 3.1.1 3.1.2 3.1.3 PURPOSE 3.2 F	RIPTION OF EXISTING ENVIRONMENT ROJECT LOCATION IL canal location and geographical context	.20 .20 .22 .23 .23 .23 .23 .23 .24 .26
3	DESC 3.1 F 3.1.1 3.1.2 3.1.1 3.1.2 3.1.1 3.1.2 3.1.3 PURPOSE 3.2 F 3.2.1	RIPTION OF EXISTING ENVIRONMENT PROJECT LOCATION IL canal location and geographical context Gazivoda dam location and geographical context Operation rules Hydropower production Mihaliq reservoir location and geographical context OF THE RESERVOIR ENVIRONMENTAL CONTEXT IL canal study area and Gazivoda	.20 .20 .22 .23 .23 .23 .23 .24 .26 .26
3	DESC 3.1 F 3.1.1 3.1.2 3.1.1 3.1.2 3.1.3 PURPOSE 3.2 F 3.2.1 3.2.2	RIPTION OF EXISTING ENVIRONMENT PROJECT LOCATION IL canal location and geographical context	.20 .20 .22 .23 .23 .23 .23 .23 .24 .26 .26 .26
3	DESC 3.1 H 3.1.1 3.1.2 3.1.1 3.1.2 3.1.3 PURPOSE 3.2 H 3.2.1 3.2.2 3.3 S	RIPTION OF EXISTING ENVIRONMENT PROJECT LOCATION IL canal location and geographical context	.20 .20 .22 .23 .23 .23 .23 .23 .24 .26 .26 .34 .37
3	DESC 3.1 F 3.1.1 3.1.2 3.1.1 3.1.2 3.1.3 PURPOSE 3.2 F 3.2.1 3.2.2 3.3 S 3.3.1	RIPTION OF EXISTING ENVIRONMENT	.20 .20 .22 .23 .23 .23 .23 .24 .26 .26 .34 .37 .37
3	DESC 3.1 F 3.1.1 3.1.2 3.1.1 3.1.2 3.1.3 PURPOSE 3.2 F 3.2.1 3.2.2 3.3 S 3.3.1 3.3.2	RIPTION OF EXISTING ENVIRONMENT ROJECT LOCATION IL canal location and geographical context	.20 .20 .22 .23 .23 .23 .23 .23 .24 .26 .36 .37 .37 .37
3	DESC 3.1 F 3.1.1 3.1.2 3.1.1 3.1.2 3.1.3 PURPOSE 3.2 F 3.2.1 3.2.2 3.3 S 3.3.1 3.3.2 3.3.3	RIPTION OF EXISTING ENVIRONMENT	.20 .20 .22 .23 .23 .23 .23 .23 .23 .24 .26 .26 .34 .37 .37 .38 .40
3	DESC 3.1 F 3.1.1 3.1.2 3.1.1 3.1.2 3.1.3 PURPOSE 3.2 F 3.2.1 3.2.2 3.3 S 3.3.1 3.3.2 3.3.3 3.3.4	RIPTION OF EXISTING ENVIRONMENT	.20 .20 .22 .23 .23 .23 .23 .23 .23 .23 .23 .23
3	DESC 3.1 F 3.1.1 3.1.2 3.1.1 3.1.2 3.1.3 PURPOSE 3.2 F 3.2.1 3.2.2 3.3 S 3.3.1 3.3.2 3.3.3 3.3.4 ANAI	RIPTION OF EXISTING ENVIRONMENT	.20 .20 .22 .23 .23 .23 .23 .23 .24 .26 .26 .34 .37 .37 .38 .40 .40 .41

4.1.1 Existing environmental conditions and existing impacts on the canal	
4.1.2 Potential environmental impacts of Minaliq reservoir implementation	
4.2 Social impacts of canal rehabilitation sub-projects	
4.2.2 Mihalig reservoir specifically potential social impacts	
5 MITIGATION MEASURES	49
5.1 INTRODUCTION: FRAMEWORK OF E&S MEASURES IMPLEMENTATION	49
5.2 ENVIRONMENTAL MEASURES	50
5.2.1 Environmental measures suggested for canal rehabilitation sub-project and Gazivoo	la50
5.2.2 Environmental measures suggested for Mihaliq reservoir implementation	
5.2.5 Summary of site investigation works and monitoring to be carried out prior to the ju	<i>II EKM EIA</i> 01 63
5.3.1 Social measures related to canal rehabilitation	
5.3.2 Social specifically considered for Mihaliq reservoir implemantation	64
6 ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK	67
ANNEXES	72
ANNEX 1. : BASELINE INFORMATION ON IBËR CANAL	74
ANNEX 2 : SETTLEMENTS ALONG IBER LEPENC CANAL	78
ANNEX 3 : BIBLIOGRAPHY	80
ANNEX 4: DRAFT TERMS OF REFERENCE FOR THE ESIA OF MIHALIC COMPENS RESERVOIR IMPLEMENTATION	ATORY 83
ANNEX 5: SUMMARY OF WATER ANALYSES TEST RESULTS AT MIHALIQ	
ANNEX 6: MAPS OF LAND-USE	94
ANNEX 7 PROPOSED PHYSICAL IMPROVEMENTS	96
ANNEX 8 DRAFT MITIGATION MEASURES FOR CANAL REHABILITATION - TABI	JES 104
ANNEX 9 DRAFT MITIGATION MEASURES FOR MIHALIQ RESERVOIR- TABLES	111
ANNEX 10 – EMP CHECKLIST FOR CANAL REHABILITATION - TEMPLATE	118
ANNEX 11: TEMPLATE FOR ENVIRONMENTAL MANAGEMENT PLAN	142
ANNEX 12: PUBLIC CONSULTATIONS REPORT	146
GRAPH INDEX	

Figure 1 : Projected works location	11
Figure 2 : Location of projected Mihaliq reservoir and pipe	12
Figure 3 : Projected works location	21
Figure 4: Iber River Catchment Area	22
Figure 5: Map of ERM and distribution network")	24
Figure 6 : Rainfall in study area	26
Figure 7 : Kosovo Hydrographic network (ILC and Mihalic Reservoir location)	27
Figure 8 : Hydrometrical network for the Ibër River Basin	28
Figure 9 : Kosovo Pollutant Sites at main rivers (ILC and Mihaliq Reservoir location)	30
Figure 10 : The deployment sites in the Mitrovica Region	31
Figure 11 : Location of project site and protected areas in Kosovo	32
Figure 12 : Trees and woodland zone risk levels along the ILC (source "Végetation" report)	33
Figure 13 : Map of land use in projected emergency reservoir project limits (feasibility study)	
Figure 14 : Trend of changes in population per settlement in the study area from 1981-2011	37
Figure 15 : Population pyramid*	38
Figure 16 : Emergency reservoir context	40
Figure 17: Retaining wall Type V	98
Figure 18: Drainage culvert - trapeze shape	99

Figure 19: Drainage culvert - rectangular shape	99
Figure 20: Detail of proposed metal fence	99
Figure 21: Safety distance rules for trees and shrub on Ibër canal1	00

TABLES

Table 1 : Main planned protection works of IL canal	10
Table 2 : Physical components of ILC structure	20
Table 3 : Potential impacts from ILC restoration on the local people's lifestyle	44
Table 4 : ILC potential impacts of access to property and housing	46
Table 5 : Potential impacts from ILC on agricultural production	46
Table 6 : Land-use global overview in Row of canal sub-projects	47
Table 7 : ERM potential impacts of land taken and accessibility of infrastructures	47
Table 8 : Land-use global overview in Row of ERM	48
Table 9 : Environmental field investigations to be conducted before ERM EIA	62
Table 10 Environmental due diligence	68
Table 11 : Environmental field investigations to be conducted before ERM EIA	86

CBA Cost Benefit Analysis EBRD European Bank for Reconstruction and Development EMP **Environmental Management Plan** ERO Energy Regulatory Office E&S Environmental and Social **ESIA** Environmental and Social Impact Assessment **ESMP** Environmental and Social Management Plan FS Feasibility Study GPS Global Positioning System ILC FPE Iber-Lepenc Joint Stock Company IL Iber-Lepenc IOW International Office for Water KEDS Kosovo Energy Distribution and Supply Company KEK Kosovo Energy Corporation Kreditanstalt für Wiederaufbau KfW MoESP Ministry of Environment and Spatial Planning MW Mega Watt O&M Operation & Maintenance **PFMA** Public Financial Management and Accountability PMF Probable Maximum Flood RAP **Resettlement Action Plan** RPF **Resettlement Policy Framework** RWCP Regional Water Company Prishtina **SCADA** Supervisory Control And Data Acquisition SIC Simulation of Irrigation Canal WB World Bank WEAP Water Evaluation and Planning System

List of Acronyms and Abbreviations

1 INTRODUCTION

1.1 Context and objectives of ESIAF

The World Bank has supported the Government of Kosovo in identifying priority measures (structural and non-structural) required for the water sector, broadly to achieve its socioeconomic development objectives linked to the availability of quality water within the Ibër basin. The World Bank's support has resulted in a Water Security for Central Kosovo study. This study assessed the existing structural integrity, and the construction quality of the bulk water conveyance systems. Out of several alternatives, the set of measures required to improve water security in the Ibër-Lepenc (IL) canal basin was identified, for which a Feasibility Study was prepared.

The main objective of the Feasibility Study was to set the basis for improving the reliability and quality of water supply to Central Kosovo by defining the investment measures needed to secure the uninterrupted and good quality water supply from the IL Canal. For the identified measures to improve water security in IL canal and Environmental and Social Impact Assessment Framework has been prepared.

The present Environmental and Social Impact Assessment Framework (hereinafter ESIAF) has two objectives:

- a) For rehabilitation works (project components to be prepared before or after project appraisal) to examine the impacts, to identify environmental due diligence and identify work specific mitigation measures and monitoring in form of Environmental and Social Management Framework (hereinafter ESMF)
- b)To identify, at the stage of pre-feasibility study, environmental impacts, mitigation measures and due diligence for the new Mihaliq reservoir and the dam, which might be considered for project financing

The IL canal is 49 km man-made hydraulic structure supplying water to central Kosovo. The water resource from the canal is used for various uses: domestic, irrigation, industries and cooling of Kosovo A (in the summer months) and B thermal power plants. In the future, the need for secured water supply will increase significantly with the new water treatment plants in Shkabaj and Vushtrri and the proposed KRPP coal power plant (600-MW lignite-fired power plant).

The intake for the IL canal "sub-basin" is Gazivoda reservoir on the Ibër River. The IL canal conveys bulk water by gravity through a system comprising canal, siphons, aqueducts, pipes to supply various user categories. The excess water is collected in the upstream part of the Sitnica River that flows back into the Ibër River, carrying flow back to Serbia (see figure 1).

Current state of IL water management infrastructures is presented in annex 1. Although recently, repairs of the major leakages were carried out by the Ibër-Lepenc Canal Company (hereinafter ILC), the canal suffers from insufficient maintenance and modernization over the past two decades.

Estimates of water losses in the conveyance system were very high before recent repairs. At this point, losses at downstream end of tributaries are not exactly known. FS estimates losses due to lack of regulation to be up to 40 % and losses due to the leaks and/or seepages to 15 %.

In addition, the IL canal remains vulnerable to disruption by landslides, leakages and pollution.

Figure 1 :IL canal location



1.2 Content of the program for the water sector

The development objective of the project is to contribute to securing acceptable water quantity and quality over the long term, for the various water users of the Iber canal in Central Kosovo.

This will be achieved through two main components: (1) canal infrastructure rehabilitation and modernization (by re-establishing the canal transit capacity, enabling closure of the canal for maintenance, strengthening the canal structural safety against extreme events, and enhancing dam safety); and (2) water resources protection and management (by increasing the Gazivoda-Iber system operational efficiency, and protecting the canal ambient water quality).

The project activities would be executed under the following three project components:

<u>Component 1: Infrastructure Rehabilitation and Modernization.</u> This component would focus on physical improvements to the deteriorated sections of the canal and its structures as well as improved hydraulic operations. Works under this component include:

<u>Subcomponent 1(a)</u> Small works for Gazivoda dam safety, canal repair and increased stability for protection against renewed physical damage from landslides and unstable soils (through lining, treatment of joints between concrete panels, abutments, foundations, cuttings, aqueducts, culverts, tile drains to control uplift pressure). Application of bituminous geo-membrane is another technical option.

<u>Subcomponent 1(b)</u> Potential developing an emergency and balancing reservoir along the canal. Although initially the reservoir was intended for the for short-term storage along the canal to bridge peak water demand and to enable temporary outages for repair purposes, at this stage of project preparation its potential purpose is not fully defined. It might also be used as reservoir for the new power plant or even new water treatment plant. Whether it would be financed, as well the exact size and location would be evaluated / decided during first project year. The Ministry of Finance would service the debt for the reservoir investment, reflecting the fact that it is a long-term, multi-sector public good, whereas all other project investments along the Canal would be on-lent to ILC, thereby supports efforts to improve ILC's financial autonomy;

<u>**Component 2: Water Resources Protection and Management.**</u> The project will also cover related water resources management options in the Iber-river basin (as related to the water balance of the Iber basin), including:

<u>Subcomponent 2(a) Protection of the canal</u> against renewed pollution, accidental pollution and other threats and man-made disruptions (through fencing, selective covers, or parallel interceptor drains with vegetative beds). This would help address the ambient water quality in the canal, particularly to meet the inflow quality requirements for the power plants and for the new Pristina Water Treatment Plant.

<u>Subcomponent 2(b) Equipment for better management of gates and regulation of water flows,</u> <u>water monitoring</u> (for the main Iber canal and for its secondary delivery system), including provisions for remote monitoring and controlling of related structures. A relatively advanced SCADA could be installed given the importance of the canal. The equipment may also include instrumentation for optimized operational schedule of the Gazivoda reservoir and its downstream balancing reservoir in Pridvorica, integrated with the proposed canal SCADA (to balance the releases for hydropower with the releases for the Iber canal).

<u>Component 3: Project Management, Coordination, Monitoring and Evaluation.</u> This component would cover overall project management as well as coordination among the different ministries/agencies involved in water management as related to the Iber-Lepenc Canal. The PIU to be located within the ILC, will be responsible for day-to-day management of project activities and will work with relevant staff in other ministries such as the MESP on subcomponent 2(a), the safeguard aspects of the project (ESMF, and RPF), and Monitoring and Evaluation (M&E).

Detailed project description

The list and description of activities below are identified through the feasibility study as those needed to contribute to acceptable water quantity for users of Iber canal. The project plans to finance majority of investments

A. Iber-Lepenc canal

Canal section rehabilitation

- New Concrete lining : 5107 m in 15 sections
- Rehabilitation of joints through a total length of canals 4911 m
- Rehabilitation of 19 aqueducts through application of plastic waterproofing materials

<u>Structures</u>

Bridges and roads:

- Access road along the canal including rehabilitation and construction of new sections.
- Bridge rehabilitation with new drainage crossing 18
- Bridge rehabilitation: 6
- Construction of recently demolished bridge: 1
- Walkway bridges: 7
- Covering slabs across Zubin Potok village: 400 m

Works to protect the canal from turbidity and pollution

- Rehabilitation or reconstruction of crossing channels above the canal: 32
- Rehabilitation or reconstruction of crossings (syphons) under the canal: 21
- Retaining walls upstream and downstream of the canal section: 9341 and 851 m
- Storm water culvert: 21 500 m

Other minor works

- Water distribution boxes: 21
- Tunnel metal grids: 13
- Clearing of vegetation: 32 000 m2

- Fence : 2408 m
- Septic tanks

Table 1 : Main	planned	protection	works of IL	canal
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Physical works	Unit	Quantities
Drainage culverts (along the entire length of the canal)	Length in meters	Approx. 22 000
Retaining walls uphill side (approx 1 m height)	Number of places : Length in meters :	33 9 000 to 9 500
Retaining walls downhill side (approx. 2-3 m height)	Number of places : Length in meters :	4 800 to 900
Illegal water pipes treatment / removal	Number of places : total of pipes :	35 approx 600
Solid waste deposits removal	Numbers of places	>10
Discharge sewerage removal	Numbers of places	At least 4

B. **Mihaliq reservoir**. Possible construction of a 600 m long and 25 meters high earth dike across a wide creek above the Iber canal creating a compensation reservoir of about 3.7 million m3 (Mihaliq reservoir), a pumping station to lift water from the Iber canal to the reservoir, and a pipeline of 2 km long to supply the Prishtina Municipal regional Water company presently under construction during periods of high turbidity of the canal water. There would be no resettlement of people from the reservoir area. The left bank of the creek is mostly government lands and the opposite side is owned by private owners. The size, location of the reservoir might change during the project implementation. The operator of the reservoir is not confirmed at this point. Location will determined to minimize impact on private land or land use by private persons. Demolition of dwellings will be avoided.

C. Compensation reservoir. The construction of a small compensation reservoir with a capacity of about 4,000 m3 at the tail end of the Iber Canal where the intake for supplying cooling water to the Thermal plant KRPP is located. This reservoir would absorb the deviations between supply and demand between the control structure DO2 and the tail end. The financing still needs to be confirmed.

D. A **Supervisory Control and Data Acquisition (SCADA)** would be installed to optimize the operation of the Iber Canal. The SCADA system would include i) Remote monitoring of all the diversion and control structures of the Iber system including the Predvorica intake, 10 irrigation pumping stations, three municipal stations and the three diversion structures and ii) Automated local control of the key structures, of which the most important one would be the canal intake at Predvorica reservoir.

E. Rehabilitation works on Gazivoda dam: a) Remove the vegetation in the downstream face including the mature tree close to the crest; b) Carry out inspection of the instrumentation, first and foremost to check the functionality of piezometers and to repair the ones which are not functional in order to start the pressure measurement and the water level in the dam, c) Install a gauging scale for the measurement of the water level, c) Install an ultrasonic monitoring of the reservoir water level (foreseen in ToR for the SCADA system); d) Repair the permanent lighting at the bottom and at the non-functional parts of the gallery; e) Repair the spillway gate; f) Rehabilitate the asphalt road, pavement and railing on the crest; g) Install cameras on the crest of the dam; h) Supply a boat for access to the intake tower and for inspection tours on the reservoir.

1.3 Study area

The map below shows global location of concerned works areas at Kovoso territory and Lepenc watershed scales.

Figure 1 : Projected works location



1.3.1 Protection and upgrading works along the open air sections of the canal

The section of the IL canal concerned by the rehabilitation project crosses two major landscape units: the hilly areas with dense forest cover in the northern part and alluvial plain of central Kosovo in its section between Buschta village and Pristina.

1.3.2 Emergency reservoir Mihaliq (ERM) project area

Although the location of reservoir has not been decided, one area was researched more during the pre-feasibility study. The area where ERM is considered to be placed as supporting infrastructure of ILC, lies near Mihaliq village of the Municipality of Vushtrri. The area is predominantly rural with isolated farms and settlements scattered into small neighborhoods. The area of implementation of the future reservoir is about 30 ha and is completely free from all kind of settlement. There will be no impact on any dwelling or economic structure. About half of the land is land cultivated with serials and the other half is not cultivated land. Property ownership is mixed, public and private.



Figure 2 : Location of projected Mihaliq reservoir and pipe

2 LEGAL FRAMEWORK

2.1 World Bank policies

Four safeguards operational policies (OP) are triggered in the frame of the project: OP 4.01 Environmental Assessment, OP 4.12 Involuntary resettlement, OP 4.37 Safety of Dams and OP 7.50 International Waterways. Last three are dealt with through different documents, more specifically: Resettlement Policy Framework; Dam safety documentation: plan for construction supervision (CS), quality assurance (QA) Framework Operation and Maintenance and Emergency Preparedness Plan; and Riparian Notification Letter or Exemption to Notification.

2.1.1 Environmental Assessment (OP/BP 4.01)

Often referred to as the "umbrella" safeguards policy, it is aiming to:

- Ensure that Bank-financed projects are environmentally sound and sustainable
- Improve decision-making by promoting integration of environmental and social criteria into project decision-making process
- Takes into account: natural environment, human health, safety, social aspects, physical cultural resources, trans-boundary and global aspects, overall legal framework, obligations under relevant international treaties and institutional capacities

The Bank classifies the project according to the nature and magnitude of potential environmental impacts. A classification of the project is made as category A, B, C, or FI project to assess potential impacts and risks and to determine the appropriate extent and type of environmental assessment

- Category A: significant adverse environmental impacts which are sensitive, diverse, or unprecedented, which may affect an area broader than the sites.
- Category B: potential adverse environmental impacts are less adverse than those of Category A projects. Impacts are site-specific; few if any of them are irreversible.
- Category C: Minimal or no adverse environmental impacts.
- Category FI: Projects involving financial intermediary

According to the WB policies the project as a whole has been classified as environmental category B, as the project components will have some adverse environmental impacts, however those are lesser than those of Category A projects.

All the investments to be financially supported by the project will not be known and / or not at the satisfactory stage of design by the project appraisal, hence the ESIAF with ESMF was prepared to determine due diligence according to OP 4.01.

ESIAF part serves as initial environmental impact assessment for different components of the project. The impacts are assessed based on field visits and pre-feasibility and feasibility studies available. ESIAF is therefore conducted both for (i) Mihaliq emergency reservoir and dam and (ii) Gazivoda rehabilitation and IL canal rehabilitation. The ESIAF part provides

baseline information and project description for all components, and predicts impacts to the level possible. Mitigation measures are also proposed as part of the ESIAF, based on identified impacts and description of works. ESIAF especially serves as preliminary ESIA for dam and reservoir as full ESIA will be prepared later during the project preparation and also identifies site investigation and monitoring that needs to be done for the full ESIA. Identified potential impacts of the dam and reservoir will be fully addressed in full EIA once all technical and other project details are known The complementary ESMF, serves as process oriented framework and defines type of environmental due diligence documents that need to be prepared for different project components. For small rehabilitation works, provides template EMP checklist, prepared based on the impacts and mitigation measures identified in ESIAF. ToRs and description of other type of due diligence document is also provided.

More specifically, the ESMF provides for the:

- a) Works for canal repair and increased stability and for protection against renewed physical damage from landslides, and unstable soils - EMP checklist presented in Annex 10 is prepared for the canal rehabilitation works;
- b)Equipment for modernization and urgent repairs of the optimized operational schedule of the Gazivoda reservoir and dam – guidance and timeline on what type of due diligence document will be prepared and when for the rehabilitation works;
- c) Development of Mihaliq emergency/balancing reservoirs along the canal –mitigation measures for impacts that are identifiable at the pre- feasibility stage, identifies missing information and defines ToR for the EIA to be conducted before project construction;
- d)Protection of the canal against renewed pollution, accidental pollution and other threats and man-made disruptions – EMP checklist presented in annex 10 are prepared for the canal works.

2.1.2 Involuntary Resettlement (OP/BP 4.12)

This policy is intended to avoid the long-term hardship, impoverishment, and environmental damage that may be caused by involuntary resettlement. The policy does this through: (a) avoiding involuntary resettlement where feasible, or minimized, exploring all viable alternative project designs; (b) where feasible conceiving and executing involuntary resettlement programs as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits and (c) assist displaced persons in their efforts to improve their livelihoods and standards of living or at least to restore them.

In respect of this OP 4.12, two cases may be encountered:

- Sub-projects composing the program of IL canal protection are submitted to Abbreviated Resettlement Plan which is prepared when the impacts of the entire displaced population are minor (if the affected people are not physically displaced and less than 10 percent of their productive assets are lost), or fewer than 200 people are displaced. (Paragraph 25 OP4.12),
- The Mihaliq reservoir (ERM) project if financed an Abbreviated Resettlement Plan will be prepared.

In order to comply with the OP 4.12, separate Resettlement Policy Framework is prepared. The RPF guides how land acquisition will be carried out to comply with Operation Policy 4.12.

2.1.3 Natural Habitats (OP/BP 4.04)

The classification of protected areas in Kosovo is established by <u>Nature Protection Act</u> (<u>Regulation 2006/22</u>). Protected areas of nature are announced with the purpose of protection and conservation of biodiversity, landscape, natural characteristics and cultural heritage and for offering effective management. Classification of protected areas within the Law on Nature Protection is in accordance with the International Union for Nature Conservation IUCN3 (The World Conservation Union).

National network of nature protected areas covers 97 nature protected areas with surface of 47.842.34 ha or 4.39 % of Kosovo's territory and more than 195 proposed area for protection, including a National Park "Bjeshkët e Nemuna" with surface of 62.488 ha.

Protected areas also include: 11 Strict Nature Reserves, one National Park, 82 Nature Monuments, two Regional Parks and one Forest Park. None of those are in the project area or its proximity.

The IL canal does not pass through or in vicinity of any protected areas or sensitive or critical habitats. Neither are any of dams or reservoirs (Gazivoda, Mihaliq, and compensation reservoir) located in such areas. Therefore the policy is not triggered.

2.1.1 <u>Physical Cultural Resources (OP/BP 4.11)</u>

There are no cultural heritage sites or objects in the vicinity of ILC according to available data therefore the policy is not triggered. However, since the excavation works are involved, chance findings clause will be included in the environmental management documentation.

2.2 Kosovo national legislation

According to Kosovo national legislation, EIA might be required for Construction of Mihaliq dam, depending on eth opinion of the Ministry of Environment. However, it is not required for rehabilitation of the (Gazivoda) dam or canal rehabilitation is required.

2.2.1 Environmental laws

The highest level environmental legal document is the <u>Environmental Protection Act (03/L-025 -2009</u>). The law addresses the prevention and reduction of pollution, environmental monitoring and highlights, among others, the principles of rational use of natural resources. Environmental pollution is subject to penalty by this law.

Environmental Permit (and possibly EIA in the case of Mihaliq reservoir project) is required from the MoESP for using natural resources. The following principles are introduced:

- General reduction of pollution
- Balancing the need for environmental protection and economic development
- Preservation of biodiversity

- Sustainable use of natural resources
- Preservation of nature and landscape.

The procedure for the implementation of a comprehensive EIA is described in the <u>Environmental Impact Assessment Act (03/L-024 -2009)</u>. According to this legislation dams and other installations (less than 5 million m3 of storage) designed to hold water or store it on a long term basis are to be examined by the MoESP in order to determine whether the project must undergo EIA. The developer, in this case ILC has to present the application for starting the EIA to the MoESP. The following items must be part of this application:

- Characteristics of the project
- Location of the projects
- Characteristics of the potential impacts

The Ministry (MoESP) informs the applicant within ten days whether an EIA is required or not. The Ministry issues guidelines (and agreed ToR) for the preparation and review of an EIA report. All other works rehabilitations, reconstructions and small constructions do not require EIA according to national legislation.

2.2.2 Social laws

Facing social issues, legal framework for land expropriation in Kosovo is meanly triggered. The expropriation process of immovable property in Kosovo is governed by the Law n°03/L-205 amending and supplementing the Law n°03/L-139 for the expropriation of immovable property. Application of this national regulation is specifically presented in the report Resettlement Policy Framework (RPF).

2.3 National policies and strategies

2.3.1 Environment

MoESP is the key competent environment authority and is supported by Kosovo Environmental Protection Agency.

The key policy documents in the sector are:

- Kosovo Environmental Strategy: 2011 2021
- National Environmental Action Plan: 2011 2021
- Strategy and Action Plan for Biodiversity 2011 2020

2.3.1.1 Kosovo Environmental Strategy

Kosovo Environmental Strategy (KES - Update as it currently stands) identifies objectives of the Water Sector as follows:

- Completion and harmonization of legislation with the EU acquis;
- Administration of the strategies and plans for the river basins;
- Construction of wastewater treatment plants (WWTPs) and related sewage system;
- Repair and constructions of new drinking water supply networks;
- Management for the protection and regulation of river beds;
- Upgrade of surface water monitoring networks;
- Creation of a groundwater-monitoring network.

The KES further identifies the priorities for the water sector as:

- Drafting the relevant bylaws;
- Drafting strategies and plans for administration of the river basins;
- Upgrading the Water Information System;
- Preventing the degradation of river ecosystems caused by gravel and sand extraction;
- Provision of water through a suitable strategy, including construction of dams and water supply networks in such a way that bio-diversity aspects are taken into account;
- Increasing co-operation between the water and nature inspectorates in implementation of nature protection legislation;
- Implementing SEA and EIA procedures, especially when the activities are planned to be undertaken in wetlands and water protected areas;
- Building urban and rural WWTPs and where possible, including informal settlements into the public sewage and water supply networks.

2.3.1.2 National Environmental Action Plan (NEAP)

The standing version of the NEAP indicates that:

• "In summary, the overall objectives are to reduce pollution to levels which meet the *EU* acquis and international standards"

In pursuing this overall objective, three specific objectives are established:

- Objective 1. Strengthening the Environmental Management System
- Objective 2. Investing in critical problem areas
- Objective 3. Enhancing information and awareness

2.3.1.3 Biodiversity Action Plan

The Biodiversity Action Plan addresses a wide range of sectors, including fisheries and waters. For waters, the Action Plan specifies the following priorities:

- Constructing plants for treating water and control of river flow by using indicators for biodiversity renewal.
- Ceasing the destruction of river ecosystems from use of sand and degrading of river beds and also to improve the management of river basins;
- Securing water availability through a suitable strategy by providing safety of dams and water supply net in a manner that benefits biodiversity;
- Increasing the cooperation between water and nature inspectorates in implementation of measures for nature protection;
- Implementing environment procedures such as Strategic Environment Assessment and Environmental Impact Assessment especially in cases where activities are planned and undertaken in water rich areas and wetlands.

2.4 Progress still to be done to meet EU standards

2.4.1 <u>Environmental policies</u>

Based on the Country Environmental Analysis of Kosovo (World Bank, 2012), some elements of national legislation, also aligned with the EU policies.

2.4.1.1 Legislation

Kosovo has an elaborate legal framework for protecting the environment. The constitution recognizes environmental protection as one of the principles on which the Republic of Kosovo is based. The key laws pertaining to the environment include those on environmental protection, environmental impact assessment, strategic environmental assessment, Kosovo water, air protection, waste management, integrated prevention pollution control, nature conservation; and agricultural land.

Key sectorial plans and strategies incorporate environmental considerations. 2011–15 Kosovo Environmental Strategy (KES) National Environment Action Plan (NEAP) were updated in 2011. The new KES (2011–21) aims to reduce pollution, protect biodiversity, ensure sustainable use of natural resources, and protect valuable national landscapes. Short-term priorities include integrating the EU acquis to Kosovo environmental legislation¹, and mainstreaming environmental concerns.

2.4.1.2 Institutional capacity

The main responsibility for environmental protection and management lays with MoESP responsible for implementing the country's environmental policy. MESP consists of an environment department for nature protection, waste management, air protection, and industrial issues as well as water protection department. The environmental inspectorate is a part of MoESP responsible for inspection activities. MoESP has few resources, presenting heavy challenges to its role in environmental management and policy setting.

Municipalities are tasked with environmental protection, monitoring, and management of natural resources within their boundaries. Some municipalities have an environmental unit, usually within the department of urban planning, often with only one or two employees. The transfer of some responsibilities from national to local municipalities during 2009/2010 has, however, further burdened already stretched municipal resources.

2.4.1.3 Focus on water resource management

The Water Act (No. 04/L-147/2013) identifies the key water management institutions in the country. It is noted, however, that the capacity to implement and enforce legislation at central and local levels remains weak. The budget allocated to the sector is limited and the relevant water management institutions lack adequate human, administrative and capital resources to implement and enforce effectively the requirements stated in the Water Act.

The Water Act defines 'Competences and Responsibilities' and defines 'Bodies and Units Established by the Water Legislation' under the following institutions:

¹ For instance : identification of potential areas which fulfil the criteria's to enter in ecological network "NATURA 2000"

- Ministry of Environment and Spatial Planning (MoESP)
- Municipalities.
- Inter-ministerial Council for Waters
- Kosovo Institute for Waters
- Authority of River Basins District (RBA)

There are several crosscutting issues along the different environmental sectors (e.g. monitoring laboratories, public participation, environmental information, etc.) that should be considered together, in order to make best possible use of the synergy between the limited human and financial resources that characterize the current situation of the Kosovo water sector. In particular, a joint implementation approach could be relevant for the following areas:

- Monitoring and Reporting Environmental Status and Emissions: the monitoring cycle encompasses activities from field surveillance and sampling activities, laboratories analysis, quality insurance and quality control, data storage and processing, evaluation and reporting. The accuracy of each of all these activities is affecting the final result, and the reliability of information and data disseminated, and used, for the definition of relevant sector policies.
- Permitting, Inspection and Enforcement: permitting procedures have to be elaborated with clearly defined and operational requirements for inspection and enforcement requirements. The environmental inspectorates should be equipped with adequate human resources and equipment; training should be provided on a regular basis to the inspectors, including updated information on new obligations deriving from the transposition/implementation of EU Environmental Directives. Inspection activities include on-site surveillance and administrative check for compliance with conditions in permits, licenses and orders given by the Competent Authority/ties. An adequate and proportionate system of fines, penalties and criminal liability for serious violations has to be established.
- Public Participation and Involvement of the Stakeholder: In the process of transposition and implementation of the EU acquis it is essential to involve the public and relevant authorities at central and local level.
- Data Management and Environmental Information: Promoting transparency by granting access to environmental information is an important principle for the whole environmental legislation; in order to promote Environmental Awareness access to environmental information has to be guaranteed to the stakeholders, other authorities and the wider public.

3 DESCRIPTION OF EXISTING ENVIRONMENT

3.1 **Project location**

3.1.1 IL canal location and geographical context

The IL canal runs from Gazivoda (Ujman) lake up to Prishtina city and ends at Badovc Lake. The excess water from the canal is collected in the upstream part of the Sitnica River that flows back into the Ibër River, carrying flow back to Serbia. In its length the canal passes through the territory of five municipalities - namely: Zubin Potok, Mitrovica, Vushtrri, Obiliq and Prishtina - passing through about 33 rural settlements and two cities. The IL canal runs mostly through the western part of Kosovo plane, the foot hills of Drenica and Qyqavica and mainly through a hilly region.

The section of the Iber Lepenc canal considered for rehabilitation under World Bank project crosses two major landscape units: the hilly areas with dense forest cover in the northern part and alluvial plain of central Kosovo in its section between Buschta village and Pristina.

The landscape is mostly agrarian with plots in irregular forms and predominately planted with corn, maize, potatoes and forage crops.

Whereas the northern part of the study area is fairly urbanized, the alluvial plain of central Kosovo is more densely populated and characterized by open field landscapes, spangled with settlements of various sizes. Close to Pristina and the KEK Power Plan, the anthropogenic character of the landscape is intensified by the dense network of linear infrastructures (roads and power lines).

The Ibër-Lepenc canal is a man-made hydraulic structure purposed to supply central Kosovo with water. The Ibër-Lepenc canal "sub-basin" draws its water from the Gazivoda reservoir. The canal runs south from the Gazivoda dam parallel to the Sitnica River, which in turn is a tributary to the downstream part of the Ibër and carries central Kosovo's polluted return flows to Serbia.

This 49 km long conveyance system consists in a succession of open sections, covered sections, tunnels, siphons and aqueducts. About half of the total length can be inspected visually.

Cumulated lengths of the open canals, siphons, aqueducts, tunnels and closed canals are summarized below:

ĺ	Type of structure	Quantity	Length
	Type of structure	Quantity	(m)

Open canals		18 913,85
Covered channels		11 645,96
Open channels		2 086,44
Siphons	11	3 506,58
Aqueducts	20	2 321,58
Tunnels	14	9 487,95
Separation structures	3	90,15
Transition		1 117,33
	Total	49 185,84

The IL canal passes along hilly sides and valleys in a flow NW-SE direction and cross mainly cultivated agriculture patches of private and public land as well as several small settlements.



View 1 : Rural landscape in the study area of ILC (Mitrovica municipality).

Figure 3 : Projected works location



3.1.2 Gazivoda dam location and geographical context

The Gazivoda Dam, officially the Ujman Dam, is a rock-filled embankment dam on the Ibër River in the District of Mitrovica, Kosovo. It is located 25 km upstream of Mitrovica and was commissioned in 1979. Its height is 107m and it falls into the category of large dams. The reservoir's spillway is situated at its left end, while the outlet works appurtenances are situated on the right side. The overall embankment fill is 5 million m³.

The catchment area (1060 km^2) consists only of direct catchment in a mountainous area spread out over three countries: Montenegro, Serbia and Kosovo.





The capacity of the lake is $370,000,000 \text{ m}^3$, with a live storage of $350,000,000 \text{ m}^3$. The volume of the reservoir is established based on the previous assessments for the needs for drinking water, industry, agriculture and energy.

Access to the dam is ensured by an asphalt road from Mitrovica. The road on the crest is a liaison for the villages on both sides of the reservoir.

Gazivoda Dam, located in the northwest part of Kosovo, with a height of 107.5m, has a storage capacity of 370 Mm³. It was built between 1979 and 1984 for multipurpose destinations: water supply for the population (cities of Mitrovica, Vushtrri and Skënderaj), for the industry, thermal power plants and water irrigation (via the Ibër canal), but also to prevent floods and to produce hydropower.

The water is captured by an intake on the Gazivoda reservoir to the Gazivoda hydropower station operated by the Ibër Lepenc Company (two Francis turbines with 33.35 MW installed capacity) and discharging into Predvorica compensation reservoir.

From this secondary buffer reservoir, part of the water is released to the Main Canal (Ibër canal) through a gate which is operated by the Ibër-Lepenc Company for distribution of bulk water, with a theoretical discharge capacity of $22 \text{ m}^3/\text{s}$.

The dam is equipped with spillways: the excess water coming from the Gazivoda reservoir flows directly to the Ibër River through the spillways.

A minimum guaranteed flow $(0.5 - 0.6 \text{ m}^3/\text{s})$, goes directly to the Ibër River bed in order to satisfy the environmental needs of the river.

3.1.1 Operation rules

At present, the Gazivoda reservoir is operated to satisfy all the water needs on the Ibër canal (taking into account some losses). Some additional releases are performed to produce more hydropower. A high level is maintained in the reservoir to guarantee a maximum head for optimizing the hydropower production and secure a volume for water needs satisfaction during droughts periods. Considering the 8 most recent years, the reservoir is used for less than 35 % of its capacity. There are at present no difficulties to meet the current water demand.

3.1.2 <u>Hydropower production</u>

Except the overflow going through Gazivoda spillway, in case of an important flood event, all the released discharge goes through the turbines and is used to produce hydroelectricity. The hydropower plant at the Gazivoda dam has a design capacity of about 100 GWh/year. The hydropower production varies mainly according to the inflow in the reservoir. The figure below shows the variation of annual hydropower production between 2006 and 2013.

3.1.3 Mihaliq reservoir location and geographical context

The proposed location of the emergency reservoir (ERM) is near Mihaliq village in the Municipality of Vushtrri. The area is predominantly rural with scattered settlements. The area for the ERM lies in both sides of the valley of ravine near Mihaliq and is predominately agricultural (cereals and grazing) land. The area of the proposed reservoir does not include human settlement. The area of implementation of the future reservoir is about 30 ha and is completely free from all kind of settlement.

Dominant agricultural crops within this area are cereals (conclusion based on observations and areal images made in different time periods).

The proposed project of Mihaliq Dam is located in the valley of the creek of Bençuk. The dike would be about 600 m long and 25 m high. The total storage at maximum level of 570 m would be around 3.7 million m3. The water would have to be raised by about 20 m above the Ibër Canal and would be sent back to the canal and to the pipeline of the Prishtina Municipal regional Water Company.

There would be no physical relocation of people from the reservoir area. The left bank of the creek is Government land and the opposite side is owned by private owners.

A few houses are located close to the reservoir but do not need expropriation. Their levels are above 580 MSL. A rehabilitation of the main existing access road will need to be proposed and a very short stretch of new road will need to be implemented.

The rationale for selecting the reservoir location is that, to serve several water users downstream, this is the only location along the canal where:

(i) The topography allows building the reservoir with the required storage size (around 3 million m3). This size can bridge demands from inter alia the new KRPP Power Plant, the new treatment plant in Shkabaj, and irrigation peaks in case formerly-irrigated areas are restored.

(ii) There is no need for resettlement of inhabitants (only a limited land acquisition of farm lands will be sought).

Figure 5: Map of ERM and distribution network")



Purpose of the reservoir

At this stage the purpose of the reservoir is not fully determined as in a long term it can have many beneficial purposes. The paragraphs below indicate its potential. The purpose and modus operandii would be determined during project implementation, most probably during the first year of implementation. a) Balancing reservoir for irrigation peak hours

The pumping stations for irrigation downstream of DO2 are: MPS Besi, PSI7, PSI8, PSI9 and PSI10. The reservoir would have a balancing function during peak hours of irrigation.

A 2.5 m^3/s pumping capacity would be needed to store the water at night. The reservoir should also be able to compensate for the inevitable deviations between demand and releases and the errors caused by the inaccuracy of measuring devices.

With a 20m head, this would correspond to a pumping capacity of 750 kVA.

b)Closing of Ibër Canal to allow the rehabilitation of the canal and tunnels upstream of DO2

The reservoir can also play a role during closure of the canal for short periods for regular and emergency maintenance. Rehabilitation of the canal would be facilitated with a large reservoir along the canal and providing a short-term storage to bridge the temporary outages for repair purposes or for emergency in case of breakdown.

In addition, the storage would enable the operator to temporarily close the canal for maintenance purposes or to palliate a sudden peak of turbidity, for instance by runoff water after a storm episode.

The reservoir has a sufficient size to secure the water demand for the power plant and for the water treatment requirements.

The demand in 2035 for Kosovo B, KRPP, WTP Shkabaj, Drenace and Ferronikeli represents $2.6m^3/s$.

With a live storage of 3Mm³, off-irrigation period, a closure of at least 10 days of the sections upstream of DO2 would be possible.

c) Bridging turbidity peaks

After rain episodes, the water quality is severely impacted by turbidity peaks. This causes major problems for the bulk consumers. Kosovo B is only equipped with a storage capacity enabling a two hour supply.

As part of the Request for Proposals for the future KRPP Project, the company in charge of the operation under a BOO agreement (Build Operate and Own) is required to construct and operate a buffer reservoir in line with the Ibër Canal designed to hold the equivalent of 15 days or more of raw water requirements for the KRPP. According to the RFP document, the required storage capacity is anticipated to be about 1,100,000 m³.

d)As already mentioned, a pipeline flowing in reverse direction towards DO2 is proposed for the sake of securing the water supply to WTP Shkabaj by Mihaliq reservoir.

The proposed reservoir will thus enable to secure the main consumers downstream of DO2:

≻ the future Water Treatment Plant Shkabaj

- ➤ the supply of Drenaci
- ➤ the cooling of Kosovo B Power Plant.

Note: The Ibër canal is only a secondary water resource for the cooling of Kosovo A during the summer months. The reservoir does not need to secure the water cooling Kosovo A Power Plant which furthermore is likely to be abandoned in the future.

3.2 Environmental context

3.2.1 IL canal study area and Gazivoda

The "Ibër Basin" constitutes of single hydrological and economic unit of Central Kosovo. The catchment area of Iber river totals to 1060 km2 and its major part is located outside the Kosovo territory. The basin is divided into three sub-basins, each with a main reservoir formed by a dam.

Rainfall - According to data recorded in the monitoring stations (see figure 6 below), the annual average rainfall in Kosovo varies from 570 mm (Dardana) to 1408 mm (Junik). The study area is characterized by a rather dry climate and a total annual precipitation range of 600-800 mm per year. Monthly rainfall variations are illustrated by values below:

Monthly rainfall (mm) / Meteorological Stations	Mitrovica Pristina	
Min.	18,1	26,7
Max.	129,5	72,6

Figure 6 : Rainfall in study area



Discharge measurements at the current Gazivoda dam site were recorded in the period from October 1947 till September 1973 (26 hydrological years). After 1973 the measurements were interrupted, due to the construction of Gazivoda dam. These measurements represent the mean monthly discharges of the Iber River at the site of the Gazivoda axis dam (in a given period).



Figure 7 : Kosovo Hydrographic network (ILC and Mihalic Reservoir location)

Source: AKMM

Groundwater resources have not been researched nor monitored well in Kosovo. In the alluvial plain of the Sitnica River, tributary to the Ibër River, the groundwater is abundant but very vulnerable to local pollution.

The main hydrogeological complex on the area from Gazivoda lake up to Obiliq are^2 :

- The hydrogeological complex of Quaternary deposits(al Q2)
- The hydrogeological complex of Pliocene Deposits (Pl1)
- The hydrogeological complex of Limestone Deposits (K2)
- The hydrogeological complex of Upper to Middle Jurassic (Igneous Rock)
- The hydrogeological complex of Mudstone, Sandstone and schists.

Apart of water resource currently provided by surface water reservoirs, complementary water supply from aquifers could exist in the Iber-Sitnica basin but the confidence in the valuation of capacity of aquifers is modest. Still, in many villages on the central/northern plateau groundwater is used for household consumption.

The Sitnica River has highly contaminated water. The contamination is caused by local pollution, wastewater from mines as well as Kosovo A and Kosovo B power plants. The levels of contaminants significantly exceed EU levels. In the case of Kosovo A, part of the wastewaters are discharged directly to Stinica and the discharge water from mineralization plants is sent to open sedimentation and neutralization basins, which are poorly maintained. Kosovo B power plant has wastewater treatment installations for technical water and sanitary wastewater, but they do not operate properly. Water from the settling pond containing acid and alkaline wastewaters generated from ion-exchangers is also discharged into the Sitnica River. For this reason the household, irrigation and other non-technical water should be captured from aquifers isolated from the river water.

Hydrological data monitoring in the area of project are noted on the figure below.

Figure 8 : Hydrometrical network for the Ibër River Basin



Station	River	Surface(km ²)
Gazivodë (akumu)	Ibër	1060
Prelez	Ibër	1109
Leposaviç	Ibër	4701
DobriDub (Lismir)	Sitnicë	1314
Nedakoc	Sitnicë	2590

Hydrometrical stations concerned in the study area are listed below:

There not available data available for subsidiaries to Sitnica river.

In the later stage of design of the ERM project, hydrogeological and hydrological data in the area of influence of the projected reservoir have to be collected. If necessary, in the field measurements need to be carried out.

Available bulk *water quality* data on ILC originates from Pristina Water Company monitoring. Monitoring of raw water of the canal shows commonly proper physical and chemical quality periodically disturbed by peaks of suspended maters and organic charge related to high rainfall episodes (see annex 5 results of ILC row water quality survey at Mihaliq).

The most recent water quality data of natural water bodies (incl. Iber river and its tributaries) have been officially published in the The State of Waters in Kosovo, Kosovo Agency on Environment Protection, 2010.

The Iber River basin has a total of 17 monitoring stations regularly sampled since 2007. Three of them are located on the Iber River. The first monitoring station is located at Kushtovë and its tests show a satisfactory water quality. The next monitoring station is located at the outskirts of town after all urban and other wastewater discharges that affect the water quality. Monitoring results of this monitoring station, show poor water quality. The third station is located in Kelmend downstream from the connection point with Sitnica River, which includes water from other sub-basins. During the monitoring period results on all monitoring do not exceed the limits values under for category II, implying that pollution is not alarming.

Following figures show main water pollution sources identified in a large scale (below figure 8) and along study area (figure 9).

Waters of the open sections of the IL canal are carrying suspended maters mostly from the surrounding agricultural and nature sites (fallen leaves of acacia, harvested products such as wheat and corn, etc.) as well as from municipal solid waste such as plastic, bottles, vegetables, etc. Significant transport of dissolved matters of animal and human origin is detected. Several wastewater connections discharging directly from the houses to the canal are noticed. In addition, several illegal dump sites of solid waste are encountered nearby the canal banks.



Figure 9 : Kosovo Pollutant Sites at main rivers (ILC and Mihaliq Reservoir location)



Figure 10 : The deployment sites in the Mitrovica Region

Due to the *natural land inclination*, the typical canal section shows that one bank of canal stands above the canal level and the other bank below it. The geological section of this document as well as feasibility study being prepared, presents more details on inclination, however here it can be easily noted that the upper bank of the canal could present risks of erosion pollution as well as land slide risk.

The *natural environment* on both sides of canal consists typically of manmade agricultural fields. Invasive Acacia trees and small bushes are commonly found along the canal edges. A presence of storks has been observed in the surroundings of the Mihaliq reservoir site. The presence of this bird on the site itself needs to be explored, especially nesting couples. It is also important to mention that there are no protected areas or areas of significant natural importance in the vicinity of the canal or the future reservoir (see figure 10).

Figure 11 : Location of project site and protected areas in Kosovo



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Invasive vegetation (planted or naturally spread, e.g. acacia, robinia, poplar) that can be observed along the edges of open canal sections, cause in some places (*see figure 11*) damages to the canal structure and slope stability (more details are presented in D2 report "vegetation")

Vegetation development along the Iber canal generates damages to the structure. To restore the canal durably, vegetation has to be treated and some rules need to be respected.

Ideally, to preserve the canal (concrete lining, embankment, drainage system), on excavation configuration no tree should be rooted less than 5 meters away from the canal embankment and no shrub less than 3 meters away from the canal embankment, while no tree and no shrub are accepted less than 3 m away from the foot of narrow and normal embankment.

Respecting this rules, trees and shrub (adult species smaller than 3 m in high) can be planted on excavation configuration to limit water and sediments flowing into the canal.



Figure 12 : Trees and woodland zone risk levels along the ILC (source "Végetation" report)

Risk level Rating	Weak [6.0 to 7.0[Medium [7.0 to 8.0]	High [8.0 to 8.8[Very high [8.8 to 12.5]
Individual tree	4	5	8	8
Wooded zone	5	5	4	3



Groups of houses are located either at the upper or at the lower bank of the canal, and sometimes on both sides of the canal. In some places, where inhabited parts are nearby, the canal water is illegally extracted from canal by PE pipes for the use in the households as well as irrigation of private lands.

Local roads, at open parts of canal, over-pass the canal in form of small bridges without any special protection measure. Protection barriers are planned in the frame of the present rehabilitation study. Other parts of canal consist of aqueducts. Along some segments leakages were observed due to the lack of maintenance. These leakages shall be tackled in the scope of the present rehabilitation process.

The canal specifically *supplies water* to the towns of Mitrovice, Vushtrri, and some smaller neighboring towns as well as to the two existing thermal power plants (Kosovo A and B), and the industrial development zone. It is planned that the canal will, over the next few years, also supply bulk water for Prishtina municipality, and possibly water for the third thermal power plant (Kosovo C), as well as the expanded irrigated areas depending on the future infrastructure.

In addition to providing water to Iber canal, the Gazivoda dam supplies water for a hydro power plant (33.35 MW). Overall, this sub basin river encompasses the main towns and main economic activities of Kosovo.

The main canal feeds 2 large secondary *irrigation* canals: Hamidi-Vasileve and Besi-Gracanka. The agricultural sector is currently not well developed in this part of Kosovo. Some irrigation infrastructure is still functioning, but on a small scale at around 1000 ha per year. The ILC Company offers irrigation contracts to farmers, at a low price, for certain irrigation periods. Most of the irrigated area is used for growing potatoes, which is a tradition in the Sitnica plain. Organized water supply and network exist in town centers, but connection rates are generally low except in Prishtina, and physical losses are substantial. Donors, such as the Swiss cooperation, USAID, KfW, UNDP and the EU are very active in supporting the improvement and expansion of water supply and drainage services, notably inside the Prishtina area. Recent measures taken by the Prishtina Regional Water Company to reduce losses and improve the bill payment rate are shown to be efficient last year. Sewerage is mostly lacking and there is a single town in Kosovo with an operational wastewater treatment plant.Mihaliq reservoir study area

The area for the future Mihaliq reservoir is a narrow valley included in a typical *agricultural landscape* of rural Kosovo. The hilly area is partly covered by agricultural land where local inhabitant land owners harvest their crops (forage, wheat, corn and few vegetables, etc., See land-use map figure 12).

Along the bottom line of the valley a small *stream of winter torrent* flows constantly. During site visits in early August these streams were in the lowest outflow and almost dry.

The stream is surrounded by what used to be typical *riverine forest* devastated by overharvesting and now is only presented by a small number of individual trees which is going to be replaced by the reservoir in the future. Household animals (cows, horses, etc.) as well as wildlife use the water streams as drinking water source. Signs of animal footprints were present at semidry riverine habitats.

The *natural slopes* of land around the future Mihaliq reservoir lay down towards the stream area. That means the future reservoir waters will tend to receive contaminants from the surrounding area: human (there are few houses and farms near the project boundaries),

animal and agriculture discharges (important and very present sheep livestock). According to the Report on the State of Environment in Kosovo 2011-2012, there is no soil monitoring system applied in Kosovo, thus there is lack of data on soil quality or pollution.

Although the agricultural activity is not extensive type on the slopes of the valley (mostly sheep pastures on left side and lower part), the *surface waters* washed away by surface run-offs from the agriculture land may carry, especially during strong rainfalls, notable amounts of suspended matters, possibly fertilizing and pesticides components, and faecal pollution.

The significance of humid riverine habitat is related to the wildlife food chain of which the most significant is that of white stork typical for this area and hence (*see element of description of white stork in the following frame*).

White Stork description and habitat

(Ciconia ciconia)

Hight: 100-115 cm, Wingspan: 195-215 cm.

Description: Clearly distinguishable from other types of Ciconiidae family because of the white body, black arm purl, the beak and red legs. During flying it is majestic with visible fingers. White chest. Prefers flying plane and uses best the warm air currents.

Spread and habitat: Nesting birds, very common up until 50s-60s, especially in the lowlands. Often found in agricultural and marshy land. Noticed in small groups during autumn migration.

Reproduction: we still do not know the exact number of stork nests in Kosovo.

Nests are built on the top of high buildings or trees, as high-voltage poles. Nests are of a huge size composed of sticks' knitting. It lays 3-5 white eggs that incubate for 33-34 days. The young fly after 56-64 days.

Food: Consists mainly of small animals such as frogs, snakes, fish, small rodents, worms, small birds, etc.

Sound: Usually silent, the strong beak hitting, especially when partners meet with one another in the nest

Along the lowland, near the river banks, one small scale illegal dumping of *solid waste* is located. According to the Report on the State of Environment in Kosovo 2011-2012, the waste management system in Kosovo is not fully implemented, and represents one of the major environmental challenges. The amount of municipal waste generated per person in Kosovo in 2011 was 335 kg. Average daily waste generated per person in Kosovo in 2011 is 0.9 kg. In average, the service of municipal waste collection covers 49% of population. Prishtina region covers the highest percentage of population with this service covering up to 55%, while the Mitrovica region with the lowest with only 30% coverage. It is obvious that the weak solid waste system presents a great concern from the perspective of preserving natural wildlife as well as protecting human health and environment.

Figure 13 : Map of land use in projected emergency reservoir project limits (feasibility study)

LAND USE OF EMERGENCY RESERVOIR IN MIHALIQ




3.3 Social Context

3.3.1 Demographical state

The IL canal passes through the territory of the following municipalities:

- Obiliq : 3 settlements, with 1,358 inhabitants,
- Vushtrri : 16 settlements, with 13.504 inhabitants,
- Mitrovica : 5 settlements, with 5,163 inhabitants,
- Zubin Potok : 7 settlements, with 2,816 inhabitants.

Thus, the study area covers a territory shared between 4 municipalities and enclosing 33 settlements with a total of 23 476 inhabitants. A location map of the settlements along the study area of the canal is provided in annex 2.

Considering the analysis of census and household data of 1981 and 2011, many localities show marked depopulation rates, while others portray a little growth. Fluctuations in inhabitant rates over the period (for 30-years) are the result of political change and the last conflict in Kosovo.



Figure 14 : Trend of changes in population per settlement in the study area from 1981-2011

Regarding the household statistics according to the settlements, the information is not entirely available; however information is available on a national and municipal level. According to the census and households in 2011, the average household in Kosovo has 5.9 members, depending of the municipality. For instance in Obiliq municipality, the average household has 5.6 members, Vushtri 5.9, Mitrovica 5.5. There is no data relative to the Zubin Potok municipality³.

Based on the census data of 2011, the dominant age group within the settlements of the study area is 10 to 19 years old, then the age group of 20-29 years old, while the third dominating

³ KAS, Agriculture data by Municipality, page 12, Prishtina 2013, Alb.

age group is the 0-9 years old, which simultaneously represent the base of the population pyramid in this area. The chart of the population pyramid shows that apart from 9 total age groups, two of them, namely the age group 10-19 years and 20-29 years are dominated by females, and all other age groups are dominated by males. Perhaps it can also be explained by the fact that males belonging to these two age groups (10-19 and 20-29 years) may have been studying or working abroad (at the census time).



Figure 15 : Population pyramid*

* Data from settlements in villages of the Zubin Potok municipality are not included in this pyramid, because the necessary data was not available.

Considering the rural population able to work per municipalities, Vushtrri municipality has the largest number of population with 52 % or 27.702 inhabitants, the municipality of Mitrovica with 31% or 16.380 inhabitants, the municipality of Obiliq with 18 % or 9.396 inhabitants⁴.

3.3.2 Social state

The local population sees the canal as a natural hydrographic flow rather than an engineering work. The ILC runs mainly through a rural area, where the main sources of income are provided by farming activities and other resources. The land is fertile, enabling residents of this area or these settlements to generate sufficient income for living. Property in the whole of Kosovo is highly fragmented. This has consistently caused the weakening of agricultural households, with an estimated agricultural land per capita of 0.15 ha.

Considering these facts and other development facts of this region, there is no developed industry, nor very high rate of active workforce.

According to the UNDP report on human development written in 2012, the poverty rate in Kosovo is controversial. There is 34 to 48 % of absolute poverty and 12 to 18% of extreme poverty. According to the report, the poverty rate has continued to grow, mainly in rural areas

⁴ KAS, Demographic data by municipality, p 13, 14-15, Prishtina 2013, Alb.

and targeting mainly children, female headed households and members of the Roma minority 5 .

Considering the limited amount of data available on a settlement level, we will refer to the data available on the municipal level, which is almost the same geographical unit as settlement. According to some KAS reports, about 33 % of rural households of the municipalities located in the study area, do not have access to the public sewage system, while 9 % do not have sanitation at all. Only 22 % have private sewage systems, of which 33 % are connected to a regular public sewage system.

In many cases, private sewage systems are discharged directly into surface watercourses. Moreover, households that do not have a sewage system, discharge their wastewater anywhere.

It should be highlighted that, since the time of the census, significant investments has been made to install municipal services throughout the area. Nevertheless, the situation has not completely improved as there are also new constructions since, as a result of the expansion of families in these settlements.

In addition, where the statistics have been combined with field observations results, conclusions remain the same: a significant number of households within the study area still discharge wastewater directly into the nearest water flow, even into the ILC.

Based on the same source (KAS), the first source of income of the rural population settlements of municipalities located in the study area is:

- For 20 % of the population: regular job or work in agriculture,
- For 9% : social assistance (70-75 € per month),
- For 53% : other funds (not from the diaspora)
- For the rest (18%): other sources.

The ratio of income per capita among funds varies up to 50 % according to their school or education level (primary school or faculty). Also, the income difference between different sexes on a same professional level is approximately the same. Thus, for example a woman funded in Kosovo, has an annual income of $\in 4.038$, while a man has $\notin 4.016$.

Considering their academic qualification, for e.g. a woman funded for primary education earns $\notin 2.547$, where as a man for the same level of education earns $\notin 2.892$. A woman funded for secondary education earns $\notin 3.513$, a man earns $\notin 3.730$.

Regarding higher education levels, men earn more than women, namely men earn $\notin 5.561$ annual salary and women earn $\notin 5.008$. According to these statistics, the average salary is \notin 350 per month, which does not meet all the needs of an economy held by other funded members (referring to the above statistics).

The way households near the canal have used and are using water is not only a current problem, but will be a problem with severe consequences in the future. Concerns are addressed with regards to two aspects. The first aspect is relative to the management and unauthorized use of water resources from the ILC by the residents of the study area. The second concerns the inevitable reduction of water use in the future, which will reflect on the socio-economic conditions of the current users, due to their long-term orientation.

3.3.2.1 Agricultural state

The study area of ILC is a rural area dominated by agricultural land, which represents a fundamental and vital resource for local residents. Although the land is fertile and constitutes

⁵ UNDP, human development report in Kosovo 2012, p 11, Prishtina 2012, Alb.

the economic basis of the inhabitants of the study area, considerable degree of property fragmentation over the years has diminished rural activity. Property fragmentation has been observed over almost the whole country, but where land is a living resource; its effect is much larger.

According to a statistics report relative to agriculture, about 32 % of households in Kosovo who own or use farmland have 0.01 to 0.25 ha of land; 14% have 0.26 to 0.50 ha property; 19% have 0.51 to 1 ha; 18% have 1.01-2.00ha, whereas 18 % of them have more than 2 ha. Such statistics show that about 82 % of households in Kosovo who own or use farmland have properties up to 2 ha in surface. This is not limited to the municipalities where the ILC runs, the same situation have been perceived throughout Kosovo.

Based on field observations, most cultivated crops along the ILC are cereals (mainly wheat and oat), maize, beans, potatoes and other plants or vegetables. Cultivation is quite intensive; mainly thanks to the irrigation potential of the ILC.

Motorization is scarcely used by the settlements throughout ILC, with 0.04 machines per capita. That is to say that approximately 27 farmers or 4 households own an agricultural machine.

Livestock farming is another rural activity, present since centuries in this area. Within the study area, it concerns mainly dairy cows, goats, sheep and pigs. Dairy cows are the most important livestock farmed due to their traditional role and importance to the household. According to statistics of KAS, the number of dairy cows within the study area is significant with about 1,810 cows, while the per capita ratio is small with solely about 0.08 dairy cow per capita or 1 dairy cow for 13 residents. This explains why a significant number of parcels are cultivated with fodder crops and pastures.

3.3.3 Property and accessibility

One of the primary concerns in the ILC specific area is also public property use, namely its uses for various purposes by residents of the area, i.e. the expansion of farming culture, the access to private agricultural property through the ILC property, creating access to households via ILC property, private appropriation of ILC parcels used as a road, various constructions such as gateways, fortified walls, etc.. All these specific phenomena of using public property over the years are problems that should be addressed in the later stages of the ILC management.

3.3.4 Social context concerning the Mihaliq project study area

The area where the ERM will be built as supporting infrastructure to the ILC lies near Mihaliq village of the Municipality of Vushtrri. Of about 30 ha, it does not include any human settlement. The closest human settlement called Bequk gathers around ten households and is located less than 1 km North of the site. A farm of cattle and live sheep is situated on the northern edge of the future reservoir.

The predominant agricultural land-uses in the limits of the project are grazing and secondary crops, plants used for purposes other than directly as food (fodder crops and pastures). The dominant agricultural crops within this area are cereals (*see figure below*).

Figure 16 : Emergency reservoir context



2age 40 of 154

4 ANALYSIS OF PROJECT IMPACTS

4.1 Environmental impacts

4.1.1 Existing environmental conditions and environmental pressures on the canal

There are several environmental aspects (including economic and other activities) currently impacting the condition and operations of the canal producing undesirable effects ranging from water turbidity to decreased canal water quality and quantity. This section deals with the current impacts / pressure on the canal. With some of these activities, the risk of re-occurrence will not completely fade away with the completion of the project, therefore this section also considers the magnitude of the impact on the canal and its operability, including delivered water quality.

In many instances, the construction materials and different kinds of *solid wastes* are discarded in uncultivated areas near the IL canal, leading to pollution of the canal bank soils by metal components and oils. Besides the aesthetic pollution, such dumping practices increases the cost of future restoration for productive purposes.

The forest area occupies parts of the land characterized by large number of slopes of the mountainous and hilly areas along the canal. Deforestation through harvesting forests, fires and tree diseases have an impact on the *forest cover and on the stability of the soils as well as watercourses*. Erosion in some parts of mountainous areas also increases with unsustainable practices of logging. Changed watercourses that can penetrate into the canal and increase turbidity and particles content in the water are one of the impacts produced by abovementioned activities. In the same time, landslide can damage the canal infrastructure and disable water supply.

Many houses are constructed on farm land within the irrigated perimeter. *Houses and buildings* in many villages and towns are constructed on pieces of land without consideration of existing urban plans, even when they exist. Land registration documents were taken away at the end of the 1999 war and are still not available. A process to re-establish the land registry is taking place, but, in the meantime, the ownership of some pieces of land is still unsecure. Until then the practice of construction regardless urban plans continues and there is a possibility of such case in the vicinity of the canal. From this issue, stems also the issue of unauthorized use of water, illegal dumping and open sewerage.

In many places, new constructions (houses) do not have an adequate *sewage system nor waste water treatment*. One of the main sources of pollution is the discharge of the sewage in the canal or proximity of canal. Household wastewaters introduce high levels of TDS, BOD, chemical oxygen demand (COD), NO3, Chloride, SO4 organic chemicals and bacteria into groundwater. As a result, near these pollution sources, the groundwater in the alluvial plain is contaminated. This is a public health issue, but also an issue for the canal since it is possible for these waste waters to enter the canal during flooding or other events. The use of water from wells and springs for human consumption, without proper treatment, can increase waterborne diseases.

When the soil and the sediment are permeable, the *groundwater* is directly affected by the pollution from households, mining and other activities including the disposal of material from which pollutants or dangerous substances can leak. The use of *pesticides and fertilizers* also

represents a local source of pollution. It is difficult to assess the extent of the use of these substances as there is very little systematic collection of data and information on this matter. Water runoffs on the bare ground surfaces during raining events are also a source of pollution, as they collect *substances left by vehicles* (fuel, oil, etc.) and other sources.

4.1.2 Potential environmental impacts of Mihaliq reservoir implementation

In order to assess the impact on flow regime, the situation before dam construction and after dam construction should be compared. The main impact is the *change in regime* from a highly oxygenated river stream to a lake with calm water and a risk of accumulation of nutrients such as phosphorus and nitrogen.

4.1.2.1 Potential environmental impact of the Mihaliq dam construction

Main potential impacts of the Mihaliq reservoir will be results of the dam construction activities and filling in the emergency reservoir. The effects of the reservoir flooding and potential impacts in the operation period is assessed in the next chapter.

Reservoir and dam construction is expected to produce predominantly negative impacts to the environment and so is the case in Mihaliq dam and emergency reservoir (ERM) construction. The scale of impact also varies with the setting. Current lack of technical details and for the dam construction prevents in depth analysis of impacts therefore only expected types of impacts will be presented in this document and reflected in ESMF. ESIA, prepared in the first year of the Project, will include detailed EMP which will then be included to bidding and contracting documentation.

Various construction activities from all stages of construction can *impact water resources* at the site, the effect however, go beyond the construction site and spreads to the wider community and area. Presence of heavy machinery, transportation vehicles, fuel, maintenance equipment and agents present potential sources of water pollution with oils and chemicals. Earthworks and removal of soil can cause water turbidity while expected removal of vegetation can impact characteristics abundance of watercourses including content of sediments, temperature, quality etc. Risk of pollution and potential magnitude will be able to assess when technical details will be known as well as the construction plans (e.g. presence of fuel tanks).

Geographical location of the REM puts the construction in the setting of hilly area prone to erosion and soil instability which are potentially greatest source of **soil disturbance**. Apart from this, presence of heavy machinery, transportation vehicles, fuel, maintenance equipment and chemicals typically used for the construction and relocation of the top soil can also become sources of soil pollution. Magnitude of the impact *is potentially high* since the accidents related to soil stability can largely impact human health and even take lives.

Negative impact to present *ecosystems and biodiversity* will occur due to noise emissions, human presence and ERM construction which will take up a considerable surface of land. The number of present species as well as their quantity is likely to be reduced. However, there are no natural habitats present in the ERM construction site. The area is mostly occupied by anthropogenic surfaces: agricultural fields and farms as well as degraded riparian forest now assembled from mostly shrub and individual trees. No wildlife was observed at the site, except presence of the white stork. This presence will be further examined in the ESIA. Impact is also possible to the downstream water recipient and its aquatic and other life

due to changes in water characteristics (e, g. velocity) which will also be a subject of the detailed full ESIA.

Impact of construction to air quality largely boils down to dust emissions and emissions form internal combustion engines (mainly NOx, CO2, CO, SOx, and particles). Dust emissions can be caused by works in dry weather, loading or unloading the construction materials, transport of people and goods. These impacts can be assessed as local and temporary. Contribution to climate change by GHG emissions is neglectable.

Noise emission will occur from large construction machinery and transportation vehicles. The impact will depend on the state of the machinery as well as time of the emission. The impact will be local, however, the magnitude is *possibly high*.

Health and Safety: accidents are very likely to occur on construction sites. Furthermore, there is possibility of landslides and erosion as well as dam safety issues and potential harm to settlements and inhabitants downstream.

Over the last fifteen years urban areas and surfaces used for road construction have extended considerably. As a result, a large amount of cropland has been converted into *non-permeable surfaces*. The runoff of rain water on these surfaces has increased and no proper environmental protection has been established to avoid soil contamination by polluted runoff waters. The result of this unregulated urbanization process and of the after-war construction boom, is as a rough estimate of about 5,000 ha of agricultural land annually lost on a national scale. However, since the canal rehabilitation is taking place in long-time existing infrastructure, the potential magnitude of this impact is *low*.

4.1.2.2 Potential environmental impact of the Mihaliq dam and reservoir in the operational period

Positive impacts of reservoir use phase reflect in increased water availability and quality that can diminish turbidity during the periods of heavy rain which is important for future operations of water treatment plant.

During the summer season; microphytes (green algae) could develop near the banks of the reservoir causing partially eutrophic (over-nourished) conditions.

Another hydrological impact is the *change in flow velocity*. This change is due to the operation of the dam gates. These sudden changes in flow velocity have an impact on macro-invertebrates development and behavior and can also cause inhabitation of invasive species.

Moreover, another possible impact is the reduction of the *flood occurring downstream* which might impact in turn the wetland zones.. The potential magnitude of this impact should be more investigated within full ESIA analysis.

In many instances, the construction materials and different kinds of *solid wastes* are dumped in uncultivated areas near the IL canal, leading to pollution of the canal bank soils by metallic components and oils. Besides the aesthetic pollution, such dumping increases the cost of future restoration for productive purposes.

The future dam which will store water will create a change in the oxygenation of water. Since the IL canal water releases itself to first Lepnec, the change in oxygen content can impact the receiving river. More details such as assessment of the contribution to the recipient, water quality of the recipient, dependent species, etc. should be known in order to assess this impact.

Obstacles to terrestrial animal corridors might be locally significant along the natural valley bottom which will be flooded.

Impacts on population of storks is possible. However, the presence of the species envisaged, but it was not determined does the animal only feeds there or resides in the area. The possibility of positive impact on the population of storks is not excluded, however this is one of the impacts that need to get full attention in the full ESIA. White stork is a protected animal in Kosovo, its IUCN category is LC (Least Concern).

Therefore, the main environmental issues identified during the field work of the present preliminary study are:

- Water quality: Mihaliq reservoir will produce ecology of the stagnant water and potentially present bacteriological and nutrient pollution source within the watershed and diminish water quality;
- Flow velocity: change in flow velocity downstream from the reservoir and its influence on water biological communities;
- Terrestrial ecology;

Disturbance of the animal corridors, Potential impact on population of white stork

4.2 Social impacts

4.2.1 Potential social impacts of canal rehabilitation sub-projects

This chapter estimates the expected social impacts of the ILC rehabilitation. This will help feeding into Environmental and Social Management Plan for the proposed rehabilitation sub-projects.

Potential impacts to the local people

The ILC, from its creation, has been and still is vital to the residents of the study area. Since the collapse of former Yugoslavia until nowadays, water from the ILC is used illegally and is constantly abused from the local residents. Such a constant use has resulted in the consideration of the Canal as a natural water flow.

Moreover, considering the usual dry and warm summers in Kosovo, the canal is consistently used for emergency crop irrigation during the season. Thus, the canal has become determinant in the orientation taken by the local farmers in crop cultivation, creating a phenomenon of agricultural orientation dependence on the use of a public resource in illegal ways. Any restriction on the management and modernization of the ILC, will alter the local residents' lifestyles. The main potential impacts are listed below.

Table 3 : Potential impacts from ILC restoration on the local people's lifestyle

Issue	Impact	Magnitude
20040		

Displacement and	Farmers and land owners mostly riparian to the	Low
dislocation	canal who have extended their land-use over II C	LOW
distocation	property shall stop their occupation and land-use in	
	the RoWs of the future canal rehabilitation works	
	This loss of land-use will concern a strip of land of	
	several meters wide along the conel: In any case this	
	strip of lond is only a low percentage of the total	
	surp of faile is only a low percentage of the total	
	land use of PAPs. Consequently, this loss of land-	
	use will represent a small loss of income for PAPS,	
	mainly riparian farmers	
Restrictions and	Can affect the household's organization, by	Medium
prohibition of the	reducing water access from the canal and therefore	
unauthorized use	canal water used for household purposes, such as	
of water	irrigation of garden near house, washing and	
	cleaning of household furniture, vehicles etc. If the	
	water use is essential than solution for authorized	
	use will be established. Concrete solutions will be	
	defined and proposed in the ESMP	
Prohibition of	It will seek family investments in septic tanks or in	Medium
household water	the creation of private sewers connected to the main	
and wastewater	discharge network if it exists. People with low	
discharge into	incomes and especially poor families will be more	
ILC	affected yet as they will not be able to afford such	
	adjustments. Concrete solution will be worked out	
	with Local Government Authorities.	
Application of	Businesses or workshops dealing with the sale of	Medium
some standards	fuel or farm chemicals and car mechanics should be	
for some	put under some conditional measures in operating	
workshops or	their business. The measures will regard basic	
various	standards for the collection and discharge of oil and	
businesses near	other harmful substances in nature (streams, rivers	
canal	or even directly into the Canal).	
Prohibition to	Daily consumers or specific wastes (i.e. from	Medium
dispose of	vehicles, agriculture etc) shall not be disposed of in	
hazardous waste	private or family (illegal) landfills due to	
anywhere near	contamination potential to the Canal during periods	
canal	of heavy rain and floods.	

Potential impacts to the property and accessibility

The ILC runs through several villages. In some cases, it physically divides a settlement. Taking into account that population has grown into a considerable number of settlements along the canal, the registry does not reflect this fragmentation of land. Solely, traditional physical separation via the use of landmarks is made.

All the new divisions, whether households with new home or just property, appear to consider that access to property or new household property is done using the ILC property. New restrictions placed on Canal property within its restoration framework, will cause access difficulties for certain properties, especially for properties distant from the road.

Issue	Impact	Magnitude
Access to new properties through ILC property	In some cases, it may happen that main accesses to agriculture plots and other private properties are provided into ILC property by the maintenance road of the canal. Any restriction on the continuation of the use of ILC property as a way of access to the parcels may interrupt agriculture parcels accessibility and may create social problems between neighboring landowners. In the case of projected rehabilitation works of the canal, only temporary disturbances of road and tracks existing along the canal may occur during the periods of works. All the maintenance roads and tracks existing along the canal will be replaced into ILC property after works periods and will still be accessible to riparian owners. Canal rehabilitations works program even includes an improvement and extension of the existing maintenance and access road along the canal. Riparian owners of the canal, mostly farmers and neighbors will take benefit of these improvements. Riparian owner will have same convenience of access to all their property. Discussed in the mitigation measures	Medium

Table 4 : ILC potential impacts of access to property and housing

Potential impacts to the agricultural cultivation of the land

The current use of ILC water will evolve in time. Once the ILC, responsible for managing the canal resource, will improve control and monitoring of canal water, it will enforce some restrictions on the right to water use for irrigation, with the delivery of irrigation permits to farmers who cultivate at least 5 ha only. This would create difficulties for many other smaller farms who do not reach this threshold. Such measures are considered to potentially have an effect on the orientation of agricultural production in the area. It will enhance the property transfer market with the aim to meet the property size criteria for irrigation permits. However, this is important impact and those water to small farmers will be still available through self organized cooperative. Help should be available for self organization of the small farmers. Whereas big farmers will be served directly.

Issue	Impact	Importance
Stopping the	Stopping illegal use of ILC water for irrigation	High
current way of	purposes will reduce crop yields and thus reduce the	
using water from	income per capita provided by agriculture in this	
IL canal	area	
Restricted right of	Considering the current canal water use, the aim of	High
use of ILC water	ILC is to contractually supply irrigation water to	
for irrigation	major landlords (who own 5 ha or more) only	

Table 5 : Potential impacts from ILC on agricultural production

Pre-assessment of land intakes of canal rehabilitation sub-projects

In order to provide an overview of the area concerned by the protection works right of way (Row), a land-use map of the ILC property has been carried out and the limits of Rows have been defined on it.

The pre-assessment of the land-use in the Rows of sub-projects is presented in the table below .

Land Use Classes			
	m ²	ha	Number
Crops Land	54707	5,47	
Grass Land	31828	3,18	
Orchards	546	0,55	
Forest	17086	1,71	
Bushes and woody areas	42064	4,21	
Trees			46
Garden (built Up Area)	6452	0,65	
Building	226	0,02	8
Road	3477	0,35	
Sum	161310	16,13	

Table 6 : Land-use	global	overview	in Row	of canal	sub-projects

This table shows that main land-uses in the Row of projected works are:

- Agriculture (crops and grass land, orchards) : more than 50%
- Forest, bushes and woody areas : around 40%

The maps of land-use in the Row of rehabilitation works, as roughly defined, are presented in appendix 5 of the ESIAF, as a separate document.

4.2.2 Mihaliq reservoir specifically potential social impacts

This chapter regards the scoping of the expected social impacts of the Mihalic reservoir implementation and operation in order to develop a social assessment of this project.

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$Table 7 \cdot FRM$	notential impacts	s of land taken and	l accessibility of inf	rastructures

Issue	Impact	Significance
Land taken and	Owners whose property is located in the	Medium
expropriation	construction zone of the ERM, will be subject to	

	expropriation procedures. Expropriation will include agricultural land and bushes or trees that are in this space.	
Loss of accessibility to local road infrastructure	The emergency water reservoir in Mihaliq will cut off a few households for which the access routes run through the project zone.	High

Potential impact on property and agricultural land

The pre-assessment of the land-use in the Row of ERM is presented in the table below.

Land Use Classes	m ²	ha	Number
Crops land	97 089	9,71	
Grass land	128 010	12,80	
Orchards	0	0,00	
Forest	63 312	6,33	
Bushes and woody areas	35 307	3,53	
Trees			4
Garden (built Up Area)	0	0,00	
Building	0	0,00	
Road	2 642	0,26	
Sum	326 359	32,64	

Table 8 : Land-use global overview in Row of ERM

No pronounced negative impact caused by the construction of theERM has been identified, except for the expropriation of property, namely agricultural lands and bushes and trees which should be addressed by Kosovo legislation in force. The expropriation process will be carried by IIC and will be guided by the Resettlement Policy Framework. Since we are only dealing with agricultural land and some forest trees, it is considered that this process will not be complicated in its implementation phase.

Potential impact on road accessibility

The construction of the ERM will also have an impact on a local road, which is currently the only accessible road for some (5-10) houses in Mihaliq. Before starting the construction of the ERM, residents of these houses should be afforded appropriate road access through alternative routes that lie North of the reservoir area. Thus in the EMP there has to be a measure: acceptable alternative access is put in place before the access is terminated. In the operational phase, if any roads have been cut by the reservoir, appropriate signposting and road blocks should be put in place to ensure road safety.

5 MITIGATION MEASURES

5.1 Introduction: framework of E&S measures implementation

E&S measures listed and briefly defined below will be managed via Environmental and Social Management Framework (ESMF), which predicts preparation of these types of documents: EMP checklists, EMPs and EIA for Mihaliq reservoir.

Thus, through implementation of framework, ILC will ensure that the potential impacts of all project phases are identified and formulated, and that activities are conducted in line with the social and environmental requirements. This section presents a set of mitigation and monitoring measures addressing environmental issues and concerns identified to be tackled in the due diligence documents prepared for the project.

To achieve this, ILC and borrower should establish an organizational effective body as well as reporting procedures. As a minimum requirement, it is important that:

- During the pre-rehabilitation meetings, rehabilitation measures included in the environmental due diligence document will be presented to the successful contractors.
- The public disclosure and consultation of the environmental due diligence documents (including EMP, EIA) should be done. The consultation should include representatives from the MESP, MAFRD, participating municipalities and NGOs as well as other organizations operating in the area and interested public. In addition, KEPA should be invited to attend the meeting.
- All necessary permits, licenses and approvals will be obtained and will be replicated in order to start the rehabilitation works. Moreover, all the works will be consistent with the requirements of all the permits, licenses and approvals.
- Environmental and social management measures should be included within the tender documents and contracting files for the project's implementation. Together with appropriate supervision and established penalties for non-compliance, it will ensure that the mitigation measures will be carried out by the contractor.
- EMPs should include more elaborated waste management strategy/ plan for construction practices. The strategy objectives will be to minimize waste by maximizing reuse and recycling opportunities.
- The contractor should prepare an emergency management plan applied to rehabilitation works, which would include objectives and instructions provided in the occurrence of accidents (technical) and possible natural hazards (flooding, landslide, etc.)
- The environmental specialist at ILC should prepare adequate environmental due diligence document, ESIA with EMP and RAP for Mihaliq reservoir construction and EMPs (EMP Checklists for smaller works) for Gazivoda dam rehabilitation and canal lining. The contractor should implement the mitigation measures and implement monitoring, while supervising engineer should monitor the implementation.

5.2 Environmental measures

The implementation of the IL project will have a wide range of environmental and social implications. Overall, the successful implementation of the project will have high socioeconomic benefits for the ILC Company and Kosovo's global economy.

5.2.1 <u>Environmental measures suggested for canal rehabilitation sub-project and</u> <u>Gazivoda</u>

Water Resources

Construction Impact Mitigation: On-Site

In order to avoid negative impact on the water quality of the canal, hazardous material management will be planned, aiming at preventing leakage of heavy metals or other toxic materials into the canal.

In that field, the Contractor will carry out all appropriate measures such as:

- Isolating canal, ground water and other natural water streams from the run-off coming from the work platforms and by keeping material further from the streams and on impermeable surfaces;
- Preventing any hazardous spillage of tanks, construction equipment and vehicles;
- Installing and maintaining proper sanitary facilities for workers;
- No waste, materials or other substances should be disposed to water flows;
- Hazardous materials should be kept in containers with secondary containment system.

During the terrestrial works, stockpiles of material will be isolated from the canal so that no spillage of materials, directly into the canal or via run-off, may occur.

Construction Impact Mitigation: Off-Site

Previous measures (see above) will also be carried out to avoid negative works effects on natural surface water quality and groundwater quality in the vicinity of the project.

Any run-off coming from the works area with potentially high charges of suspended matter will be filtered before spillage into the natural flows. The water run-off potentially contaminated with hazardous substances will be collected on site (in a temporary retention basin) and transported towards the adequate treatment plant or storage by a licensed company.

Operation Phase Impact Mitigation

General implementation of the drainage system along the canal will have local effects on watersheds and breakdown of natural flows between streams passed over by the canal.

Hydrological studies, carried out as a part of the ESIA will aim to check that the changes introduced by the canal rehabilitation and construction works would not affect human needs or uses and will not increase flood risks or riverbed erosion downstream. The conclusions of the studies will be reflected in the designs.

During the operation, IL Company, will conduct a periodic monitoring of the watercourses downstream and the canal drainage system outlets. An annual complete survey will be carried out after the rain season (at least).

After finalization of the rehabilitation works, ILC will ask the local population to signal any disturbance downstream that could be due to the canal drainage implementation. Claims and information will commonly be sent by post, but a phone number and email contact will be available in case of an emergency alert. For such cases and any other potentially accidental cases, ILC will prepare Emergency Response Action Plan defining emergency situations, procedures, actions and responsible persons.

Establishment of Protected Zoning

The IL Canal watershed areas will need to be protected against pollution resulting from anthropogenic activities and natural causes.

This objective is pursued by the establishment of an appropriate zoning in the canal area, with the use of a thee-level zoning; each zone being characterized by different levels of regulation. It is expected that the application of the zoning will actually result in the overall improvement of the quality of the environment and the water quality of the reservoir specifically.

The proposed zoning is planned as follows:

A- Total protection zone:

This zone will cover an area of at least 5 meters radius from both sides of canal edges (which in many parts of the open canal are defined by the right of way road slopes).

No activities are allowed within this area, except for those strictly necessary to the operation of the canal. Extreme care is exercised to avoid spillage of fluids or products of any kind. The area should be expropriated and better yet, fenced off (depending on the funding and public participation agreement). However, where possible, planting of low native bushes could be another alternative to be considered.

B- Buffer zone

This zone extends to a radius of 20 m around the canal waters with special attention to the upper slope side. Here, limitations are imposed to anthropogenic activities, in order to prevent pollution of the reservoir.

Within this area, the following activities are forbidden:

- a. Disposal of wastewater and waste mud
- b. Stocking of pesticides and fertilizers
- c. Use of pesticides and fertilizers, unless authorized by KEPA and ILC after a specific assessment case by case (taking into account the specific products and soils)
- d. Infiltration of runoff from roads and parking lots
- e. Cemeteries
- f. Opening of quarries with deep excavations in contact with the resrvoir
- g. Drilling of wells, except if authorized by ILC
- h. Stocking of toxic chemicals or products and of radioactive materials;
- i. Centers for the storage and demolition of decommissioned vehicles
- j. Dispersion wells;
- k. Wastewater treatment and dispersion facilities
- 1. Roads (other than ILCs right of way), or other infrastructures

Special attention must be given to those parts where buildings enter the buffer zone. Institutional enforcement measures must be considered from the ILC on any illegal intervention.

C- Catchment Protection Zone

Activities in this area will be regulated in order to prevent the infiltration of toxic materials into the canal and aquifer, with special regards to in situ activities, agricultural usage of pesticides and fertilizers, solid waste and wastewater disposal.

This should take place via two sets of actions:

1. Regulatory implementation towards the existing activities,

This will include a review of all activities taking place within the catchment area (activities mentioned above) to ensure the stringent application of existing regulations, and prescribe adaptation measures as required. This activity should be conducted by the KEPA and ILC.

2. Preventive actions for future developments, in terms of land use planning and licensing requirements.

This activity should occur through the cooperation of KEPA, the ILC and the Local Authorities responsible for land use planning.

Soil

Construction Impact Mitigation: On-Site; Slope stability

The canal construction infrastructure is partly located within hilly areas which potentially are affected by erosion and slope instability, due to the soil's contents with weak geo-technical performance.

Where such phenomena affect the infrastructure or may be worsened by activities during the protection works, measures are recommended to prevent from any landslide during and after protection works. Measures include, but are not limited to:

- Planning of construction of retaining walls, uphill and/or downhill the canal, in order to minimize landslide risk especially during earth works,
- Surface drainage works, to divert rainwater which would erode the soil, with channels arranged alongside the line of maximum slope on the body of the landslide. Covering the excavated slopes;
- Inserting reinforcement elements in the ground when needed;
- Greening of the slopes, as the root systems of plants are able to improve the soil's cohesion and resistance to shear.

The choice of which of these measures should be applied will be defined by the main design. Additionally, the Works Supervisor depending on the conditions when the canal works reach the sensitive area, can propose additional measures for stabilization.

Operation Phase Impact Mitigation

The only impact of the project on soils during the operational phase is the rather remote possibility that localized landslides may occur in the proximity of the canal.

Should such risk be detected, supplementary mitigating measures may be implemented (additional planting and/or uphill drainage) and should the phenomena continue, the areas at

risk will be fenced off, and an adequate compensation will be provided to the land owners on the basis of involuntary resettlement.

Ecosystems

Pre-Construction Impact Mitigation

Forest or other sensitive habitats are not present at the project site or in vicinity. There are individual trees and shrubs, but no unique ecosystem of forest.

Construction Impact Mitigation: On-Site

• Reduction in Biodiversity

To minimize damage to fauna in the area, especially white storks that were observed in the area, a combination of measures was suggested. Specifically the Contractor will be required to:

- Minimize loss of greenery from construction activities and restrict the area of movement to a minimum;
- Minimize destruction of nests;
- Prevent the capture and trade;
- Prevent hunting, trapping and egg collecting by construction workers;
- Prohibit the collection of firewood from working areas; and
- Minimize damage to watercourses from earthworks and improper waste disposal.

These will be achieved by:

- Using only defined and approved liquid and solid waste disposal sites;
- Educating construction crews on the impact of disturbance and damage to habitats;
- Providing construction crews with facilities that do not require them to light fires;
- Ensuring Terms of Employment include severe penalties for the unnecessary disturbance of environmentally significant sites and hunting; and
- Enforcing such penalties on all workers, including sub-contractors.

Other aspects of impact mitigation, such as the appropriate storage and disposal of solid and liquid wastes will also prevent many indirect impacts upon vegetation and wildlife.

The Engineer will also ensure the Contractor is held liable for any non-compliance with the Environmental Legislation on wildlife protection and endangered species and Kosovo's international commitments by any staff or parties.

Construction Impact Mitigation: Off-Site;

The project is not expected to have any off-site impact on ecosystems. Consequently, no mitigation measures are necessary in this respect.

Air

Construction Impact Mitigation: On-Site and Off site

Air quality is only slightly affected by the project. During the works the main impacts can be minimized or even removed through common mitigation actions generally related to civil works contracts (General Prescriptions to Contractors Environmental Good Practices).

Operation Phase Impact Mitigation.

Impacts on the local context during the canal life cycle will be related to emissions of chemicals and pollutants (i.e. PM10, CO, SO2, NO2, etc.) due mainly to the movements of service's means (trucks, etc.) and partially due to the operation of the pumping station. Here, air quality will be slightly affected by the functioning of the pumps and complementary gears.

The use of stand-by generators to ensure that water pumping station operation is not interrupted during power outages will produce some exhaust emissions but these are not expected to significantly affect ambient air quality. However there are no facilities or sensitive receptors nearby that can be disturbed (schools, hospitals, houses etc.) nor other buildings.

The application of the same common mitigating measures (General Prescriptions to Contractors Environmental Good Practices) for ordinary and extraordinary maintenance will also provide adequate mitigation of project impacts on Air during the Operation Phase

Noise

Construction Impact Mitigation: On-Site and Off-Site

Noise emission from construction activities will be reduced and prevented by using equipment fitted with appropriate noise muffling devices, and in accordance with manufacturers' recommendations. Vehicles that are excessively noisy due to poor engine adjustment, damage to noise amelioration equipment or other inefficient operating conditions, shall not be operated until corrective measures have been taken.

Construction-related noise impacts are temporary and can be mitigated through a good construction practice and effective site supervision (General Prescriptions to Contractors Environmental Good Practices)

Operation Phase Impact Mitigation.

Noise caused by the canal operation is related to point sources such as electricity cabs, pumps site, well fields. The emissions from these sources will be limited to a restricted area in the proximity of these sites. The canal mainly passes through rural areas with wide cultivations, grassy fields, small villages and scattered houses.

The impact will consist in nuisance caused by the routine operational hum, enhanced noise levels from stand-by generators, and noise generated during the excavation of repair sections. The following mitigation measures shall apply:

- Pumps and other mechanical equipment to be effectively maintained and where possible inside of the buildings / structures;
- Manufacturer's noise suppression and vibration equipment on generators to be kept in place and in good condition;
- In the case of exceeding noise limits set in the national legislation, steps such as installing noise-screens should be taken

Physical and Cultural heritage

Construction Impact Mitigation: On-Site;

The obligations of the Kosovo Law on Cultural Heritage will be followed in all these cases and it should be part of the contractual duties.

- Based on the "Law on Cultural Heritage", the Contractor prior to starting the works on site should receive a written approval letter from the National Archaeological Council (NAC) after the conduct of a superficial survey on the site. In addition the Contractor should sign a pre contract agreement with the NAC. All construction work will be confined to the smallest area possible. Construction compounds will be placed in areas free from known archaeological sites or archaeologically sensitive areas.
- If archaeological or religious artifacts are discovered (chance finds) then the Kosovo Archaeological Service (KAS) of the Ministry of Culture (MoC) should be immediately informed (within 24 hours). A team of field specialists of KAS should then visit the site in order to identify the relicts. The site will be protected by substantial fencing to prevent inadvertent or negligent damage to the archaeology. During the works for the construction phase, constant collaboration will take place with specialized archaeologists of KAS in order to minimize potential damage to the sites and monuments.

5.2.2 Environmental measures suggested for Mihaliq reservoir implementation

Water Resources

Construction Impact Mitigation: On-Site

During construction works, the potential impact on surface water and groundwater quality arises from the activities and maintenance of the contractor's yard, works on the canal and potential penetration of excavated soil into the water streams, transport, maintenance of vehicles and handling and storage of lubricants and fuel. The risk of pollution will be increased during terrestrial works and during the use of hazardous materials in the scope of the dam construction. All adequate prevention measures against water pollution risks that will arise from the project ESIA will figure in the tender documents of the construction contractor. Among these measures will figure:

- Prevent from any leakage, deposit and seepage of hazardous materials,
- Diversion of natural streams from worksite as well as isolating canal, groundwater, and other natural waters from fun-off coming from the work platforms
- Prevent works area and maintenance yard from a flood risk.

Construction Impact Mitigation: Off-Site

During the construction phase, the measures implemented off-site aim to monitor possible effects on downstream water quality. Hence, a periodic survey of the Sitnica tributary water quality downstream from the site will be conducted during the works phase. A survey of the

underground water quality will also be implemented. Periodic samples of groundwater will be collected in boreholes implemented downhill of the site.

Any run-off coming from the works area with potentially high charges of suspended matter will be filtered before spillage into the natural flows. The water run-off potentially contaminated with hazardous substances will be collected on site (in a temporary retention basin) and transported towards the adequate treatment plant or storage by a licensed company.

Operation Phase Impact Mitigation

The ERM project will feed exclusively from the IL canal. Hence, its operation will not affect the local water resources.

The main environmental issue will be the protection of the water quality of the reservoir against pollution sources coming from the uphill watershed of the reservoir.

The design of the project will establish the appropriate arrangements that will ensure the preservation of the quality of the resource. The solution will probably be the isolation of the reservoir from the upstream flows. The possibility of the diversion of the upstream flows from the reservoir shall be studied during the project design. It is assumed that a complete diversion will not be fully possible during the flood periods.

In any case the operation of the reservoir will imply the permanent survey of the quality of the resource. The monitoring of the water quality of the reservoir will be defined within the frame of the future reservoir management plan.

Establishment of Protected Zoning

The Mihaliq reservoir watershed area will need to be protected against pollution resulting from anthropogenic activities and natural causes.

This objective is pursued by the establishment of an appropriate zoning in the canal area, with the use of a thee-level zoning; each zone being characterized by different levels of regulation. It is expected that the application of the zoning will actually result in the overall improvement of the quality of the environment and the water quality of the reservoir specifically.

The proposed zoning is planned as follows:

A- Total protection zone:

This zone will cover an area of at least 5 meters radius from both sides of canal edges (which in many parts of the open canal are defined by the right of way road slopes).

No activities are allowed within this area, except for those strictly necessary to the operation of the canal. Extreme care is exercised to avoid spillage of fluids or products of any kind. The area should be expropriated and better yet, fenced off (depending on the funding and public participation agreement). However, where possible, planting of low native bushes could be another alternative to be considered.

B- Buffer zone

This zone extends to a radius of 20 m around the canal waters with special attention to the upper slope side. Here, limitations are imposed to anthropogenic activities, in order to prevent pollution of the reservoir.

Within this area, the following activities are forbidden:

- m. Disposal of wastewater and waste mud
- n. Stocking of pesticides and fertilizers
- o. Use of pesticides and fertilizers, unless authorized by KEPA and ILC after a specific assessment case by case (taking into account the specific products and soils)
- p. Infiltration of runoff from roads and parking lots
- q. Cemeteries
- r. Opening of quarries with deep excavations in contact with the resrvoir
- s. Drilling of wells, except if authorized by ILC
- t. Stocking of toxic chemicals or products and of radioactive materials;
- u. Centers for the storage and demolition of decommissioned vehicles
- v. Dispersion wells;
- w. Wastewater treatment and dispersion facilities
- x. Roads (other than ILCs right of way), or other infrastructures

Special attention must be given to those parts where buildings enter the buffer zone. Institutional enforcement measures must be considered from the ILC on any illegal intervention.

C- Catchment Protection Zone

This area will extend to at least a radius around the watershed boundaries; however, its extension should be designated once the canal area has been developed on the basis of calculated data.

Activities in this area will be regulated in order to prevent the infiltration of toxic materials into the canal and aquifer, with special regards to in situ activities, agricultural usage of pesticides and fertilizers, solid waste and wastewater disposal.

This should take place via two sets of actions:

3. Regulatory implementation towards the existing activities,

This will include a review of all activities taking place within the catchment area (activities mentioned above) to ensure the stringent application of existing regulations, and prescribe adaptation measures as required. This activity should be conducted by the KEPA and ILC.

4. Preventive actions for future developments, in terms of land use planning and licensing requirements.

This activity should occur through the cooperation of KEPA, the ILC and the Local Authorities responsible for land use planning.

Soil

Construction Impact Mitigation: On-Site; Slope stability

The reservoir construction infrastructure is going to be located within a hilly area which is affected by erosion and slope instability, due to the soil's contents with weak geo-technical performance.

Where such phenomena affect the infrastructure or may be worsened by activities during the protection works, measures are recommended to prevent from any landslide during and after protection works. Measures include, but are not limited to:

- Planning of construction of retaining walls, uphill and/or downhill the canal, in order to minimize landslide risk especially during earth works,
- Surface drainage works, to divert rainwater which would erode the soil, with channels arranged alongside the line of maximum slope on the body of the landslide; Covering the excavated slopes;
- Inserting reinforcement elements in the ground when needed;
- Greening of the slopes, as the root systems of plants are able to improve the soil's cohesion and resistance to shear.

The choice of which of these measures should be applied will be defined by the main design. Additionally, the Works Supervisor depending on the conditions when the canal works reach the sensitive area, can propose additional measures for stabilization.

Operation Phase Impact Mitigation

The only impact of the project on soils during the operational phase is the rather remote possibility that localized landslides may occur in the proximity of the canal.

Should such risk be detected, supplementary mitigating measures may be implemented (additional planting and/or uphill drainage) and should the phenomena continue, the areas at risk will be fenced off, and an adequate compensation will be provided to the land owners on the basis of involuntary resettlement.

Ecosystems

Pre-Construction Impact Mitigation

Forest or other sensitive habitats are not present at the project site or in vicinity. There are some individual trees and shrubs in the project area, but no unique ecosystem of forest.

Construction Impact Mitigation: On-Site

• Reduction in Biodiversity

To minimize damage to fauna in the area, especially white storks that were observed in the area, a combination of measures was suggested. Specifically the Contractor will be required to:

- Minimize loss of greenery from construction activities and restrict the area of movement to a minimum;
- Minimize destruction of nests;
- Prevent the capture and trade;
- Prevent hunting, trapping and egg collecting by construction workers;
- Prohibit the collection of firewood from working areas; and
- Minimize damage to watercourses from earthworks and improper waste disposal.

These will be achieved by:

- Using only defined and approved liquid and solid waste disposal sites;
- Educating construction crews on the impact of disturbance and damage to habitats;
- Providing construction crews with facilities that do not require them to light fires;
- Ensuring Terms of Employment include severe penalties for the unnecessary disturbance of environmentally significant sites and hunting; and
- Enforcing such penalties on all workers, including sub-contractors.

Other aspects of impact mitigation, such as the appropriate storage and disposal of solid and liquid wastes will also prevent many indirect impacts upon vegetation and wildlife.

The Engineer will also ensure the Contractor is held liable for any non-compliance with the Environmental Legislation on wildlife protection and endangered species and Kosovo's international commitments by any staff or parties.

Construction Impact Mitigation: Off-Site;

The project is not expected to have any off-site impact on present ecosystems. Consequently, no mitigation measures are necessary in this respect. However, it must be taken into account that solid waste might implicate white stork disturbance. In such a case, protective measures must be taken.

Permanent Impact Mitigation;

The project is not expected to have any permanent impact on present ecosystems. Consequently, no mitigation measures are necessary in this respect.

Operation Phase Impact Mitigation.

During the operation phase, the only foreseeable impact on present ecosystems could occur if extraordinary maintenance operations would be required for the tract of the reservoir which is crossing the lower part of plain. Such maintenance might require excavating the pipeline, with the consequent cutting and/or eradication of the re-planted vegetation which would have grown over the right-of way since construction took place.

Air

Construction Impact Mitigation: On-Site and Off site

Air quality is only slightly affected by the project. During the construction phase the main impacts can be minimized or even removed through good construction practice and effective site supervision (General Prescriptions to Contractors Environmental Good Practices).

Operation Phase Impact Mitigation.

Impacts on the local context during the reservoir life cycle will be related to emissions of chemicals and pollutants (i.e. PM10, CO, SO2, NO2, etc.) due mainly to the movements of service's means (trucks, etc.) and partially due to the operation of the pumping station. Here, air quality will be slightly affected by the functioning of the pumps and complementary gears.

The use of stand-by generators to ensure that water pumping station operation is not interrupted during power outages will produce some exhaust emissions but these are not expected to significantly affect ambient air quality. However there are no facilities or sensitive receptors nearby that can be disturbed (schools, hospitals, residential houses etc.) nor other buildings.

The application of the same measures (General Prescriptions to Contractors Environmental Good Practices) for ordinary and extraordinary maintenance will also provide adequate mitigation of project impacts on Air during the Operation Phase.

Noise

Construction Impact Mitigation: On-Site and Off-Site

Noise emission from construction activities will be reduced and prevented by using equipment fitted with appropriate noise muffling devices, and in accordance with manufacturers' recommendations. Vehicles that are excessively noisy due to poor engine adjustment, damage to noise amelioration equipment or other inefficient operating conditions, shall not be operated until corrective measures have been taken.

Construction-related noise impacts are temporary and can be mitigated through a good construction practice and effective site supervision (General Prescriptions to Contractors Environmental Good Practices)

Operation Phase Impact Mitigation.

Noise caused by the canal operation is related to point sources such as electricity cabs, pumps site, well fields. The emissions from these sources will be limited to a restricted area in the proximity of these sites. The canal mainly passes through rural areas with wide cultivations, grassy fields, small villages and scattered houses.

The impact will consist in nuisance caused by the routine operational hum, enhanced noise levels from stand-by generators, and noise generated during the excavation of repair sections. The following mitigation measures shall apply:

- Pumps and other mechanical equipment to be effectively maintained;
- Manufacturer's noise suppression and vibration equipment on generators to be kept in good condition.
- In the case of exceeding noise limits set in the national legislation, steps such as installing noise-screens should be taken.

Physical and Cultural Resources

Construction Impact Mitigation: On-Site

Based on the "Law on Cultural Heritage", the Contractor should receive a written approval letter from the National Archaeological Council (NAC) after the conduct of a basic inspection of the site and prior starting the works on site. In addition, the Contractor should sign a pre contract agreement with the NAC. All construction work will be confined to the smallest area possible.

Construction compounds will be placed in areas free from known archaeological sites or archaeologically sensitive areas.

If archaeological or religious artifacts are discovered (chance finds) then the Kosovo Archaeological Service (KAS) of the Ministry of Culture (MoC) should be immediately informed (within 24 hours). A team of field specialists of KAS should then visit the site in order to identify the relicts. The site will be protected by substantial fencing to prevent inadvertent or negligent damage to the archaeology. During the construction phase, a continuous collaboration will take place with specialized archaeologists of KAS in order to minimize potential damage to the sites and monuments,

The obligations of the Kosovo Law on Cultural Heritage will be followed in all these cases and it should be part of the contractual duties.

5.2.3 <u>Summary of site investigation works and monitoring to be carried out prior to</u> <u>the full ERM EIA</u>

From the pre-assessment of environmental issues related to the ERM project, different fields arise within which data needs to be collected prior to a complete assessment of the project. These investigations and their baseline guidelines are listed below. The proposed ToR for the Mihaliq dam and reservoir is presented in the Annex 4 and requires also legal framework analysis, baseline for the socioeconomic analysis, impacts identification, mitigation measures, monitoring plans, etc. The ToR should be advised with the MoES and the WB before disclosed and consulted, and updated based on all available documentation to be prepared during the project implementation.

Field	Items	Objective	Principle	Period
Hydrological	Water flows of the	Design of the project	Continuous measurement of the flows	One year
conditions	natural stream on site		as well as daily rainfall collection	
	Water quality of the	Initial state	Physical, chemical and bacteriological	One flood period
	natural stream on site	Baseline for monitoring during	analysis on several samples collected on	Wet and dry
		construction and operation	site, upstream and downstream	seasons
		phases		
Hydrogeological	Groundwater level and	Initial state	On at least three boreholes implemented	One year
conditions	quality	Baseline for monitoring during	on site, upstream and downstream :	
		construction and operation	• Weekly level measurement	
		phases		
			• Monthly chemical analysis	
Natural ecosystems	Aquatic fauna	Inventory for initial states	Invertebrates and fish species	1 in dry season
	Aquatic Taulia	Impact assessment	inventories on site All species	1 in wet season
			migrating through the proposed ERM.	1 m wet seuson
	Semi-Aquatic fauna	Inventory for initial states	Amphibians inventory on site. All	One year –proper
		Impact assessment	species migrating through the proposed	seasons
			ERM.	
	Terrestrial fauna	Inventory for initial states	Mammals (including bats), insects and	One year –proper
		Impact assessment	reptiles inventories on site. All species	seasons
			migrating through the proposed ERM.	
	Birds	Inventory for initial states	Birds located on site and habitat use	One year –proper
		Impact assessment	(nesting, wintering or migrating)	seasons

Table 9 : Environmental field investigations to be conducted before ERM EIA

5.3 Social measures

5.3.1 Social measures related to canal rehabilitation

Displacement and dislocation

The following measures are proposed in order to mitigate the impacts:

- Make an accurate inventory of the property to be expropriated.
- Identify the social characteristics of the population which is subject to expropriation.
- Families with large number of members or persons who are unable to work belonging to the category of people on social assistance or considered as poor people should be provided extra care and complete information on all conditions of expropriation or dislocation.
- Expropriation procedures must take account key factors such as: sufficient description of the property to be expropriated (the entire property or part of it), how it affects household functionalism, accessibility, timeframe.
- Expropriation must take into account not only the location conditions but also biophysical characteristics of the soil or soil fertility.
- Expropriation should be specific for each potential case of expropriation or dislocation.
- For all measures of dislocation, expropriation or even eventual destruction, residents and specifically owners or users should be informed in advance (several months) before the beginning of the effective procedure, in order to have enough time for preparing private and socio-economic adaptation.

Addressing the Change of the current way of using water

The measures that will be applied to mitigate the impact of the termination of the way of water use would be:

- Notify all illegal users that so far way of water using from ILC will end in a time limit.
- Farmers who do not meet size criteria for application fro irrigation water would receive support to organize in a small group that manage minimum collective size for irrigation. The service will be available until new form of organization is not established. The new rule will result to farmers' cooperation.
- In order to carry out these measures it is needed institutional arrangements and strengthening which must include institutions such are: ILC, Municipalities, MESP-Department of Water, MAFRD-Department of Rural Development and Consulting Services, and MF.

Addressing the discharge of waste water, household and other waste into ILC or surrounding area

In order to mitigate or prevent this impact should be considered the remedial and preventive measures as follows:

- Make a registry or inventory of the number and location of wastewater discharges in ILC as well as classify discharges according to the number of households and their characteristics.
- Companies responsible for removal and management of wastewater shall ensure that the discharge is stopped, but previously they need to design and build private sewage networks connecting into public sewage.
- RCIL together with the relevant municipality should invest in the connection of the private sewage to the public one for the categories of poor families and families on social assistance.
- Respective municipalities in their territory along with RCIL should ensure that solid or liquid waste produced either from daily consumption or agricultural activity or other, should not be disposed of in spontaneous landfills near the ILC and especially in the upper parts of the Canal.
- In order to carry out these measures it is needed institutional arrangements and strengthening which must include institutions such are: ILC, Municipalities, MESP-Department of Environmental Protection, MLSW, and MF.

Access to property

In this case, adequate measures should be taken to prevent negative impacts related directly or indirectly on access to property:

- There should be a complete inventory of the property and parcels affected by the management and restriction of ILC land use, and in particular reflections on access to agricultural land and houses.
- Housing units developed so far, where the access to road and other property is planned through the ILC property should be left back under use for as long as ILC operation is not hindered. Otherwise, the property will be expropriated but under the OP 4.12 rules as under the Kosovar rules given the illegality ILC is not obliged to compensate for the materials used to build structures.
- Parcel or re-parceling developed so far and when ILC property is considered as the only possibility of access to the property should be left in use as long as ILC operation is not hindered. Otherwise land acquisition under the OP 4.12 rules as set in the RPF

5.3.2 Social specifically considered for Mihaliq reservoir implementation

Displacement and dislocation

The following measures can be implemented in order to mitigate the negative impacts from the construction of the ERM:

- Make an accurate inventory of the property which should be expropriated.
- Dislocation procedures must include all details that may affect the expropriation, such as detailed information of the property to be expropriated (the entire property or a part of that), how it affects household functionalism, accessibility as well as detailed and accurate time limits.

• Expropriation shall take into account not only the location conditions but also the biophysical characteristics of the land or soil fertility.

Expropriation or displacements should be specific for each potential case of expropriation or dislocation.

Access to property

Each time needed, adequate measures must be implemented to prevent negative impacts related to the blockage of local infrastructure by the construction of ERM, mainly access road for residents of the area. The following measures can be applied in order to mitigate or eliminate negative impacts:

- Before dam works, implementation of a new access road for residents which will be blocked by the construction of ERM.
- An alternative road should be operational before the blockage of the existing road.

ESIAF & ESMF Report

6 ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

Environmental and Social Management Framework (ESMF) provides an essential link between impacts predicted and mitigation measures specified within the Environmental and Social Impact Assessment Framework (ESIA Framework) report, and implementation and operational activities.

ESMF serves as a tool to screen the investments from the environmental protection and nature preservation perspective and guides for addressing identified environmental considerations. For well-known investments ESMF presents template EMP checklists consisting of *mitigation, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels, while for other defines due diligence documentation to be prepared during project implementation.*

In the first year of project implementation only SCADA system will be installed. No physical works will start before the second year. The time will be used for the determination of the exact investments and their design. In parallel environmental due diligence documents will be prepared.

In the present case of IL canal restoration program, the present Environmental and Social Management Framework (ESMF) deals with environmental and social (E&S) mitigation measures which principles are defined in the ESIAF.

Findings of the ESIAF with ESMF strongly suggest that the environmental operation document should be prepared for the overall maintenance of the canal and its structures upon completion of the investments.

Environmental Screening

Environmental Screening is the first step in the environmental due diligence process of reviewing the investments and is based on its type, content and location. Its purpose is to determine the environmental risk associated with the proposed investment and identify the type of environmental due diligence document that will be required which will address these risks. The screening should confirm that project implementation is respecting both Bank's environmental and social policies and national legislative.

For the purpose of capacity building of the project in the field of environmental protection, a civil or environmental engineer (CE) will be engaged full time during the project implementation as a member to PIU. CE will conduct screening of all investment. The screening will be done based on the available technical documentation, type of investment and site visit. In case of ambiguousness (not expected at this time – as a result of initial assessment) the CE will consult the WB environmental specialist for the advice.

Environmental screening results are reflected in the category of the project and type of environmental assessment (EA) that needs to be carried out in order to adequately recognize

potential environmental impacts early in the preparation so the concerns could be reflected in the sub-project design and project implementation. An EA is a process conducted by the ILC or other investor to predict, evaluate, and mitigate the environmental impacts and risks that may arise from the proposed sub-project. The type and scope of EA will depend of the results of the screening process. Any type of EA report should identify potential impacts and define how to improve environmental performance of the proposed project. The report should contain identified impacts, its features (probability, reach, time of impact, significance) and measures for avoidance, reduction and monitoring of these measures.

Based on the site visits, ESIAF and feasibility studies prepared for the proposed investments, the investments are grouped according to environmental risk and for each group and environmental due diligence is described in table 10.

The initial mitigation measures identified in chapter e of ESIAF should be taken into account when preparing the environmental due diligence document.

Type of investment	Environmental Documentation to be prepared prior to construction
Rehabilitation of existing infrastructure along the canal and installation of water protection measures	EMP checklist (annex 10) Any official approval/permits
Rehabilitation on Gazivoda dam	EMP (Annex 11); Any official approval/permits
New construction of Bridges and Access roads along the canal	EMP (annex 11) Any official approval/permits
Construction of small reservoir (40000 m3)	EMP (annex 11) Any official approval/permits
Construction of Mihaliq reservoir	 Option 1) The statement of "EIA is not required" from Ministry of Environment EIA report prepared according to the WB policies with EMP (Annex XX) Other dam safety documents prepared according to WB OP 3.37 Any official approval/permits Option 2) The statement of "EIA is required" from Ministry of Environment Full EIA report with EMP according to national procedures as well as WB procedures Schedule for Implementation of EIA recommendations Other dam safety documents prepared according to WB OP 3.37 Any official approval/permits

Table 10 Environmental due diligence

The borrower will advise the categorization with the WB environmental specialist, and proceed with the document preparation. Upon completion of the documents, those will be reviewed by WB environmental specialist, before the disclosure and consultation process starts.

Disclosure and consultation of the documents

Public disclosure and consultation of ESIAF and ESMF

The ESIAF with ESMF will disclosed on ILC web sites where it should remain available to public for at least 14 days. Documents will also be available in hard copy on premises of ILC, as well in municipalities Pristina, Vushtrri and Zubin Potok in English, Albanian and Serbian language. In parallel with publishing ESIAF with ESMF, a call for comments will be issued with electronic and postal addresses for sending comments. In the same time, public consultations will be set in and date and venue announced. In addition to publishing call for public consultations a proactive approach should be taken including sending invitations to prominent stakeholders and municipalities. Public consultations will take place in Pristina, Vushtrri, and Zubin potok municipalities. All relevant comments and Public Consultation Minutes should be included to the final version of ESMF. The minutes of public consultation should reflect the process and the outcome of public consultation and disclosure of ESIAF with ESMF. It should also contain a sample of invitations, list of attendants, and summary of comments received.

Prior to appraisal following Dam Safety documents will be disclosed: a) For Gazivoda dam: Full-fledged O&M and EPP plans; b) For the new dam: detailed Construction Supervision and Quality Assurance Plan and Instrumentation plan; O&M plan and EPP

Disclosure of environmental due diligence documents during project implementation

All environmental sue diligence documents prepared during project implementation (EIAs, EMPs, EMP Checklists) are to be disclosed should be prepared in English, Macedonian and Albanian language.

EIAs, EMPs should be disclosed on ILC web sites as well as web sites of impacted municipalities where it should remain available to public for at least 14 days. All should also be available in hard copy on the premises of ILC and referent municipalities. When published, call for comments on documents should be issued with electronic and postal addresses on disposal for sending comments. In parallel, public consultation meeting needs to be organized as part of disclosure process for EIAs, and EMPs. Public consultation should take place in impacted municipality. In addition to publishing call for public consultations on ILC web sites a proactive approach should be taken including sending invitations to prominent stakeholders, NGOs active in the impacted area and potentially affected municipalities. Minutes of public consultation, containing a sample of invitations, list of attendants, and summary of comments received, should be included to the final version of the disclosed document. Disclosure and consultation of the EIA, should be done twice. At the stage of ToR and at the stage of draft EIA.

Disclosure procedure for EMP Checklists is simpler. EMP Checklist should be disclosed on ILC web sites as well as web sites of impacted municipalities where it should remain available to public for at least 14 days for written commenting. It should also be available in

hard copy on the premises of ILC. When published, call for comments on documents should be issued with electronic and postal addresses on disposal for sending comments. Minutes of public consultation (collected comments and questions), containing summary of comments received, should be included to the final version of the disclosed document.

Monitoring environmental compliance

During the project implementation, the borrower is responsible for implementation of mitigation measures as well as monitoring. The borrower's project implementation team will have a permanent environmental specialist, who will be responsible for screening, preparation of documents, disclosure and consultation as well as supervision of project implementation and monitoring.

The borrower will prepare the due diligence documents preferably before the tendering process starts. By including, environmental due diligence documents in the bidding process, the responsibility for implementation of mitigation measures can be transferred directly to works contractor, while monitoring and supervision on implementation of mitigation measures to supervising engineer.

PIU environmental specialist shall conduct regular site visits, and define dynamics of reporting from supervising engineer. The specialist shall properly keep all sub-project documentation on file and make it available for the World Bank upon request. He will also report regularly on preparation of due diligence documents and implementation in the regular progress project report.

The World Bank will follow environmental performance of the Project by regular review of reports as well by supervision of the overall screening process, document quality review and implementation of environmental recommendations, including random visits to the project sites.

ESIAF & ESMF Report

ANNEXES
ESIAF & ESMF Report

ANNEX 1. : BASELINE INFORMATION ON IBER CANAL

The Iber canal together with Gazivoda dam, the Predvorica compensation reservoir and a pressurized irrigation system serving 20,000 ha was built in the 1970-1980s under a World Bank Loan (YU -777). This 49 km long canal, better described as a conveyance system, is indeed a succession of short sections of trapezoidal canals, closed canals, tunnels (14), aqueducts (20) and siphons (11):

- Open trapezoidal canals: 18.9 km
- Open rectangular canals: 2.1 km
- Closed channels: 10.3 km
- Siphons; 3.5 km
- Aqueducts; 2.3 km
- Tunnels: 9.5 km

Only about half of the length of the Iber Conveyance system is open air. The remaining part would need complete closure of water delivery for visual inspection. However it is not expected that serious damages requiring repair works would be found in the closed sections because of the massive concreting of rectangular canals and tunnels. However the siphons would have to be inspected carefully.

The design capacity of the system at the head is 22 m3/s 6and decreases to 6.47 m^3 /s at the tail end.

The trapezoidal canal sections were originally lined with an 8 cm thick unreinforced concrete, according to the standards of the US bureau of Reclamation. After 40 years of service, this type of lining has reached its life of service. During the last 5- 6 years, the Iber Company has carried out repair works on the most serious damaged sections by replacing the existing concrete and later by placing a 12 cm reinforced concrete over the existing one.

The works have been executed by local contractors while the canal was still under operation, since it is not possible to close the system for even ONE day. The canal cross-section was divided into two sections by installing a stop-log wall in the middle of the canal and two cofferdams.

During the field visit, no visible leakages on active slides were observed along the canals and structures. It seems that the most severely damaged sections have been repaired. Only small cracks were observed in the old sections of the canal without any displacements which would indicate serious settlements of the embankments or the effect of freezing/ thawing during winter causing displacements of the concrete panels through back pressure of accumulating ice. However the concrete structures appear to have superficially deteriorated, possibly from

⁶ Earlier reports mention that the capacity of the Iber canal is about 10-13 m3/s, which is incorrect.

freeze actions causing spalling and scaling of the surface. This could occur when the concrete is saturated.

Iber Canal Efficiency and water losses

All reports on water resources in Kosovo state that the overall efficiency of the Iber conveyance system is about 50 percent. Most recent ones assume that the recent rehabilitation works have raised the efficiency from 50 to 55 percent (or higher).

The origin of this 50 percent estimate was found in the COWI study; "Evaluation of the Hydro-system and Water Availability Assessment" under the preparation for the proposed Kosovo C power Plant. Localized leakages at about 25 points totaling 595 The power capacity has now been reduced to 600 MW and the water demand to 500 l/s.l/s were measured or estimated during field vi7sits in October 2007, of which a major leakage of 250 l/s at km 17.5. An additional leakage of 149 l/s was added for unidentified losses and a 488 l/s for seepage through joints. The total water losses of 1230 l/s account for about 50 % of the assumed average flow of 2.45 m3/s. Since all leakages identified in 2007 have been stopped based on the field mission observations, the losses are now limited to seepage losses through cracks and joints. It is likely that the overall efficiency now reached about 65-70 percent.

The method of estimation of losses used in 2007 was acceptable for a rough approximation. The losses from the Iber Canal should now be measured through the inflow/outflow method using precise flow meters of acoustic type for example. This method is highly suitable to the conditions of the Iber Canal since there are only 5 or 6 offtakes from this canal. The distances between measuring sections could be long to eliminate errors of measurements. There are no (significant) operational losses through escape spill structures.

Water Demand

The water demand estimates vary considerably between the various studies of the water resources and water demand in Central Kosovo.

The Iber system is a multi-purpose system providing irrigation, municipal and industrial water, and cooling water for coal power plants near Prishtina. The water demands for these different uses were estimated in the 2007 COWI study as follows:

- a) Power plants: In 2007, the water demand for a 2000 MW Power Plant C was estimated at 1.52 m3/s. ⁸
- b) Kosovo power plant B consumption was estimated at 700 l/s year round and the consumption of the power plant A to 200 l/s during summer months only.
- c) The Study assumes that 10,000 ha would be irrigated in 2016 with an average irrigation demand of 2000 m3/ season/ha (??? This figure seems underestimated unless irrigation is only supplemental to rain). Under these conditions the annual

⁷ The ponding method, consisting of observing the decline of water level in a pond created by two cofferdams at few hundred meters interval, is not feasible without interruption of canal service.

⁸ The power capacity has now been reduced to 600 MW and the water demand to 500 l/s.

demand for irrigation would be 20 million m3 and the demand during peak month of 2.24 m3/s, or 0.2 l/s/ha. These values appear underestimated.

- d) The annual domestic water use was estimated at 14.6 million m3 with a peak of 480 l/s in summer times
- e) The annual estimated industrial consumption was estimated at 31.5 million m3.

Assuming that the above losses would be reduced to 25 percent, the near-future inflow and the annual volumes at the head of the Iber canal were estimated at 8.56 m3/s and 189 million m3 of which 47.4 million m3 are losses.

The study determined that simulation over an average of the 25 year period of records of inflows to Gazivoda would be acceptable. The conclusion was that there was enough water to satisfy all consumer needs.

A 2009 study "Assessment of water demand and supply and of the feasibility of the South Iber-Lepenc scheme" adopted different assumptions. The water consumption for irrigation was estimated at 3200 m3/ha/annum (i.e 16.2 Mm3 for 5,000 ha). The study examined four scenarios and correctly simulated the Gazivoda reservoir operation over a period of 25 year 1948-1972, assuming that the losses could be reduced from 50 percent under scenarios A and B to 25 percent under scenarios C and D. This study still assumes that the installed power at Kosovo C would be 2000 MW with an annual water demand of 48 Mm3.

Scenario	Irrigation	Thermal	industry	domestic	Losses	Total
	MCM/yr				(%)	MCM/yr
A .Present	700	A/B	0	15	50	54
В	5000	A/B/C	30	15	50	192
С	5000	A/B/C	132	50	25	329
D	18000	A/B/C	30	50	25	255

Under present situation, the reservoir is significantly under-utilized.

Under Scenario B, the simulations indicate that the system can meet all the water demand for irrigation, industrial and domestic demand, including cooling water for the power plants, even with an efficiency of 50%. However the variations of water level in the Gazivoda reservoir would increase from less than 10 meters (5 m in 2008) to levels corresponding to variations of volumes from the normal storage of 350 Mm³ to about 250 Mm³ (with the exception of year "1951" when it will drop to 150 Mm3).

Under Scenario C with losses reduced to 25 percent, and industrial demand increased to the maximum possible, the total demand is still met but the volume of Gazivoda reservoir would drop below 200 Mm3 one year out two and one year below 100 Mm³, which is still above the minimum level for the operation of the power plant.

In conclusion, none of the earlier water balance studies properly reflect the present proposed demand of water and/or were carried out to the level required at feasibility level. The consulting firm to be recruited under the Bank preparation study should revise the simulation studies using: i) updated data on water demand especially for Kosovo C and adopting realistic irrigation demand estimates and ii) simulating the operation of the reservoir over a maximum number of years.

Inaction now could cause water shortage in the future:

Canal now intakes 60 Mm3/year from Predvorica to deliver total 40 Mm^3 /year demands (3 m3/s), thus efficiency is around 65-70%. Irrigated lands are currently limited to 1,500 ha (using 3,000 to 5,000 m³/ha/year, depending on crop), or canal diversion of 4 Mm3/year in 2010. This is a small fraction of the total irrigable 20,000 ha, which may not be achievable in the near future due to lack of marketing for the produce.

This 60 Mm3/year in future (when Pristina WTP, Power Plant C, and additional 10,000 ha arable lands connect to Iber canal), could grow to 200 Mm3/year or 10 m³/sec (canal as-built capacity is 22 m³/sec, decreasing to 6.5m3/sec at the tail). Gazivoda was built for water demands as follows: 17% agriculture, 8% drinking, 70% industrial. Gazivoda average inflow is 350 Mm3/year and life storage is around the same.

It now releases some 200 Mm³/year for hydropower that is spilled back to Iber river (rather than in the canal) via Predvorica balancing reservoir, to produce only 2% of the country's energy (but this helps bridge power demand peaks and generates around 55% of the Iber company revenues). In future the increasing demand on Iber canal water will thus: compete in its timing (though will not compete in its consumption) with these hydropower releases, and will consume much of the river inflow at Gazivoda (leaving a small inter-annual storage and causing wide level/head variations in Gazivoda). Burden of water shortage may then fall on agriculture (irrigable 20,000 ha cannot be reliably irrigated) and/or on the environment.

Pumped storage scheme at Gazivoda

The construction of a pumped storage scheme using the Gazivoda reservoir and the Predvorica compensation reservoir could be envisaged to optimize the power capacity during peak hours in Kosovo.

The present capacity of the Predvorica of $480,000 \text{ m}^3$ would likely need to be doubled to generate energy during about 8 hours. The Consultant would determine the technical pre-feasibility to develop such a scheme using reservoir simulations. The TOR does not require any engineering studies including surveys and geotechnical investigations.

ANNEX 2 : SETTLEMENTS ALONG IBER LEPENC CANAL

See attached map

ANNEX 3 : BIBLIOGRAPHY

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- 6. Ibër River Basin Management Plan (EU funded).
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 - b. Environmental Hotspots in Kosovo,
 - c. State of the Air report,
 - d. Kosovo greenhouse gas emissions 2008-2009,
 - e. Water polluter cadaster,
 - f. The state of water in Kosovo,
 - g. The state of waste in Kosovo,
 - h. The state of Nature, etc.
- 3. UNDP Kosovo, Data and report about social development in Kosovo including Human Development Report for Kosovo 2012,

ESIAF & ESMF Report

ANNEX 4: DRAFT TERMS OF REFERENCE FOR THE ESIA OF MIHALIQ COMPENSATORY RESERVOIR IMPLEMENTATION

Emergency Reservoir of Mihalic ENVIRONMENTAL and SOCIAL IMPACT ASSESSMENT TERMS OF REFERENCE (draft) ILC PROTECTION OF IBER LEPENC CANAL – FEASIBILITY STUDY

1. Introduction

The Government of KOSOVO is preparing the engineering design and project implementation plan for the Emergency Reservoir of Mihalic (ERM) project. The objective of the project is to guarantee water resource of ILC canal in the frame of irrigation, industrial (KEK) and potable (Pristina) Water supply.

The purpose of this study is to provide an Environmental/Social assessment of the proposed works in compliance with the requirements of the Government of KOSOVO and World Bank Safeguards, namely :

- Kosovo regulations : Law on EIA (No 9/2004),
- WB safeguards :
 - Environmental Assessment OP/BP 4.01,
 - Social Assessment OP/BP -4.10

This project is being implemented under the PROTECTION OF IBER LEPENC CANAL Project which is being funded by World Bank and executed by the ILC.

Facing the size of the project :

- large dam more than 20 meters high,
- may retain almost 3 millions of cubic meters,
- on an area of approximately 30 ha.

The project is classified in class A in both classification (National and World Bank) so that it is submitted to a detailed ESIA.

2. Construction Works Description

The project include construction and operation of following main elements :

- Dam,
- Reservoir,
- Pipe junction to IL canal



General situation of the project is presented on the figure below.

The scoping of expected social impacts of Mihalic reservoir implementation and operation leads to following main issues:

- Land taken and expropriation,
- Loss of accessibility to local road infrastructure

5. Specific Requirements: Environmental/Social Assessment

The preparation of the environmental/social assessment is governed by MOESP requirements and those of the World Bank Safeguards Policies as outlined in the Environmental and Social Assessment Framework (ESMF) for the Rehabilitation of IL canal Project. This ESIA to be prepared under this contract shall provide an analysis of the potential impacts associated with the works and operation. The assessment shall consider the physical, biological, and socioeconomic impacts of the works and, in general, the positive and negative impacts associated with the implementation of the re.

Specifically, the consultant shall:

- Review proposed designs and construction plans
- Review the baseline situation in the project area.
- Assess social issues
- Meet with relevant parties to discuss perceived impacts of the works plan including local Community.
- Identify short-term reversible and non-reversible environmental impacts associated with construction and operation of the projected reservoir.

• Provide a mitigation plan for anticipated social and environmental impacts relating to the project.

The consultant shall produce an Environmental/Social Assessment report detailing the findings of the study which shall be based on the following outline and at a minimum include:

- 1. Executive Summary (English) of not more than 2 pages
- 2. Description of the works and alternatives considered
- 3. Legal framework including environmental, land use, water management and other related laws and regulations
- 4. Description of the Existing Environment
- 5. Physical
- 6. Biological
- 7. Socioeconomic
- 8. Analysis of Impacts including selection of the preferred options
 - Physical
 - Biological
 - Socioeconomic
- 9. Mitigation Analysis of the preferred option
- 10. Mitigation measures, monitoring
- 11. Environmental and Social Management Plan
- 12. Record of Consultations
- 13. Technical Annexes

Description of existing environment and analysis of impacts will be based on field surveys on at least these areas:

- Hydrological context, (upstream, reservoir location,, and downstream until Sitniza river)
- Water quality (upstream, reservoir location,, and downstream until Sitniza river)
- Terrestrial fauna and flora (project area and vicinity),
- Aquatic fauna and flora(upstream, reservoir location,, and downstream until Sitniza river),
- Population, households and existing human activities in the watershed area of the reservoir

In the table below are listed minimum field surveys that the consultant will have to conduct on a period of one year prior to the full EIA redaction.

Field	Items	Objective	Principle	Period
Hydrological conditions	Water flows of the natural stream on site	Design of the project	Continuous measurement of the flows as well as daily rainfall collection	One year
	Water quality of the	Initial state	Physical, chemical and bacteriological	One flood period
	natural stream on site	Baseline for monitoring during	analysis on several samples collected on	Wet and dry
		construction and operation	site, upstream and downstream	seasons
	~	phases		
Hydrogeological	Groundwater level and	Initial state	On at least three boreholes implemented	One year
conditions	quality	Baseline for monitoring during	on site, upstream and downstream :	
		construction and operation	• Weekly level measurement	
		phases		
			• Monthly chemical analysis	
Natural ecosystems	Aquatic fauna	Inventory for initial states	Invertebrates and fish species	1 in dry season
		Impact assessment	inventories on site	1 in wet season
	Semi-Aquatic fauna	Inventory for initial states	Amphibians inventory on site	One year –proper
		Impact assessment		seasons
	Terrestrial fauna	Inventory for initial states	Mammals (including bats), insects and	One year –proper
		Impact assessment	reptiles inventories on site	seasons
	Birds	Inventory for initial states	Birds located on site and habitat use	One year –proper
		Impact assessment	(nesting, wintering or migrating)	seasons

Table 11 : Environmental field investigations to be conducted before ERM EIA

This assessment shall be written in a concise manner in terms that can be readily understood by non-technical personnel and shall be organized to clearly present the positive and negative impacts of works identified. Technical supporting information shall be included in the technical annex of the report.

6. Public Consultation

During the development of this assessment, the contractor shall conduct meetings with the affected population, relevant government and non-government entities. A record of these meetings shall be summarized in the assessment and a written record of these meetings shall be contained in the annex section of the assessment report.

7. Public Comment

This report shall be delivered to the MOESP for review. Additionally, the report shall be made available for public comment for not less than 30 days. At the conclusion of the public comment period, comments shall be reviewed and incorporated in the final environmental assessment document.

8. Resettlement Action Plan

As it is probable that works require involuntary relocation, a Resettlement Action Plan (RAP) shall be developed pertaining to the affected sites. This plan shall be produced consistent with the Kosovo national legal framework and shall conform to World Bank requirements for involuntary relocation (OP 4.12) and the ESMF for the IL Canal rehabilitation Project.

9. Deliverables

Draft ESIA including ESMP for consultation and review Final ESIA and EMP incorporating feedback from consultations and review Site specific EMPs EMP Checklists

If needed :

Draft RAP for consultation and review Final RAP incorporating feedback from consultations and review

10. Period of performance

n. a.

ESIAF & ESMF Report

ANNEX 5: SUMMARY OF WATER ANALYSES TEST RESULTS AT MIHALIQ9

The following table summarises the water test results undertaken both for the Kocks Feasibility Study and by the Consultant during the design phase of the Project. The minimum, maximum and mean values are given in each case as are the number of samples in total and the number meeting the standard.

		Doromotri				Num	ber of	Meet			
Parameter	Unit	c value	Min.	Mean	Max.	Total	pies	standa			
						Total	meet	rd			
Microbiological parameters											
Escherichia	(number /	0	90	273.0	677.0	10	0				
coli(E.coli)	100ml)	0	70	0	0	10	0	0.0%			
T	(number /	0	0	82.54	165.0	8	0	0.00/			
Enterococci	100ml)				0			0.0%			
Chemical parameters	5										
Acrylamide	µg/l	0.1	0.00		0.00	0	0				
Antimony	μg/l	5	1.00	1.00	1.00	16	16	100.0%			
Arsenic	μg/l	10	1.00	1.00	1.00	20	20	100.0%			
Benzene	μg/l	1	0.10	0.23	0.25	16	16	100.0%			
Benzo(a)pyrene	μg/l	0.01	0.00	0.07	1.00	15	14	93.3%			
Boron	mg/l	1	0.01	0.01	0.02	20	20	100.0%			
Bromate	μg/l	10	0.10	1.90	2.50	18	18	100.0%			
Cadmium	μg/l	5	0.10	0.17	0.20	20	20	100.0%			
Chromium	μg/l	50	1.00	2.02	10.00	17	17	100.0%			
Copper	mg/l	2	0.00	0.42	2.30	18	16	88.9%			
Cyanide	μg/l	50	5.00	5.63	10.00	16	16	100.0%			
1,2-dichloroethane	μg/l	3	0.03	0.32	1.00	18	18	100.0%			
Epichlorohydrin	μg/l	0.1	0.00		0.00	0					
Fluoride	mg/l	1.5	0.05	0.18	0.20	16	16	100.0%			
Lead	μg/l	10	1.00	1.00	1.00	20	20	100.0%			
Mercury	μg/l	1	0.05	0.09	0.10	16	16	100.0%			
Nickel	μg/l	20	0.01	0.99	1.40	16	16	100.0%			
Nitrate	mg/l	50	1.00	1.51	1.90	19	19	100.0%			
Nitrite	mg/l	0.5	0.01	0.02	0.03	16	16	100.0%			
Pesticides	μg/l	0.1	0.03	0.03	0.03	7	7	100.0%			
Pesticides—Total	μg/l	0.5	0.03	0.03	0.03	13	13	100.0%			

 9 Kocks feasibility study - Municipal water supply and sewage disposal in PRISTINA, Phase III - 2011

Polycyclic aromatic hydrocarbons	μg/l	0.1	0.00		0.00	0		
Selenium	μg/l	10	1.00	1.00	1.00	20	20	100.0%
Tetrachloroethene and Trichloroethene	μg/l	10	0.10	0.69	1.00	17	17	100.0%
Trihalomethanes— Total	μg/l	100	0.00	0.00	0.00	2	2	100.0%
Vinyl chloride	μg/l	0.5	0.00		0.00	0	0	

_		Parametri				Numl sam	ber of ples	Meet the		
Parameter	Unit	c value	Min.	Mean	Max.	Total	meet	standa rd		
Indicator parameters										
Aluminium	µg/l	200	10.00	51.52	200.0 0	21	19	90.5%		
Ammonium	mg/l	0.5	0.01	0.06	0.10	16	16	100.0%		
Chloride	mg/l	250	2.90	3.28	3.80	18	18	100.0%		
Clostridium perfringens (includings pores)	number/100 ml	0	0.00	28.50	50.00	10	0	0.0%		
Colour (spectral absorption coefficient at 436 nm)	1/m Acceptable to consumers and no abnormal change		0.10	0.14	0.20	13		0.0%		
Conductivity	µScm ⁻¹ at 20°C	2500	26.30	225.7 9	263.0 0	17	17	100.0%		
Hydrogen ion concentration	pH units	>=6,5 and =<9,5	7.92	8.48	11.40	20	17	85.0%		
Iron	µg/l	200	14.00	95.32	300.0 0	22	19	86.4%		
Manganese	µg/l	50	2.40	35.85	115.0 0	21	15	71.4%		
Odour	Acceptable to consumers and no abnormal change		0.00	0.00	0.00	6		0.0%		
Oxidisability	mg/l O ₂	5	0.00		0.00	0	0			
Sulphate	mg/l	250	6.50	7.21	7.70	19	19	100.0%		
Sodium	mg/l	200	2.80	3.54	5.50	21	21	100.0%		

Taste	Acceptable to consumers and no abnormal change		0.00	0.00	0.00	6		0.0%
Colony count 22°	no abnormal change		398	1068	1320	5		0.0%
Coliform bacteria	number/100 ml	0	180	1367	3270	11	0	0.0%
Total organic carbon (TOC)	no abnormal change WE mg/l		1.00	1.76	2.00	21		0.0%
Turbidity	FNU Acceptable to consumers and no abnormal change	1	0.10	0.96	2.80	17	12	70.6%

D	TT -4	Parametri	NC	M	M	Numl sam	oer of ples	Meet the
Parameter	Unit	c value	Nin.	Mean	Max.	Total	meet	standa rd
Radioactivity								
Tritium	Bq/l	100	0.00		0.00	0		
Total indicative dose	mSv/year	0.1	0.00		0.00	0		
Overspill Council Di	rective Eu							
absorbance			0.00		0.00	0		
pH-value at calcite saturation			-0.25	6.17	7.89	10		
delta pH value (WE)			0.23	0.30	0.40	7		
saturation pH value (WE)			7.53	7.75	7.85	7		
saturation index (WE)			-0.31	0.20	0.44	11		
calcite dissolve capacity (WE)	mg/l		-9.31	-4.43	10.00	8		
acid capacity $pH_{4,3}$ (WE)	mmol/l		2.59	2.75	3.00	21		
carbonate hardness (WE)	°dH		6.20	7.20	7.60	6		
base capacity pH _{8,2} (WE)	mmol/l		0.03	0.09	0.10	18		
free carbonic acid (WE)	mg/l		4.50	4.50	4.50	7		
total hardness (ICP°dH)(WE)	°dH		6.20	7.76	9.10	20		
total hardness (ICP,mmol)(WE)	mmol/l		1.11	1.40	1.63	19		
total suspended solids			3.00	9.50	16.00	2		
dissolved solids	mg/l		0.00		0.00	0		
Calcium	mg/l	n.a.	36.90	49.66	57.20	21		
Magnesium	mg/l	n.a.	3.60	4.35	4.90	21		
Chemical oxygen demand (COD)	mg/l	n.a.	4.20	4.35	4.50	2		

ESIAF & ESMF Report

ANNEX 6: MAPS OF LAND-USE

See separate document: VOLUME I 3

ESIAF & ESMF Report

ANNEX 7 PROPOSED PHYSICAL IMPROVEMENTS

GENERAL

During inventory survey of the canal, it was found that the canal suffers from various types of pollution and turbidity originating from sources classified in 4 categories:

- Infiltration of turbid water into the canal
- Waste deposits
- Sedimentation
- Vegetation

The protection and rehabilitation works have been divided in 16 categories as follows: **Roads, bridges, walkways and covering slab**

- 1. Access roads
- 2. Bridge rehabilitation with new drainage crossing
- 3. Bridge rehabilitation without drainage
- 4. Proposed New Bridge
- 5. Covering slab in Zubin Potok
- 6. Walkway Bridges

Protection against run-off water

- 7. Crossing channels above the canal
- 8. Crossing siphons under the canal
- 9. Retaining walls above the canal level
- 10. Slope protection below the canal level
- 11. Sewerage (septic tanks)
- 12. Storm water culvert

Vegetation, fences and miscellaneous

- 13. Perimeter fence
- 14. Trash racks at entrance of tunnels / covered sections
- 15. Vegetation
- 16. Water distribution boxes

ROADS, BRIDGES, WALKWAYS AND COVERING SLAB

Access roads

At some segments, the access road is missing, the rest of the length, access road exist but need to be rehabilitated because is not well maintained. The entire length of the open canal should be covered by an access road in fair condition at least on one side. It is proposed to build a new road in the segments where this is missing. The existing road in poor condition should be repaired and maintained.

Bridge rehabilitation with drainage crossing

28 No road bridges in reinforced concrete are concerned. These structures are generally in fair condition. To prevent the water run-off from the roads uphill, arrangements shall be made to ensure that the storm water can be evacuated from the bridge.

For this purpose, alongside of the bridges, new channels are to be built to collect and allow the crossing of the storm water from the road gully and from the drain concrete culvert which has to be built alongside the canal.

In addition, the following rehabilitation works are proposed:

- > The spalled concrete surfaces are to be repaired partially.
- > The damaged parallel walls are to be removed and new walls shall be erected.
- > The metal fence shall be rehabilitated: removal of rust, primer coating and a finish layer.

<u>Note:</u> The storm water crossing recommended at 28 bridges will need to be carefully examined at the stage of Detailed Design. Indeed, the solution can only be proposed if there is obvious place to discharge the storm water diverted across the canal.

Bridge rehabilitation without drainage crossing

6 No road bridges in reinforced concrete are concerned. For those bridges, only the rehabilitation works proposed in the previous paragraph are required.

New bridge

It was observed that one bridge had totally been removed at the chainage 12+600.00. This missing bridge at chainage 12+600.00 is to be reconstructed.

Covering slab in Zubin Potok

Once the lining is rehabilitated, it is proposed to build a cover slab over 400m in Zubin Potok for safety reasons but also to prevent the disposal of solid waste.

Based on our interviews with ILC's management in the North, the residents in the village Zubin Potok support the covering of the remaining open parts of the canal.

Walkway Bridges

During the site survey was observed that is necessary to build a new walkway bridge, especially in the populated zones where there is no bridge close by.

It is proposed to build walkway bridges at 7 locations.

PROTECTION AGAINST RUN-OFF WATER

Crossing channels above the canal

Along the main canal have been identified 32 No crossing channels above the canal. These structures are generally in poor condition and very often filled with soil. Since most of them are non-functional, storm water overflows into the canal and generates pollution and sedimentation.

Crossing siphons below the canal

Along the main canal have been identified 21 No crossings underneath the canal (siphons). These structures are generally in poor condition and very often filled with soil. Since most of them are non-functional, storm water overflows into the canal and generates pollution and sedimentation.

Retaining walls uphill of the canal

From the uphill bank along the canal the storm water is not collected and at places runs-off directly into the canal.

It is proposed, where the slope is steep to construct retaining walls, as per the specific types presented in the figures hereafter combined with a drainage culvert.



Strengthening of slopes downhill of the canal

Four areas have been identified with a potential risk of washout or land slide downhill of the canal. The risk results from the combination of several factors:

- Steep slope angle
- High water table in the embankment
- Trees and roots growing in the embankment

The stabilisation proposed includes the following measures:

- Removal of vegetation;
- Stump removal, filling of the hole and compaction;
- Profiling of the embankment and fill the depression zones;
- Placing the geomat;
- Fill with 25 to 50cm of topsoil
- Installing gabions at the foot of the embankment to stabilise the foot of the dyke, drain; the embankment and anchor the geomat;
- Hydro-seeding

Storm water culvert

On the uphill side of the canal, no drainage culvert has been foreseen to collect the storm water. Due to this absence of drainage, the water from uphill slope overflows into the canal.

The canal has originally been designed in a way that storm water from the uphill slope pours directly into the canal through an inlet or else transits across the canal.

Crossing of storm water drainage is performed through crossing channels above the canal and through siphons under the canal. At the locations alongside the canal where the storm water is not collected towards a crossing channel or siphon, the storm water discharges directly into the canal.

It is recommended to build an open drain culvert in concrete along the entire length of the open canal on the right bank to collect the water from uphill.

The culvert will collect the storm water up to the nearest crossing channel or crossing siphon.

Figure 19: Drainage culvert - rectangular shape



Figure 18: Drainage culvert - trapeze shape

Note: at the origin, a 1m wide platform had been foreseen on both sides of the canal. Due to the absence of maintenance around the canal, the ground slope has eroded and is currently in most locations in the continuity of the canal slope.

VEGETATION, FENCES AND MISCELLANEOUS

Perimeter fence

Fences have been proposed in the layout drawings, where required for security reasons. In total 2410m of fences are proposed.



Figure 20: Detail of proposed metal fence

Trash racks at entrance of tunnels / covered sections

The inlets and outlets of tunnels are in fair condition. Most of the tunnels inlets are unprotected by trash racks. This is required to prevent the entry of vegetation, waste, animals, etc... into the tunnel.



Photos: Entry of tunnels / covered sections

Intensive vegetation

Intensive vegetation alongside the channel was observed during the inventory along both rehabilitated and un-rehabilitated sections of the canal. This causes pollution of the water with the entry of organic material and damages to the lining and the construction joints by the root development. The issue of intensive vegetation is further developed in the report "Vegetation".

To restore the canal durably and prevent further damages, vegetation has to be treated and some rules need to be respected. Ideally, to preserve the canal (concrete lining, embankment, drainage system), on excavation configuration (Cf. figure below) no tree should be rooted less than 5 meters away from the canal embankment and no shrub less than 3 meters away from the canal embankment, while no tree and no shrub are accepted less than 3 m away from the foot of narrow and normal embankment.



Figure 21: Safety distance rules for trees and shrub on Ibër canal

Respecting these rules, trees and shrub (adult species smaller than 3 m in high) can be planted on excavation configuration to limit water and sediments flowing into the canal.

Water distribution boxes

Along the canal, citizens have installed pipes to draw water out from the canal in illegal manner. The concrete lining structure has in some places been damaged to insert the pipe. Holes were drilled through the base slab of several aqueducts causing permanent leakage that farmers use to fill bowsers. In those places the illegal pipes is inserted through joints and leads to significant leakages.

In total, nearly 600 illegal pipes have been identified.

This issue is to be tackled between ILC and the local authorities in order to organize the distribution to the citizens in a legal manner. Distribution chambers could be constructed below the canal to enable the distribution of water through contracts between the local authorities and ILC.

POLLUTION

Algae and moss

The canal also suffers from development of algae and moss. Algae have intensively developed in the aqueducts and shall be removed during their rehabilitation.

Waste Deposits

Several waste deposits are present along the Ibër canal and originate from private deposits. In addition, building rubble and other debris were observed inside the canal.

The reason is due to the absence of waste collection in the rural areas. Waste in and alongside the Ibër Channel leads brings organic and inorganic harmful material and severely affects the water quality.

During the inventory survey it was found that uncontrolled private waste deposits are more concentrated in the Northern section of the Ibër Channel. To tackle this issue, it is indispensable to promote awareness campaigns.

Domestic waste water discharged into the canal

Another pollution source is sewerage discharged into the canal by private houses. Along the canal sewerage discharge pipes pouring directly into the canal and contaminating the water have been identified in four places. This issue should be addressed by ILC through the local authorities.

Another source of waste water infiltration was found next to Bridge 19. A pipe discharges waste water from an adjacent livestock shed into the IL-Canal. This presents a serious threat to the water quality of the IL-Canal.

EQUIPMENT FOR MODERNIZATION AND URGENT REPAIRS OF THE OPTIMIZED OPERATIONAL SCHEDULE OF THE GAZIVODA RESERVOIR AND DAM

The assessment on the Dam Safety of Gazivoda Dam presented initial findings on current condition of the dam and also presents recommendation for the modernization / upgrades.

The findings on the current state of the Gazivoda dam are following:

- the necessary monitoring is not carried out since 1997 and should be resumed according to the international standards
- The asphalt road on the crest of the dam is settled approximately by 30 cm on the upstream side. This is reported to appear since 1997. An investigation is necessary in order to find out the cause of the settlement and the behavior since the occurrence. It is recommended to proceed with a full geodetic survey and examine how the dam has deviated, apart from the visible settlement observed on the crest and on the upstream face.
- Several pavement precast concrete blocks are damaged or missing. A railing on the pavements is also damaged in several places.
- The upstream and downstream faces are globally in good condition. The main concern at the downstream face is the grown vegetation and one tree.
- The grouting gallery in general is in good condition. Several deficiencies are identified: visible leaks which are not measured, lightning is not functional throughout the gallery.

- The condition of the embankment dam is good.
- The study of the spillway capacity was done on its design phase. With the current size of the reservoir, possible dam failure could cause extensive damage to the population their property and to the structures downstream. Therefore, the spillway capacity should be reviewed, based on the probable Maximum Flood (PMF). The PMF as a flood event has to be calculated considering the most severe and reasonably possible combination of rainstorm, snow accumulation, melt rate and antecedent moisture conditions. The flood study, should define whether the capacity of the spillway and channels are sufficient and of adequate capacity to discharge the design flood.
- One of the hydraulic flap gates cannot be opened automatically. However the operators are able to open it mechanically. The rehabilitation of the hydraulic operating system should be carried out and the valves need to be inspected and maintained. A failure mode of the valves will need to be analyzed as part of the Risk Analysis

The initial findings suggest following:

- A regular monitoring at the dam should be undertaken at least in the level of the past monitoring and according to the defined standards for monitoring and supervision of the dams.
- A geodetic survey should be undertaken to examine the extent and the progress of the settlement observed on the crest and the upstream face of the dam.
- A Risk Analysis should be undertaken and shall include:
 - a modern probabilistic seismic hazard analysis assessing the design earthquake is mandatory in today practice. The design earthquake will be the loading function to assess the earthquake safety of the dam. Modern evaluation methods are to be used.
 - Flood hazard study. This work will include re-evaluation of the assumptions made in the original assessment and to re-evaluate the PMF and the spillway capacity.

The findings also suggest the following works:

- Remove the vegetation in the downstream face including the mature tree close to the crest
- Carry out inspection of the instrumentation, first and foremost to check the functionality of piezometers and to repair the ones which are not functional in order to start the pressure measurement and the water level in the dam.
- Install a gauging scale for the measurement of the water level.
- Install an ultrasonic monitoring of the reservoir water level and later connect the measurement to the recommended SCADA system.
- Measure and follow the leakages into the gallery.
- Measure the leakage flow with the installed V-notches in the gallery and on the downstream toe of the dam. Repair the permanent lightning at the bottom and at the non-functional parts of the gallery
- Repair the gates of the spillway.

- Rehabilitate the asphalt road, pavement and railing on the crest.
- Install cameras on the crest of the dam.
- Supply a boat for access to the intake tower and for inspection tours on the reservoir.

MIHALIQ COMPENSATORY AND EMERGENCY RESERVOIR IMPLEMENTATION

Due to seepage/leaks, operational losses, sedimentation and increased roughness, the canal capacity would in the long run become insufficient, in particular during peak hour supply of irrigation. Another issue with the Ibër canal is linked with the peaks of turbidity after rain episodes. These peaks are not compatible with the clear water requirements by the bulk operators (KEK, Pristina Water Company, KRPP). Last but not least, another motivation for the project was that, it is currently not possible to close the Ibër canal even for a few hours for maintenance or cleaning, let alone due to any unforeseen emergency.

ANNEX 8 DRAFT MITIGATION MEASURES FOR CANAL REHABILITATION - TABLES

CANAL REHABILITATION SUB-PROJECTS

Phase	Impact/Issue	Mitigation Measure	Cost		Institution	al Responsibility	Comment
	_		Install	Operate	Install	Operate	
Pre- Construction	Water Resources	Adequacy of supplies	PMU	PMU, ILC, Designer	ILC	ILC	
		Drilling of exploration	-		PMU	Contractor	
		Development of hydrological model	•		PMU	ILC	
	Water quality	Identification and prevention of any possible new source of pollution			PMU	ILC	
		Establishment of protection zones			ILC	ILC	
Construction	Water Resources	Prevention of pollutant discharges penetration into the canal due to protection works	n.a.	Covered by constructi on costs	n.a.	Contractor	Contractor should set aside sum in his offer to be used as per instructions of works supervision on basis of service orders at pre-negotiated unit prices.
		Prevention from pollutant	n.a.	Covered	n.a.	Contractor	Contractor should set aside sum

		discharges penetration into aquifers level during works		by constructi on costs			in his offer to be used as per instructions of works supervision on basis of service orders at pre-negotiated unit prices.
Construction	Soil	Baseline conditions of vulnerable slopes documented (in sites identified in the present report, plus any other site which may prove vulnerable in the course of the works)	n.a.	Covered by constructi on costs	n.a.	Contractor	Contractor should set aside sum in his offer to be used as per instructions of works supervision on basis of service orders at pre-negotiated unit prices
		Stabilization measures implemented on case-by- case basis, to be indicated by contractor in his offer.	n.a.	Covered by constructi on costs	n.a.	Contractor	
	Critical ecosystems Biodiversity	Ex- ante survey of canal tract with marking of vegetation (trees), dens, nests, and species to be protected during the works.	n.a.	Covered by constructi on costs	n.a.	Contractor	Contractor should set aside sum in his offer to be used as per instructions of works supervision on basis of service orders at pre-negotiated unit prices
	Air and noise	Common mitigation actions generally related to civil works contracts (good pratices) to reduce air pollution and noise emissions from works	n.a.	Covered by constructi on costs	n.a.	Contractor	Contractor should set aside sum in his offer to be used as per instructions of works supervision on basis of service orders at pre-negotiated unit prices
	Landscape and biodiversity	Re-planting with native species (replacement of	n.a.	Covered by	n.a.	Contractor	Contractor should set aside sum in his offer to be used as per

		acacia with bushes)		constructi on costs			instructions of works supervision on basis of service
		Plantation of alignment with various native species of trees and bushes, on the limit of immediate protection zone of IL canal	n.a.	Covered by constructi on costs	n.a.	Contractor	orders at pre-negotiated unit prices.
	Physical and cultural heritage	Comply with obligations of the Kosovo Law on Cultural Heritage	n.a.	Covered by constructi on costs	n.a.	Contractor / ILC	Contractor should set aside sum in his offer to be used as per instructions of works supervision on basis of service orders at pre-negotiated unit prices.
	Workers safety	In line with best construction practices and national legislation	n.a.	Covered by constructi on costs	n.a.	Contractor / ILC	
Operation	Water resources	Response to warnings of decrease in quantity/quality levels through management measures		ILC	n.a.	ILC	Based on use of hydro geological model and of monitoring data to control and predict qualitative and quantitative aquifer conditions
	Surface water pollution	Long-term cleanup program of mining dumps, water courses and soil. Special focus on hot spot mining dumps.	Ouside project budget.		GoKS.	GoKS.	measure, enhancing sustainability of present project, and required for public health reasons- NOT consequence of present project
	Soil	Monitoring of sensitive slopes (Ishmi hills) ; further stabilization works	ILC		n.a.	MoE	Unlikely to occur if stabilization is well executed during works

	if required.					
Air and noise	Common mitigation (good pratices) to reduce air pollution and noise emissions from canal operation	n.a.	ILC	n.a.	ILC	
Newly established ecosystems	Monitoring of replanted area in Ishmi Hills Further re-planting if required.	MoE		n.a.	MoE	Unlikely to occur
Bidiversity and landscape	Maintenance of vegetation and plantations made along canal		ILC	n.a.	ILC	

CANAL REHABILITATION SUB-PROJECTS SOCIAL

Phase	Impact/Issue	Mitigation Measure	Cost		Institutional		Comment
					Responsibility	7	
			Install	Operate	Install	Operate	
Pre-	Expropriation	Create inventory of the	PMU	PMU,	ILC, MF, DD	ILC, DD	It must include all affected
Construction		property to be dislocated		ILC,			persons and families and it must
		or expropriated		Designer			consider the fact that some
							owner-families lost the property
							title (doc.) during the war. RPF
							applies
		Complementary support to			ILC, DD, MF	ILC, DD	Good Practice' only- RPF
		the families with social			& MLSW		applies
		assistances					

	Dislocation and resettlement	Project PMU	ILC	It must include all affected persons and families and it mus consider the fact that some owner-families lost the property title (doc.) during the war			
Restrictions and prohibition of the use of water	Stopping the illegal use of water	ILC	ILC	Stopping must be due to offering an alternative option given below			
	Enabling the use of water for the group of farmers (gathered by small farmers)	ILC, MAFRD	ILC & MAFRD	In case of establishing the smal farmer association to a specific geographical area with suitability irrigation			
Prohibition to dispose of nazardous waste anywhere near canal	Connect the sewage pipes to the main public network when it exists or design and built new one when it doesn't to prevent polluting water. Stop disposing the wastes in the uphill of the channel	ILC, Municipality, Regional Company of Water and Waste Services ILC, Municipality, Regional Company of Water and Waste Services	ILC, Municipalit y, Regional Company of Water and Waste Services ILC, Municipalit y, Regional Company of Water and Waste Services				
Access to property	Ensuring that after the displacement process will not cause any road access issues for local peoples and properties	ILC, Municipality	ILC, Municipalit y	All properties must have access to the road. To be complian with the RPF			
Construction	Illegal discharge of sewage to the ILC Access to property	Connecting the local or household sewage pipes to the main public sewage system All roads and paths disruption linked with ILC	PMU n.a.	ILC, Municipal ity Covered by	ILC, Municipality, MESP n.a.	ILC, Municipalit y, MESP ILC, Municipalit	
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	P	construction work to be identified and inform local peoples; Offering suitable alternative accessibility to households, property and other utilities		constructi on costs		y, Designer	
	Safety	Signs for not swimming children's in to the ILC; Preventing path or pavement designs close to possible dangerous sites; Offering safety measures when it is needed to all paths and roads.		ILC, Municipal ity	ILC, Municipality	ILC, Municipalit y	
	Workers safety	In line with best construction practices and national legislation	n.a.	Covered by constructi on costs	n.a.	Contractor / ILC	
Operation	Monitoring of future urban development near ILC	Monitoring of future urban development (housing and commercial) in the 100m of uphill of ILC; Restrict any threatening kind of future development	n.a.	ILC, Municipal ity	ILC, Municipality	ILC, Municipalit y	

	in the 100m uphill of ILC				
		 			
Access property	Road maintaining;	ILC	ILC	ILC	
maintaining	Paths maintaining;				
	Safety structures				
	maintaining.				

ANNEX 9 DRAFT MITIGATION MEASURES FOR MIHALIQ RESERVOIR- TABLES

MIHALIQ RESERVOIR

Phase	Impact/Issue	Mitigation Measure	Cost		Institution	al	Comment
					Responsibility		
			Install	Operate	Install	Operate	
Construction	Landscape	Due care of landscape; Movement of equipment and crews to be restricted; No trees to be felled outside working areas; Unnecessary damage to be remedied at Contractors' expense.	n.a.	Covered by constructio n costs	n.a.	Contractor	Good Practice' only
	Biodiversity	Movement of equipment and crews to be restricted; All materials to be stored in approved manner; Only approved waste disposal sites to be used; Crews to be educated on habitat disturbance; Firewood for crews or alternative facilities to be provided; Comply with Environmental Law on Wildlife Protection; Crews to be penalized for unnecessary disturbance.	n.a.	Covered by constructio n costs	n.a.	Contractor	Good Practice' only
	Communicati on Routes	Disruptions to be identified in Traffic Management Plan; Inform the public of forthcoming delays; Use appropriate signage.	n.a.	Covered by constructio n costs	n.a.	Contractor	
	Public Utilities	Document all utilities within 50 m of work sites; Coordinate works with utility companies; Damage to defined utilities to be repaired at Contractors' expense.	n.a.	Covered by constructio n costs	n.a.	Contractor	

	Public Access	Disruptions to be identified in Traffic Management Plan; Inform impacted owners ahead of disruption; Maintain vehicular access to emergency services; Maintain pedestrian access to public buildings; Use appropriate signage; Keep roads clean.	n.a.	Covered by constructio n costs	n.a.		
	Tourism	Remove unwanted materials and equipment from work sites;	n.a.	Covered by constructio n costs	n.a.		
Construction	Soil and Water Pollution	Duty of Care to avoid spillage of all polluting materials; Comply with regulations regarding pollution abatement; Contaminated soil to be removed and replaced; Chemical storage to accord to manufacturer's recommendations; Fuel to be stored within bonded areas; All spillage to be reported; Remedial action to be undertaken as a matter of urgency; Incidents to be remediated at Contractors' expense.	n.a.	Covered by constructio n costs	n.a.	Contractor	Contract requirement
	Drainage, Erosion, Turbidity and Sediment Load	Site clearance ahead of construction to be restricted; Disruptions to drainage channels to have prior approval; Any short-term increases in turbidity to be approved; Dewatering works to avoid excessive turbidity; Store stripped topsoil in manner suitable for reuse; All stock piles and soil heaps to remain stable. Excess spoil and materials not to be stored.	n.a.	Covered by constructio n costs	n.a.	Contractor	Contract requirement
	Noise and Dust	All equipment to be fitted with appropriate muffles; Equipment/vehicles in poor condition not to be used; Noisy equipment to be located away from sensitive sites; Plant not left to run on idle; Restricted working hours, particularly for piling; Extension of normal working hours to be approved; All relevant Albanian and World Bank standards to be complied with; Cement handling to limit atmospheric discharge; Burning of debris from ground clearance not	n.a.	Covered by constructio n costs	n.a.	Contractor	Contract requirement

	Use of Explosives	permitted; Damping down of sites and access roads; Hoardings to be used where appropriate; Vehicle loads likely to emit dust to be covered. All aspects of use to be in accordance with ammunition requirements. Contractor and Local Police	n.a.	Covered by constructio n costs	n.a.	Contractor	Supervised by local police
	Surplus Materials	All solid waste regulations to be complied with; Unwanted materials disposed of promptly; Spoil for later use to be appropriately stored. Materials are not to be stored on site for long or in large quantities	n.a.	Covered by constructio n costs	n.a.	Contractor	'Good Practice' only
Construction (suite)	Public and Worker's Safety	All sites to be secure from unauthorized access; Adequate warning signage to be provided; Flagmen to provide safe ingress and egress to work sites; Contractor to implement strict Health and Safety.	n.a.	Covered by constructio n costs	n.a.	Contractor	Good Practice' only
	Physical and cultural heritage	Comply with obligations of the Kosovo Law on Cultural Heritage	n.a.	Covered by constructio n costs	n.a.	Contractor / ILC	Contractor should set aside sum in his offer to be used as per instructions of works
Construction Impact / Mitigation Off-Site	Construction Camp	Appropriate facilities for sewerage be installed; Treated wastewater to be re-used where possible; Polluting substances to be identified, stored and handled in accordance with manufacturers' recommendations; Fuel storage to be fully bonded; All spillage to be reported; Remedial action to be undertaken as a matter of urgency; Incidents to be remediated at Contractors' expense; Proposals for solid waste disposed to be approved; Lead acid batteries to be taken for recycling; Access control, including	n.a.	Covered by constructio n costs	n.a.	Contractor	Good Practice' only

		signage, to be implemented; Adjacent public roads to be kept clean; Wide or abnormal loads to be delivered at night.					
	Other Sites	Priority to be given to the use of existing licensed quarries; Quarry operation restricted to daylight hours; Dust and noise to be suppressed as appropriate; Operations to be restricted to times of low wind velocities;	n.a.	Covered by constructio n costs	n.a.	Contractor	Good Practice' only
Opération	Water quality	Identification and prevention of any possible new source of pollution in the watershed of the reservoir	n.a.	ILC	MoESP / ILC	MoESP / ILC	
		Establishment of protection zoning in the reservoir area	n.a.	ILC	MoESP / ILC	MoESP / ILC	
	Bidiversity and landscape	Maintenance of vegetation and plantations made in the vicinity of the reservoir (steep slopes)		ILC	n.a.	ILC	
	Safety	Prepare and regularly update Emergency Response Action Plan					

MIHALIQ RESERVOIR SOCIAL FRAMEWORK

Phase	Impact/Issue	Mitigation Measure	Cost		Institutional Responsibility		Comment
			Install	Operate	Install	Operate	
Pre-	Displacement and	Inventory of the property to be	PMU	PMU,	ILC, MF, DD	ILC, DD	It must include all affected
Constructio	dislocation	dislocated or expropriated		ILC,			persons and families and it must
n				Designer			consider the fact that some owner-

				families lost the property title (doc.) during the war
	Complementary support to the families with social assistances	ILC, DD, MF & MLSW	ILC, DD	Good Practice' only
	Dislocation and resettlement	Project PMU	ILC	It must include all affected persons and families and it must consider the fact that some owner- families lost the property title (doc.) during the war
Restrictions and prohibition of the use of water	Enabling the use of water for the group of farmers (gathered by small farmers)	ILC, MAFRD	ILC & MAFRD	In case of establishing the small farmer association to a specific geographical area with suitability irrigation
Prohibition	Connect any sewage to a main	ILC,	ILC,	
sewages and	public network when it exists or	Municipality,	Municipality,	
disposal of	design and built new one when it	Regional	Regional	
hazardous waste	doesn't to prevent polluting water.	Company of	Company of	
in the watershed		Water and	Water and	
of ERM		Waste	Waste	
		Services	Services	
	Prevent any the waste deposit in	ILC,	ILC,	
	the uphill of the ERM	Municipality,	Municipality,	
		Regional	Regional	
		Company of	Company of	
		Water and	Water and	
		Waste	Waste	
		Services	Services	
Access to	Ensuring that after the	ILC,	ILC,	All properties must have access to
property	displacement of the road, process	Municipality	Municipality	the road
	will not cause any road access			
	issues for local peoples and			

		properties					
Constructio n	Reconnect all public services network (Water supply, Sewage, Electricity and roads)	Connecting the local or household to the main supplier network	PMU	ILC, Municipali ty	ILC, Municipality, MESP	ILC, Municipality, MESP	
	Access to property	All roads and paths disruption linked with ERM construction work to be identified and inform local peoples; Offering suitable alternative accessibility to households, property and other utilities before the previous access is terminated.	n.a.	Covered by constructi on costs	n.a.	ILC, Municipality, Designer	
	Safety	Signs for not swimming children's in to the ERM; Offering safety measures when it is needed to all paths and roads. In the case roads have been flooded by ERM appropriate traffic/informing signs and road blocks should be put in place.		ILC	ILC	ILC	
	Touristic elements and landscape	Construction materials and overall design element of ERM must be attractive for rural touristic needs	n.a.	Covered by constructi on costs	n.a.		

Operation	Monitoring of	Monitoring of future urban	n.a.	ILC,	ILC,	ILC,	
	future urban	development (housing and		Municipali	Municipality	Municipality	
	development	commercial) in the 100m of uphill		ty			
	near ERM	of ERM;					
		Restrict any threatening land use					
		types of future development in the					
		100m uphill of ERM					
	Access property	Road maintaining;		ILC	ILC	ILC	
	maintaining	Paths maintaining;					
		Safety structures maintaining.					
	Touristic	Not allowing swimming or fishing	na	ПС	ПС	ПС	
	development	for anowing swimming of fishing	11.u		ILC		

ANNEX $10-{\ensuremath{\mathsf{EMP}}}$ CHECKLIST FOR CANAL REHABILITATION - TEMPLATE

Potential Environmental Impacts

The environmental impacts of the sub project are expected to be of manageable, temporary and of local impact as they are related to the general construction activities on already known and previously used locations. These impacts most commonly include: a) Dust and noise due to excavation, demolition and construction; b) Management of demolition construction wastes and accidental spillage of machine oil, lubricants, etc., c) Encroachment to a private property; d) damage to historical or cultural property or unknown archaeological sites; e) Traffic disturbance; (f) surface or ground water and g) soil pollution or erosion.

CHECKLIST EMP

Checklist EMP is applied for minor rehabilitation or small-scale building construction. It provides "pragmatic good practice" and it is designed to be user friendly and compatible with WB safeguard requirements. The checklist-type format attempts to cover typical mitigation approaches to common civil works contracts with localized impacts.

The checklist has one introduction section and three main parts:

- Introduction or foreword part in which the project is introduced, environmental category defined, and checklist EMP concept explained.
- **Part 1** constitutes a descriptive part ("*site passport*") that describes the project specifics in terms of physical location, the institutional and legislative aspects, the project description, inclusive of the need for a capacity building program and description of the public consultation process.
- **Part 2** includes the environmental and social screening in a simple Yes/No format followed by mitigation measures for any given activity.
- **Part 3** is a monitoring plan for activities during project construction and implementation. It retains the same format required for standard World Bank EMPs. It is the intention of this checklist that Part 2 and Part 3 be included as bidding documents for contractors.

Application of the EMP-Checklist

The design process for the envisaged civil works in the Education Excellence and Equity Project will be conducted in three phases:

- 1) *General identification and scoping phase*, in which the objects (e.g. schools) for rehabilitation, extension and/or construction are selected and an approximate program for the potential work typologies elaborated. At this stage, Part 1, 2 and 3 of the Checklist EMP are filled. Part 2 of the Checklist EMP can be used to select typical activities from a "menu" and relate them to the typical environmental issues and mitigation measures.
- 2) *Detailed design and tendering phase*, including specifications and bills of quantities for individual objects. Checklist EMP is revised according to the detailed design at this stage. As such, the Checklist is presented to the public, prior to the tendering

procedure. This phase also includes the tender and award of the works contracts. The whole filled in tabular EMP (Part 1, 2 and 3) should be additionally attached as integral part to the works contract as well as supervision contract, analogous to all technical and commercial terms, has to be signed by the contract parties.

3) During the works implementation phase environmental compliance is checked on the respective site by the site certified inspector(s) / supervisor(s), which include the site supervisory engineer or supervisor of the project. The mitigation measures in Part 2 and monitoring plan in Part 3 are the basis to verify the Contractor's or project investor compliance with the required environmental provisions.

MONITORING AND REPORTING

For the monitoring of the safeguards due diligence, the site supervisor works with **Part 3** of the EMP Checklist, *i.e.* with the monitoring plan. Part 3 is developed site specifically and in necessary detail, defining clear mitigation measures and monitoring which can be included in the works contracts, which reflect the status of environmental practice on the construction site and which can be observed/measured/ quantified/verified by the inspector during the construction works.

Such mitigation measures include the use of Personal Protective Equipment (PPE) by workers on the site, dust generation and prevention, amount of water used and discharged by site, presence of proper sanitary facilities for workers, waste collection of separate types (mineral waste, wood, metals, plastic, hazardous waste, e.g. asbestos, paint residues, spent engine oil), waste quantities, proper organization of disposal pathways and facilities, or reuse and recycling wherever possible.

Reporting on implementation of practices should be described in the regular report toward PIU.

PART 1: INSTI	TUTIONAL	& ADMINISTRATIV	E					
Country		K	Kosovo					
Project title		Protection of	Iber Lepenc Canal					
Scope of								
project and	Construction	and water management						
activity								
Institutional arrangements (Name and contacts)	WB, EBRD, Republic of Kosovo	Project Ministry of XXXXXX (MoESP Environmental Consultant hired by the ILC Responsible for supervision of EMP implementation	management Local party and/or beneficiary Municipalities of Zubin Potok, Mitorivca, Vushtrri, Obiliq and Drishtina					
		Sur	pervision					
Implementation arrangements (Name and contacts)	WB Safeguards supervision	Municipality of Zubin Potok, Mitorivca, Vushtrri, Obiliq and Prishtina () Responsible for contracting site supervising engineer and occasional site supervision Supervising site engineer (name needed to be updated after	Local Inspectorate Responsible for occasional visits to the site or upon public complaint Consultants Responsible for supervision of overall project. Hired by the ILC before the construction on the specific site commence					

contracting)
Responsible for
monitoring of
implementation of
the Checklist EMP
from constructor
side. Hired by the
Municipality

SITE DESCRIE	ITE DESCRIPTION		
Name of site	Iber Lepenc Canal (IL Canal)		
Describe site	The IL Canal is a man-made Annex 1: Site information (figures from		
location	hydraulic structure built with the site) [X] Y		
	purpose to supply central		
	Kosovo with water. The canal		
	suffers from insufficient		
	maintenance and is vulnerable		
	to landslides, leakages and		
	pollution. The existing Canal is		
	49 km long in total, the part to		
	be rehabilitated is XXX long.		
	The Canal from Ujman up to		
	Prishtina passes through the		
	territory of five municipalities		
	while the part for rehabilitation		
	runs through three (Zubin		
	Potok, Mitrovica, Vushtrri,).		
	The part crosses two major		
	landscape units – hilly areas of		
	Northern Kosovo and densely		
	populated plane of Central		
XX71 /1	Kosovo.		
Who owns the	The land is a public property, however, there is quite a few cases where the		
lanu:	The L Conel The existing Conel to be partially rebebilitated rung from		
desographic	Ine IL Canal The existing Canal, to be partially renabilitated, runs from		
description	(Ultrain) take up to Frishting city and ends at Badove Lake and is		
	the territory of five municipalities (Zubin Potok Mitrovice Vushtrri Obilia		
	and Pristhing) and altoghether 33 rural settlements. The Canal runs mostly		
	through western parts of Kosovo plane and some through North Kosovo		
	region which is predominantly hilly		
LEGISLATION	I section which is predominantly inity.		
Identify	A least :		
national &	• Kosovo Water Law (Law No.2004/24) and associated regulations		
local	relating to the management, planning, protection and institutional		
legislation &	responsibilities in regard to water and water resources:		
permits that	• Law on Waters of Kosovo (Law No. 2012/04-L-147) provide		
apply to	sustainable development and utilization of water resources that are		
project activity	necessary for public health, environmental protection and social-		
	economic development of the Republic of Kosovo; establish		
	procedures and guiding principles for the optimal distribution of		
	water resources, based on the use and purpose;		
	• Law on Environmental Protection (03/L-025 -2009) and associated		
	regulations:		
	• Environmental Permit (pre commissioning phase) required from the		
	MESP for using natural resources:		
	According to Art 50 of Law NO. U3/L-214 on EIA: present ESMP and		
	Environmental Permit are submitted to approval of the environmental		

	protection inspector (MoESP inspector)		
PUBLIC CONS	NSULTATION		
Identify when /	EMP Checklist prepared for the present sub-projects will have to be		
where the	publicly disclosed once the sub-project is approved by ILC.		
public	Present EMP prepared and conducted under the authority of ILC will be		
consultation	available for public consultation during a minimum of 14 days (two weeks)		
process took	in the [relevant Municipality] and on ILC website.		
place	Period, object and mode of public consultation are announced 5 days before		
	consultation period in a local newspaper.		
	ILC responsible collects results of public consultation and submits it		
	together with the final version of EMP to the approval of the environmental		
	protection inspector or relevant ministry.		
INSTITUTION	AL CAPACITY BUILDING		
Will there be	[X] N or []Y if Yes, Annex 2 includes the capacity building information		
any capacity			
building?			

Will the site	Activity	Status	Additional references
activity	General (all type of rehabilitation works)	[X] Yes [] No	See Section A below
include/involve	Canal lining and rehabilitation of joints	[] Yes [] No	See Section B below
any of the	Drainage implementation	[] Yes [] No	See Section C, A below
following:	Landslides stabilization/ retaining wall implementation	[] Yes [] No	See Section D , A below
	Tall vegetation removal	[] Yes [] No	See Section E, A below
	Solid waste deposits removal	[] Yes [] No	See Section F , A below
	Illegal water pipes removal	[] Yes [] No	See Section G, A below
	Illegal domestic sewage removal	[] Yes [] No	See Section H, A below
	Rehabilitation works close to housing	[] Yes [] No	See Section I, A below
	Rehabilitation works in to cultural heritage preservation area (known or suspected)	[] Yes [] No	See Section K, A below
	Supply Chain Management Asphalt base/Concrete Production/Quarry Management	[]Yes []No	See Section L, A below
	Rehabilitation and of roads	[] Yes [] No	See Section M, A below
	Rehabilitation and of bridges	[] Yes [] No	See Section N, A below
	Culverts	[] Yes [] No	See Section O , A below
	Septic tanks	[]Yes []No	See Section P.A below

PART 2: ENVIRONMENTAL /SOCIAL SCREENING

For each type of activities concerned, measures to be applied are listed facing E&S issues :

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
A. General	Notification and Worker	(a) The local construction and environment inspectorates and communities have been notified of
Conditions – all	Safety	upcoming activities.
type of works		(b) The public has been notified of the works through appropriate notification in the media
		and/or at publicly accessible sites (including the site of the works).
		(c) All legally required permits have been acquired for construction and/or rehabilitation.
		(d) All work will be carried out in a safe and disciplined manner designed to minimize impacts
		on neighboring residents and environment.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
		(e) Workers' Personal Protection Equipment (PPE) will comply with international good practice
		(obligatory wearing of hardhats at all times, masks and safety glasses as needed and
		prescribed, harnesses and safety boots).
		(f) Workers are well trained to use potentially dangerous equipment.
		(g) All health and safety (H&S) incidents should be reported to project manager.
		(h) Unauthorized persons should be prohibited access to working areas and the construction camp.
		(i) Working area will be fenced or clearly marked with signposts and construction site tape.
		(j) Cover open pits as possible during working hours and at least at the end of the working hours.
		(k) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
	Waste Management	(a) Waste management practices should be aligned with the national legislation.
		(b) Containers for each identified waste category are provided in sufficient quantities and positioned conveniently (easily accessible).
		(c) Waste collection and disposal pathways and licensed sites will be identified for all major waste types expected from demolition and construction activities.
		(d) Mineral (natural) construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and temporarily stored in appropriate containers. Depending of its origin and content, mineral waste will be reapplied to its original location or reused.
		(e) All construction waste will be collected and disposed properly by licensed collectors.
		(f) The records of waste disposal will be regularly updated and kept as proof for proper management, as designed.
		(g) Whenever feasible the contractor will reuse and recycle appropriate and viable materials
		(h) Discarding any kind of waste (including organic waste) or waste water to the canal or the surrounding is strictly forbidden.
		(i) All waste and unused materials, all mechanization and tools should be removed from the site upon the work completion.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
	Toxic/Hazardous	(a) Temporarily storage on site of all hazardous or toxic substances will be in safe containers
	Materials and Waste	labeled with details of composition, properties and handling information.
	Management	(b)The containers with hazardous substances should be kept in a leak-proof container to prevent
		spillage and leaking. This container should poses secondary containment system such as
		bunds (e.g. bunded-container), double walls, or similar. Secondary containment system must
		be free of cracks, able to contain the spill, and be emptied quickly.
		(c) The containers with hazardous substances must be kept closed, except when adding or
		removing materials/waste. They must not be handled, opened, or stored in a manner that may
		cause them to leak.
		(d)The containers holding ignitable or reactive wastes must be located at least 15 meters (50 feet)
		from the facility's property line.
		(e) The wastes are transported by specially licensed carriers and disposed in a licensed facility.
		The records of waste disposal will be regularly updated and kept as proof for proper
		management, as designed.
		(f) Paints with toxic ingredients or solvents or lead-based paints will not be used.
	Transport and Materials	(a) All materials prone to dusting have to be transported in closed or covered trucks, or the
	Management	material, if convenient, need to be water-sprayed
		(b) Roads are regularly swept and cleaned at critical points.
		(c) Keep the topsoil and stockpiles separate.
		(d) Locate stockpiles away from drainage lines, natural waterways and places susceptible to land
		erosion.
		(e) Stockpiles and piles of material should (i) not exceed 2m in height, (ii) should be stabilized
		and well secured to avoid collapsing and injuries.
		(f) All loads of soil are covered when being taken off the site for disposal.
	Air Quality	(a) Use of water with all land clearing, grubbing, scraping, excavation, land leveling, grading, cut
		and fill and demolition activities which may cause dusting and particles emissions.
		(b) Ensure all transportation vehicles and machinery have been equipped with appropriate
		emission control equipment, regularly maintained and attested.
		(c) Ensure all vehicles and machinery use petrol from official sources (licensed gas stations) and
		on fuel determined by the machinery and vehicles producer.
		(d) There will be no excessive idling of construction vehicles at sites.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
		(a) Washing of transport vehicles and wheels will be conducted regularly, in previously identified
		sites equipped with, minimally, oil and grease collector.
		(b) Excavation and other clearing activities and earthwork must be done during agreed working
		times and permitting weather conditions to avoid drifting of sand and dust into neighboring
		area
		(c) Loading and unloading or dust prone materials will be conducted during the favorable
		weather and with adequate dust-reduction measures
		(d) A speed limit of 40km/h must not be exceeded on dirt roads
		(e) Dust prone materials should be transported in closed or covered trucks
		(f) Dust prone materials and other bulk materials should be protected from weather conditions,
		especially wind and rain. Install wind fences to prevent dusting wherever appropriate. Install
		wind fences to prevent dusting wherever appropriate.
	Noise	(g) Construction noise will be limited to restricted times agreed to in the permit.
		(h) Work during the night will be avoided if possible. If unavoidable, all necessary permits must
		be obtained.
		(i) During the operations the engine covers of generators, air compressors and other powered
		mechanical equipment should be closed, and equipment placed as far away from residential areas as possible.
		(j) Pumps and other mechanical equipment should be effectively maintained.
		(k) During the operations the engine covers of generators, air compressors and other powered
		mechanical equipment are closed.
		(1) If works are done in the proximity of the houses, anti –noise wall or temporary earth bond
		implemented between noisy works area and residential areas, if needed
	Soil Quality and	(a) Phasing the work program to minimize the land disturbance.
	Stability	(b) Exercise erosion and sediment control during replacement of damaged plates by diverting and
		filtering of working flows.
		(c) Minimize landslide risk by construction of temporary culverts and embankment.
		(d) Carry out surface drainage works to divert the rainwater that would erode the soil especially
		during the earth works.
		(e) Soil and rock removal should be conducted in a way not to increase turbidity of water or
		cause sedimentation. This is done by diverting flows form the working area. In the case there

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
		will be workflow, it should be filtered before released to the recipient.
		(f) Removed mineral content (soil and rocks) should be reapplied to its original location if
		possible. In the case of suspicious soil content a chemical analysis should be carried out. The
		results of the analysis would determine steps that should follow.
		(g) Implement storm water management measures to minimize erosion and offsite sediment
		delivery to receiving waters.
		(h) Keep vehicles to well defined haul roads.
		(i) Soil work and management will take into account metrological data and conditions when
		planned and carried out (e.g. temperature of the soil, humidity, snow, ice, etc.).
		(j) Application of antifreeze and/or accelerator compounds to the soil is not allowed.
		(k) Continually inspect and assess the effectiveness of sediment control measures and apply
		(1) Contaminated soil must be strinned and disposed to a licensed landfill
	Water quality	(i) Containinated son must be surpped and disposed to a needsed fandrin.
	water quanty	(a) Trevent hazardous spinage coming from waste (temporary waste storage should be leakage protected and those for hazardous or toxic waste equipped with secondary containment
		system e.g. double walled or bunded containers)
		(b) In the case of any run off coming from works area possibly contaminated by hazardous
		substances shall be collected on site to a temporary retention basin and transported to an
		adequate treatment plant.
		(c) Install and maintain of proper sanitary facilities for workers. The wastewater from these
		sources should be transported to proper waste water treatment facilities.
		(d) Prevent hazardous spillage coming from tanks (mandatory secondary containment system,
		e.g. double walled or bunded containers), construction equipment and vehicles (regular
		maintenance and check-ups of oil and gas tanks, machinery and vehicles can be parked
		(manipulated) only on asphalted or concrete surfaces with surface runoff water collecting
		system.
		(e) Operating premises are equipped with waste water collecting system. Water is collected
		through the system and taken to the waste water treatment. Waste water treatment is
		minimally equipped with oil and grease separator after which waste water is either released to
		the municipal water collecting system (that includes further treatment), water treatment
		system on site or water is collected and taken for treatment elsewhere.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
		(f) Isolate nature flows coming from the work platforms from the rest of the flow. Filter work
		flows before re-entering recipient. Working site run-offs with possible charge with suspended
		matter should be filtered before spillage to natural flows.
		(g) Supervise pumping and implement precautionary that water pumped turbidity is minimal.
		(h) Ensure that water pumped back to natural waterways never exceeds the regulatory water quality standards by regular testing.
		(i) Water, and other components, in concrete mixture shall be clean and free of harmful chemicals.
		(j) Coarse aggregate in concrete applied and used in reconstruction need to conform to durability and gradation requirements.
		(k) Servicing of vehicles and machinery is conducted off site.
		(1) Water used for construction and other purposes (e.g. sanitary) is taken from the existing water
		supply sources. No additional water sources will be engaged.
	Biodiversity	(a) Appropriate avoidance, minimization or/and protection measures shall be determined with an
		authorized body if needed.
		(b) Limit daytime speed of vehicles.
		(c) Avoid construction at night.
		(d) Working site should occupy only the surfaces necessary for works to be carried out. Minimize camp and area used for motion of vehicles, machinery and people.
		(e) Minimize loss of vegetation.
		(f) Construction activities are planned carefully so as not to interfere with the important reproduction stages of protected species.
		(g) Prevent hunting, trapping and egg collecting by construction workers
		(h) Prohibit the collection of firewood and traditional medicine plants from working areas.
		(i) Destroyed greenery has to be rehabilitated with local indigenousness flora typical of the
		representative botanical unit, amongst which fire resistant species are preferred.
	Landscape	(a) Landscape preservation and reconstruction – alterations in landscape during the construction
		should be recovered and returned to its previous condition as soon as possible
	Cultural heritage	(a) In the case of chance finds, the site will be fenced (protected) and authorities (Kosovo
	preservation	Archeological Services - KAS) informed. Their instructions will be followed in the further
		works.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
		(b) The construction related camps, storages and other objects will be located further from
		archeological sites or archeologically sensitive areas.
	Fire Protection	(a) Grass left on the site must be regularly cut, especially during the dry periods, to prevent fires.
		(b) No burning will be allowed on site under any circumstance.
		(c) All cooking on site shell be done in demarcated areas and under constant control.
		(d) The contractor shall have operational fire-fighting equipment available on site at all times.
		Their position is communicated to workers and marked. The level of fire-fighting equipment
		must be assessed and evaluated through a risk assessment. There is an appointed person on
		the site responsible for the fire protection. Procedures in the case of fire are well known to all
		employees.
B. Canal lining	Notification and Worker	(a) Preventing reinforced measures against drowning risk are planned, properly implemented and
and rehabilitation	Safety	constantly maintained during works activity period
of joints	Accidents Prevention	(a) Vehicles and machinery manipulation and movement space will be clearly marked.
		(b) If the works disrupt regular road traffic, the contractor will establish safe temporary road
		regulation with appropriate signalization. Prior to such works all necessary permits would be
		obtained and all relevant authorities notified.
	Nature Protection	(a) Cover all excavated steep-walled holes and trenches (in the case they cannot be covered,
		(b) Thoroughly inspect all holes and trenches before they are filled
		(c) Thoroughly inspect all construction pipes (over 10 cm diameter) that have been stored at the
		construction site overnight.
		(d) Prior to commencement of works the contractor will check the site for presence of wildlife
		and in case of finding bird nests, bats, dens or young the competent authority must be notified
		(Ministry of Environment and Spatial Planning).
C. Drainage	Notification and Worker	(a) During construction over the canal, preventing reinforced measures against drowning risk are
implementation	Safety	planned, properly implemented and constantly maintained during works activity period.
	Water Quality	(a) Prevent pollutant, solid waste and sediments spillages into crossed natural water flows.
		(b) Surface water at the construction site is diverted away from excavation trenches or areas
		prone to erosion.
		(c) If necessary, the stream flow is made to bypass the construction area with drainage lines.
		(d) Canals are kept clean.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
	Land Stability and	(a) Avoid works during heavy rainfall periods.
	Erosion Prevention	(b) Counturing and minimizing length and steepness of slopes
		(c) Exposed areas will be mulched/covered in order to stabilize.
		(d) Channels and diches will be designed for post-construction flows.
		(e) Planning phased clearing and keeping the areas of land cleared to a minimum and the period
		of time areas remain cleared to a minimum to avoid erosion.
		(f) Rehabilitate cleared areas promptly, where possible.
		(g) Minimize the quantity of water that enters cleared areas before finalization of works.
		(h) Preventing off site sediment transport using silt fences, stream diversion and similar.
	Accidents Prevention	(e) During the works necessary measures preventing erosion and landslides will be taken.
		(f) Vehicles and machinery manipulation and movement space will be clearly marked.
		(g) If the works disrupt regular road traffic, the contractor will establish safe temporary road
		regulation with appropriate signalization. Prior to such works all necessary permits would be
		obtained and authorities notified.
	Nature Protection	(a) Cover all excavated steep-walled holes and trenches (in the case they cannot be covered,
		construct ramps, e.g. planks).
		(b) Thoroughly inspect all holes and trenches before they are filled.
		(c) Thoroughly inspect all construction pipes (over 10 cm diameter) that have been stored at the
		construction site overnight.
		(d) Prior to commencement of works the contractor will check the site for presence of wildlife
		and in case of finding bird nests, bats, dens or young the competent authority must be notified
		(Ministry of Environment and Spatial Planning).
D. Landslides	Water Quality	(a) Prevent from pollutant, solid waste and sediments spillages into crossed natural water flows
stabilization/		
retaining wall	Waste	(a) Soil excavated during the earthworks should be protected from scattering and dusting and
implementation		should be reapplied.
		(a) Construction waste should be handed over a licensed company or taken to a waste
		management center licensed for construction waste management
	Land Stability and	(a) Avoid works during heavy rainfall periods.
	Erosion Prevention	(b) Counturing and minimizing length and steepness of slopes.
		(c) Exposed areas will be mulched/covered in order to stabilize.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
		(d) Channels and diches will be designed for post-construction flows.
		(e) Planning phased clearing and keeping the areas of land cleared to a minimum and the period
		of time areas remain cleared to a minimum to avoid erosion.
		(f) Rehabilitate cleared areas promptly, where possible.
		(g) Minimize the quantity of water that enters cleared areas (e.g. using drainage canals).
E Tall vegetation	Biodiversity	(a) Possible fauna species should be identified and protected – fauna (including birds, insects,
removal		amphibians, reptiles, small mammals, etc.).
		(b) No cut of tall vegetation during nesting period (from April to September).
	Green waste	(a)Reuse of removed vegetation material where possible: chopped wood available to local
	management	residents.
		(b)Green waste burning on site is not allowed.
		(c)Remove only allocated trees and shrubs according to the vegetation removal plan
	Water Quality	(a) Prevent accidental disposal of vegetation material removed into the canal.
		(a) Rehabilitate cleared areas promptly, where possible.
	Land Stability	
		(b) Minimize the quantity of water that enters cleared areas (e.g. using drainage canals)
F. Solid waste	Waste management	(a) Waste types found on the site should be identified and plans for removal adjusted in line with
deposits removal		findings.
		(b) Waste collection and disposal pathways and licensed sites have to be identified and respected
		for all waste types expected from waste deposits removal.
		(c) Waste will be removed, transported and landfilled/processed only by adequately authorized
		(d) If assessed as necessary by supervising engineer, sediments near solid waste denosits analysis
		(d) It assessed as necessary by supervising engineer, sediments near solid waste deposits analysis must be conducted to establish the content and possible environmental and health risks. In the case sediments and soil was found hazardous or toxic it will be treated as toxic waste (requirements available in general conditions).

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST			
	Water and Soil Quality	(a) Prevent possible contaminants to enter the water body during the removal by isolating nature			
		flows from the works flow.			
		(b) Filter the uncontaminated work flows before re-entering recipient.			
		(c) In the case of any run-off coming from works area possibly contaminated by hazardous			
		substances shall be collected on site to a temporary retention basin and transported to a			
		adequate treatment plant.			
	Social sustainability	(a) Respective municipality ensure that solid waste produced either from daily consumption or			
		agricultural activity or other are, from now on, disposed of in licensed and legal landfills.			
		(b) Notification to all identified local stakeholders that waste disposal along IL canal is strictly			
		prohibited.			
		(c) Waste collection public service implementation and/or enhancement for poor families or			
		families under social assistance, will be carried out by respective municipalities with			
		assistance of ILC.			
		(d) In order to carry out these measures, institutional arrangements and strengthening capacity is			
		provided which includes institutions such are: ILC, Municipalities, and local representatives			
		of MESP- Department of Water, MAFRD-Department of Rural Development and Consulting			
		Services, and MF.			
G. Illegal water	Social sustainability	(a) Timely notify all illegal water users that water from ILC will be prohibited from a certain			
pipes removal		date.			
		(b) ILC together with local agricultural authority will propose an alternative solution to enable			
		water use to users concerned.			
		(c) In order to carry out these measures, institutional arrangements and strengthening capacity is			
		provided which includes institutions such are: ILC, Municipalities, and local representatives			
		of MESP- Department of Water, MAFRD-Department of Rural Development and Consulting			
		Services, and MF.			
H. Illegal	Social sustainability	(a) ILC together with the relevant municipality propose technical solution for connection of the			
domestic sewage		private sewage to the public network or to a septic tank.			
removal		(b) Technical and financial assistance for sewage collection and/or treatment for poor families or			
		tamilies under social assistance.			
		(c) In order to carry out these measures, institutional arrangements and strengthening capacity is			
		provided which includes institutions such are: ILC, Municipalities, and local representatives			

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST			
		of MESP- Department of Water, MAFRD-Department of Rural Development and Consulting			
		Services, and MF.			
K. Rehabilitation	Cultural heritage	(a) During the preliminary phases of construction qualified archeologist will monitor soil			
works in vicinity	preservation	stripping and ground preparation works.			
of cultural		(b) Obtain permission from the National Archeological Council.			
heritage		(c) In the case of accidental finding, the site will be fenced (protected) and authorities (Kosovo			
preservation area		Archeological Services - KAS) informed. Their instructions will be followed in the further			
(known or		works.			
suspected)		(d) The construction related camps, storages and other objects will be located further from			
		archeological sites or archeologically sensitive areas.			
L. Supply Chain	I/1 Asphalt base	(a) Producer of asphalt has to obtain/hold all required working and emission permits and quality			
Management		certifications.			
Asphalt		(b) Producer has to present a proof of conformity with all national environmental and H&S			
base/Concrete		legislation.			
Production/Quar		(c) Ensure the subcontractor has all the necessary skills and experience and precautionary			
ry Management		systems in place to prevent a wash off of bituminous materials (primer or primer binder).			
		(d) Water in bitumen emulsion production should not be contaminated with hazardous or toxic			
		chemicals (however, technological water is preferred).			
		(e) Asphalt and bitumen emulsion application will take into account metrological data and			
		conditions when planned and carried out (raining periods, overcast, cooler and dumper			
		weather, etc.)			
		(f) Bitumen emulsion is applied only to adequately compacted and swept surfaces with adequate			
		moisture content.			
		(g) Positioning of the emulsion sprayer should be such so spaying beyond the area to be primed			
		or primer sealed.			
		(h) Equipment should be cleaned in areas where there will be no impact to the environment or			
		danger of surface run-off (e.g. areas where water is collected to retention basins and			
		transported to proper water treatment, and waste is separated and appropriately disposed).			
		(1) Aspnait should be covered when transported to the site of application.			
		(J) The stone aggregate quarry (the supplier of aggregate for construction of roads and platforms)			
		has to present a proof of conformity with all national environmental and H&S legislation.			

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST			
		(k) The quarry supplying the stone aggregate has to proof to hold all operating, environmental			
		and H&S permits.			
		(l)Ensure all transportation vehicles and machinery have been equipped with appropriate			
		emission control equipment, regularly maintained and attested.			
	I/2 Concrete production	(a) Producer of concrete has to obtain/hold all required working and emission permits and			
		quality certifications.			
		(b) Producer has to present a proof of conformity with all national environmental and H&S			
		legislation.			
		(c) The quarry supplying the cement producer with limestone has to proof to hold all operating,			
		environmental and H&S permits.			
		(d) The lime quarry has to present a proof of conformity with all national environmental and			
		H&S legislation.			
		(e) The quarry supplying the stone aggregate has to proof to hold all operating, environmental			
		and H&S permits.			
		(f) The stone aggregate quarry has to present a proof of conformity with all national			
		environmental and H&S legislation.			
		(g) Ensure all transportation vehicles and machinery have been equipped with appropriate			
		emission control equipment, regularly maintained and attested.			
		(h) Supplier of sand and other mineral materials should present valid excavation permit.			
M. Rehabilitation	Land Stability and	(a) Limiting access road gradients to reduce run-off induced erosion.			
of roads	Erosion	(b) Provide adequate road drainage based on road width, surface material, compaction and			
		maintenance.			
		(c) Avoid works during heavy rainfall periods.			
		(d) Counturing and minimizing length and steepness of slopes.			
		(e) Exposed areas will be mulched/covered in order to stabilize.			
		(f) Channels and diches will be designed for post-construction flows.			
		(g) Planning phased clearing and keeping the areas of land cleared to a minimum and the period			
		of time areas remain cleared to a minimum to avoid erosion.			
		(n) Kenadilitate cleared areas promptly, where possible.			
		(1) WINDING the quantity of water that enters cleared areas before finalization of Works.			
		(a) Preventing off site sediment transport using silt fences and similar			

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST			
		(b) Roads will not be widened			
	Traffic Safety	 (a) Works should be organized in such way it interferes minimally with the regular road traffic. In the case interference occurs traffic should be regulated with signs and signals achieving maximum road safety. (b) Local municipalities and police will be advised on alternative routing (c) All relevant authorities (e.g. Ministry of Interior) should be notified of the upcoming works and consulted on safety issues. 			
N. Rehabilitation	Water and Soil	(a) Only anticorrosive agents not toxic to the environment will be used on site			
of bridges	Protection	(b) Measures should be taken to prevent leakage and spilling of anticorrosive agents to the environment.			
		(c) Restricting the duration and careful timing of in-stream activities to lower low periods and			
		avoiding periods critical to biological cycles of valued flora and fauna			
		(d) For in-stream works use isolation techniques such as berming or diversion during construction			
		to limit spread of disturbed sediments into water.			
O. Culverts	Water Quality	(a) Prevent from pollutant, solid waste and sediments spillages into crossed natural water flows			
	Nature Protection	(a) Cover all excavated steep-walled holes and trenches (in the case they cannot be covered, construct ramps, e.g. planks).			
		(b) Thoroughly inspect all holes and trenches before they are filled.			
		(c) Thoroughly inspect all construction pipes (over 10 cm diameter) that have been stored at the construction site overnight.			
		 (d) Prior to commencement of works the contractor will check the site for presence of wildlife and in case of finding bird nests, bats, dens or young the competent authority must be notified (Ministry of Environmental and Nature Protection, Department for Nature Protection, Nature Protection Directorate). 			
	Waste	(a) Soil excavated during the earthworks should be protected from scattering and dusting and should be reapplied.			
		(b) Construction waste should be handed over a licensed company or taken to a waste			
		management center licensed for construction waste management			

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST			
	Land Stability and	(a) Avoid works during heavy rainfall periods.			
	Erosion Prevention	(b) Counturing and minimizing length and steepness of slopes			
		(c) Exposed areas will be mulched/covered in order to stabilize.			
		(d) Channels and diches will be designed for post-construction flows.			
		(e) Planning phased clearing and keeping the areas of land cleared to a minimum and the period			
		of time areas remain cleared to a minimum to avoid erosion.			
		(f) Rehabilitate cleared areas promptly, where possible.			
		(g) Minimize the quantity of water that enters cleared areas (e.g. using drainage canals).			
P. Septic Tanks		(a) Locate the tank that no extra weight is laid upon it.			
		(b) The tank should be adequately designed and sized in order to avoid use of additives,			
		overflowing and be easily maintained.			
		(c) Users of the septic tank should be well informed of its maintenance requirements.			
		(d) Drainage from roof, cellar/footing (sump pump) and surface water run-off should be directed away from the tank.			
		(e) Before put to use, the tank (and the collection system) should be tested for impermeability.			
		(f) Facilitate discharge of fecal sludge and septage at storage and treatment facilities so that untreated septage is not discharged to the environment.			
		(g) Provide systems for effective collection or waste waters from the targeted households and, if possible, separately manage gray water.			

For each measure to be applied, monitoring plan (see below) defines all conditions of its control.

Phase	What (Will the parameter be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuity?)	Why (Is the parameter being monitored?)	Cost (if not included in project budget)	Who (Is responsible for monitoring?)
	Permits						
u	Site organization						
ing ity ati	~						
uri ctiv							
reg a D							
d							
ty on							
livi ati							
act							
ng							
ple							
D DI							
u u							
ng ity isio							
livi rvi							
DI aci							
ns							

Page 139 of 154

Annex 1 The site and its specifications

This section is filled by contractor and reviewed by supervising engineer or ILC and describes the exact construction site

Annex 2 Capacity Building for monitoring the compliance with the environmental and social policies

This section is filled by ILC

Key issues for capacity building:

- Responsibilities (agencies/parties involved in implementation and supervision)
- Personnel required to fulfill responsibilities: existing ILC staff ; consultants (full or part time)
- Training: as required to ensure needed capacity (specify nature, source, timing)
- Costs: overall budget required; broken down at least by main institutional strengthening activities

ANNEX 11: TEMPLATE FOR ENVIRONMENTAL MANAGEMENT PLAN

1. A project's environmental management plan (EMP) consists of the set of mitigation, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The plan also includes the actions needed to implement these measures.¹ Management plans are essential elements of EA reports for Category A projects; for many Category B projects, the EA may result in a management plan only. To prepare a management plan, the borrower and its EA design team (a) identify the set of responses to potentially adverse impacts; (b) determine requirements for ensuring that those responses are made effectively and in a timely manner; and (c) describe the means for meeting those requirements.² More specifically, the EMP includes the following components.

Mitigation

2. The EMP identifies feasible and cost-effective measures that may reduce potentially significant adverse environmental impacts to acceptable levels. The plan includes compensatory measures if mitigation measures are not feasible, cost-effective, or sufficient. Specifically, the EMP

(a) identifies and summarizes all anticipated significant adverse environmental impacts (including those involving indigenous people or involuntary resettlement);

(b) describes--with technical details--each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate;

(c) estimates any potential environmental impacts of these measures; and

(d) provides linkage with any other mitigation plans (e.g., for involuntary resettlement, indigenous peoples, or cultural property) required for the project.

Monitoring

3. Environmental monitoring during project implementation provides information about key environmental aspects of the project, particularly the environmental impacts of the project and the effectiveness of mitigation measures. Such information enables the borrower and the Bank to evaluate the success of mitigation as part of project supervision, and allows corrective action to be taken when needed. Therefore, the EMP identifies monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed in the EA report and the mitigation measures described in the EMP. Specifically, the monitoring section of the EMP provides(a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and (b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

Capacity Development and Training

4. To support timely and effective implementation of environmental project components and mitigation measures, the EMP draws on the EA's assessment of the existence, role, and capability of environmental units on site or at the agency and ministry level.³ If necessary, the EMP recommends the establishment or expansion of such units, and the training of staff, to allow implementation of EA recommendations. Specifically, the EMP provides a specific description of institutional arrangements--who is responsible for carrying out the mitigatory and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental management capability in the agencies responsible for implementation, most EMPs cover one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes.

Implementation Schedule and Cost Estimates

5. For all three aspects (mitigation, monitoring, and capacity development), the EMP provides (a) an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b) the capital and recurrent cost estimates and sources of funds for implementing the EMP. These figures are also integrated into the total project cost tables.

Integration of EMP with Project

6. The borrower's decision to proceed with a project, and the Bank's decision to support it, are predicated in part on the expectation that the EMP will be executed effectively. Consequently, the Bank expects the plan to be specific in its description of the individual mitigation and monitoring measures and its assignment of institutional responsibilities, and it must be integrated into the project's overall planning, design, budget, and implementation. Such integration is achieved by establishing the EMP within the project so that the plan will receive funding and supervision along with the other components.

The EMP will contain following chapters: 1. GENERAL PROJECT AND SITE INFORMATION 1.1. DESCRIPTION OF THE PROJECT Project title Project location Project purpose Scope of project and activity 1.2. LEGISLATION and ADMINISTRATION National legislation 1.3. STATUS OF PROJECT DESIGN DOCUMENTATION AND PERMITS Ownership of the land or the object Type of document or permit

2. DESCRIPTION OF THE ENVIRONMENT (BASELINE CONDITIONS) General description of project site environment

Physical environment Socio-cultural environment 3. DETERMINATION OF THE POTENTIAL IMPACTS 4. MITIGATION AND MONITORING PLAN Mitigation Plan

Construction Phase						
Activity	Expected Environmental Impact	Proposed Measure for Mitigation	Responsibility for Implementing Mitigation Measure	Period of Implementing Mitigation Measure		
1.						
2.						
Operation Phase						
1.						
2.						
••••						

Monitoring Plan

Construction Phase						
What	Where	How	When	By Whom		
parameter is to be monitored?	is the parameter to be monitored?	is the parameter to be monitored (what should be measured and how)?	is the parameter to be monitored (timing and frequency)?	is the parameter to be monitored– (responsibility)?		
1.						
2.						
Operation Phase						
1.						
2.						
•••						
-----	--	--				

Annex 12: Public Consultations Report

Consultations of ESIAF with ESMF, took place in Vushtrri, Mitrovica and Pristina on February 24, 25 and 26, 2016 respectively. The document was previously published on ILC web site (on February 10, 2016) and made available in hard copy at its premises for 14 days. Information on its disclosure, followed by public consultations were posted at ILC web site, public hoarding, and respective Municipalities' buildings. Both, the document and announcement, was provided in Albanian, Serbian and English language.

Figure 22 Public announcement in Albanian language

Publikimi i Vlerësimit Kornizë Social, dhe Kornizës për Me Mbrojtja e Kanalit në Kosovë	ë të Ndikimit Mjedisor dhe Social i Menaxhimit Mjedisor dhe enaxhimin e Zhvendosjes - Projekti i Sigurisë së Ujit dhe
Projekti i Sigurisë së Ujit dhe M Bankës Botërore (Shoqata e zh furnizimit me ujë per shfrytëzu arrihet nëpërmes implementimi në pendën ë Ujmanit, punët re Rezervarit të ri për emergjencë	Ibrojtja e Kanalit në Kosovë ështe project I financuar nga Grupi I nvillimit ndërkombëtar - ShZhN). Qëllimi I projektit është sigurimi I esit e ndryshëm të ujit në Kosovën Qendrore. Qëllimi, që do të it të aktiviteteve të projektit kryesor përfshirë punët rehabilituese ehabilituese në kanalin e Ibër-Lenencit dhe ndoshta ndërtimit të
Duke u bazuar në kerkesat e implementuese, Kanali i Ibër- Mjedisor dhe Social (KVNMS) Korniza e Politikave për Zhveno përputhje me legjislacionin ven implementimit të projektit dhe n	e sigurisë mjedisore dhe sociale të Bankës Botërore, agjencia Lepencit Ltd (KIL), përgatiti Kornizën e Vlerësimit të Ndikimit n me Kornizën e Menagjimit Mjedisor dhe social (KMMS) dhe dosje (KPZh) për kativi9tetet e projektit me qëllim të sigurimit për dor dhe politikat mjedisore dhe sociale të Bankës Botërore gjatë në tutje.
Dokumentet e lartëpërmendura vlerësimit dhe të kenë çasje pu për komente, pyetje dhe sygjeri	 (KVNMS, KMMS dhe KPZh) janë publikuar si pjsë e procesit të ablikisht, përfshirë grupet civile shoqërore, OJQ-të dhe të tjerat, ime.
Dokumentet do të jenë të dispo Shkurt 2016. Në të njëjtën kohë këshillime në recepcionin e ILC Komune në Vushtrri.	onueshme në web faqen e ILC prej 10 Shkurtit 2016 deri me 23 ë, kopja e printuar e dokumenteve do të jetë e disponueshme për C në Prishtinë, në bordin e informatave në Zubin Potok dhe në
Të gjitha komentet, sygjerimet mënyrë elektronike apo nëpërm	dhe propozimet e publikut të interesuar mund të dërgohen në nes postës së rregullt në adresat e mëposhtme:
 Me e-mail: <u>info@iber-lep</u> Me postë: Bulevardi"Bill 	<u>penc.org</u> Clinton" nr.13, 10000 Prishtinë
Ne gjithashtu kishim dashur të përcjellura me konsultime dhe o dhe bej pyetje përsëri mbi d përgjegjës.	é njoftojmë prezentimin publik të KVNMS, KMMS dhe KPZh të diskutime ku publiku i interesuar do të mund të komentoj, sygjeroj ikumentet dhepermbajtjet e tyre, drejtëpërdrejtë me personat
Të gjitha komentet e shkruara o	the ato gojore do të shënohen në proqesverbal.
Prezentimet dhe konsultimet pu	ıblike do të mbahen si në vijim:
 Në Prishtinë me 26 S Clinton" nr. 13, 10000 Pr Në Zubin Potok(Mitrovic Në Vushtrri me 24 Shku 	hkurt 2016, në orën 11,Lokacioni: Drejtoria e IL,Bulevardi"Bill ishtinë xë) me 25 Shkurt 2016, në orën 11, në (Kuvendi Komunal) rt 2016, në orën 11, në (Objekti i IL-Nj.P."Vushtrri")

Javno objavljivanje Okvirne Procjene Uticaja u Zivotnu Sredinu i Drustvu	kao i Okvira
Drustvenog Upravljivanja, i Upravljanje Okvira za Raseljavanje - Bezbedn	ost Voda na
Kosovu i Projekat Zaštite Kanala	

Projekat Bezbednosti Vode i Zaštite Kanala je projekat finansiran od strane grupacije Svjetske Banke (internationalno udruzenje za razvoj - IUR). Projekat ima za cilj da obezbedi snabdevanje vodom za različite korisnike vode u centralnom Kosovu. Cilj , koji će se postići kroz realizaciju glavnih projektnih aktivnosti, uključujući izvođenje radova rehabilitacije na branu Gazivode, radove na sanaciji kanala Ibar-Lepenac i eventualno izgradnju novog rezervara za vanredne situacije.

Oslanjajuci se na životne sredine I socijalne zaštitne vahteve Svetske Banke, agencija za implementaciju , Kanal Ibar - Lepenac doo (KIL), pripremljen je Okvir za Procenu Uticaja u Zivotnu Sredinu i Socijalna (OPUZSS) sa Okvirom za Ekološko i Društveno Upravljanje (OEDU) i Okvira Politike za Raseljavanje (OPR) za aktivnosti projekta sa ciljem da se obezbedi poštovanje nacionalnih legislacija i ekoloskih i socijalnih politika Svetske Banke tokom implementacije projekta i šire .

Gorepomenuti dokumnti (OPUZSS, OEDU i OPR) su javno objavljeni kao deo procesa procene projekta i da postanu dostupni javnosti , uključujući i organizacije civilnog društva , nevladinih organizacija i drugi , za komentare, pitanja i sugestije.

Dokumenti će biti dostupni na sajtu ILC od 10 februara 2016 do 23 februara 2016 godine. U isto vreme , stampana kopija dokumenata će biti na raspolaganju za konsultacije na recepciji ILC prostorija u Prištini , bordu informacija u Zubin Potoku i opštine Vučitrn.

Sve primjedbe , sugestije i pitanja zainteresovane javnosti mogu da se elektronskim putem ili poštom poslati na sledeću adresu:

- Preko e-maila: info@iber-lepenc.org
- Preko poste: Bulevard"Bill Clinton" br.13, 10000 Priština

Takođe bismo želeli da objavimo javnu prezentaciju OPUZSS sa OEDU i OPR, sa konsultacijama i diskusijama, gde će zainteresovani građani moći , ponovo , da komentariše , sugeriše i postavljati pitanja o dokumentima i njegov sadržaj direktno odgovornim licima .

Svko pisano i usmeno komentari će se registrirati na zapisnik

Javna prezentacija i konsultacije će se održati

U Pristini datuma 26 februara 2016 go. u 11 ćasova, na (Direkcija)

U Zubin Potoku(Mitrovica) datuma 25 februara 2016 go. u 11 ćasova, na (S.O.)

U Vucitrnu on datuma 24 februara 2016 go. u 11 ćasova, na (R.J."Vushtrri")

Figure 24 Public announcement in English

Public disclosure of Environmental Environmental and Social Manageme Framework - Kosovo Water Security an	and Social Impact Assessment Framework ent Framework, and Resettlement Management d Canal Protection Project
Sosovo Water Security and Canal Protect Broup (International development Associa or various water users in Central Koso nplementation of main Project activitie ehabilitation works on Iber-Lepnec ca Reservoir.	tion Project is a project financed by the World Bank tion - IDA). The Project aims at ensuring water supply ovo. The goal, which will be accomplished through s including rehabilitation works on Gazivoda dam, nal and possibly construction of new Emergency
Following the World Bank environmental agency, Iber-Lepnec Canal Ltd (ILC), pre Framework (ESIAF) with Environmental Resettlement Policy Framework (RPF) compliance with national legislation and he project implementation and beyond.	and social safeguard requirements the implementing pared Environmental and Social Impact Assessment and Social Management Framework (ESMF) and for the project activities with a purpose to ensure World Bank environmental and social policies during
The abovementioned documents (ESIAF he project appraisal process and in the ivil society groups, NGOs and other, for o	with ESMF, RPF) are publically disclosed as a part of way to become available to general public, including comments, questions and suggestions.
The documents will be available on the w 3, 2016. In the same time, a hard copy of he reception of ILC premises in Pristi- hunicipality.	veb site of ILC from <mark>February 10, 2016 until February</mark> of the documents will be available for consultations at na, information board in Zubin Potok and Vushtrii
Il comments, suggestions and questions egular post to the following address:	s of interested public can be sent electronically or by
 By e-mail: <u>info@iber-lepenc.org</u> By post: Bulevardi"Bill Clinton" nr.1 	3, 10000 Prishtinë
Ve would also like to announce public pre- y consultations and discussion where the uggest and post questions on the doc versons.	esentation of the EISAF with ESMF and RPF followed ne interested public will be able, again, to comment, suments and its content directly to the responsible
Il written and verbal comments will be ad	dressed and recorded in the minutes.
Public presentation and consultations will	take place
 In Pristina on February 26, 2016, 1 In Zubin Potok (Mitrovica)on Febru Potok; (Mitrovica) In Vushtrri on February 24, 2016, 1 	1am CET/am/pm at (Head Office) lary 25, 2016, 11am CET/am/pm at Municipality Zubin 1am CET/am/pm at Work Unit "Vushtrri"

At all three public consultation meetings a presentation was given on ESIAF with ESMF findings were presented by Mr Arberor Prekazi and ILC legal department with details on any adverse effects project implementation might have on environment components and all WB policy and national legislation implications including needed environmental assessments and environmental due diligence documents. Second presentation was given by ILC legal department to list any potential adverse effect this project might have in terms of social aspects/conditions. Detail description was provided on how the communication with community shall be advocated throughout the project in order to ensure community ownership and also it was explained that there will be a grievance mechanism to address any potential complain of people affected during project implementation.

At the end of each meeting participants were informed that the document is still available to them in three languages if they would like more information about potential social and environmental impacts and in the case of additional questions they can be posted to ILC via mail, phone or personally. Participants were also asked to share information they gathered today with their communities being advised that also the people who were not present today in the Public Consultation still can send their questions to ILC.





<u>Vushtrii</u>

Eleven (11) participants representing villages around Vushtrri took part in the public consultation meeting at ILC premises. All of them are in fact employees of ILC, however, they are also small local farmers living in the vicinity of the canal with their families and as such they attended the Meeting as representatives of the Vushtrri community.

There were two questions/comments from the audience. The first was related to the fact that children living around the canal use it for bathing and swimming and if some kind of stairs should be built so they could more easily come out of the canal since after rehabilitation the canal would be deeper and current stronger and faster. ILC explained that this is an unauthorized use of the canal that should be prevented and not encouraged. ILC reminded the present that the purpose of the canal is not recreational or any other than to deliver water to its final users.

Picture 2 Consultations in Vushtrri



The comments and questions indicate how deep is the alternative (unauthorized) use of the canal rooted into the lives of the local population and stresses out need for paying special attention to safety in the construction and operational period.

The second question relates to the possibility of expanding the irrigation network. ILC maintained that only the main canal will be rehabilitated and no secondary irrigation canals would be rehabilitated nor new ones would be built.

Figure 25 Participants List - Vushtrri

Public	Consultations for Environmental and Social	Location	Vushtrri	Date:	24/02/20
Mana	gement Framework of Water Security and Canal ction Project			Data	-
Konsu	Iltimi Publik mbi Kornizen e menaxhimit mjedisor dhe si dhe Projektin e sigurise se uiit dhe mbroitjes se kanalit	Lokacioni		Datum	-
Javne zivotr	konsultacije Okvirnog plana upravljanja drustvenom I nom sredinom za projekat Sigurnosti opskrbe vodom I e kanala	Lokacija		Datum	
No.	Name /Emri /Ime	Surname /Mbiemri /Prezime	Company,Instit ution /Ndermarrja, Institucioni) /Kompanija, institucija	Contact telephone /telefoni kontaktues /Kontakt telefon	E/mail
1.	MUHARREM	CAKAJ	STANC	<u> </u>	
9	SELDENN	JONUS	DEBELLUK	4	
5	h Small	halimi	Mikalia		
1	Soll	Smakedli	Neolakou	1	
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Mitrovica (Zubn Potok)

The second consultations were planned to take place in Zubin Potok which is located in Northern Kosovo, a region not recognising central government of the Republic of Kosovo in Pristina. Despite ILC efforts the Municipality of Zubin Potok was not interested in organising a consultation meeting there. Alternatives were sought in the area, but unsuccessfully. Therefore the public consultations were organised in the nearby Mitrovica Municipality. Twenty (20) people attended the consultations from private sector (mining), Municipality, as well as private persons. Informal representative of Zubin Potok was also present.

Some of the questions did not relate to the environment or social issues, but other issues related to ILC rehabilitation such as source of financing, potential financial burden for the Municipality of Mitrovica, pronged life expectancy of the canal, and future price of water as potentially higher due to the loan.

Issue of land ownership was raised questioning the ILC ownership of all parcels of land on the Canal's route and if it was reflected in the cadastral agencies of each municipality.

The ILC legal department representative maintained that ILC does poses deeds for every parcel of land they are using and can document it. If any of cadastral agencies has not reflected changes of property that was actually purchased decades ago – it can be done in the upcoming months as necessary documents exist in the office of ILC.

Cooperation with farmers and KFW was suggested during the discussion. Farmers should be consulted and informed on adequate use of the IL canal. KFW is currently working on rehabilitation works at Vau and Dejes and are also implementing SCADA but linked with Early warning system which is suggested should be also installed during the IL canal modernization and such system should be linked with local and central authorities.

ILC confirmed that meetings will be held with nearby farmers during project implementation.

Picture 3 Consultations in Mitrovica



As in Vushtrri, question on safety issues regarding unauthorized use of canal for swimming and other purposes, especially by children, was raised. It was suggested that the IL canal should be closed completely to avoid accidents.

ILC informed that studies were done and there was rationale to have an open canal at that time (in the 1970s) and that the construction of a completely closed canal would probably have different costs for construction and for maintenance. I addition, today it is not possible to just bring a decision to close it completely as it is constructed as an open canal and its complete closure would need lot of modifications.

All questions posted during the Mitrovica Consultation Meeting were answered and comments and suggestions noted.

Figure 26 Participants List - Mitrovica

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<u>Pristina</u>

Although prominent NGOs and governmental officials from all relevant ministries, including Ministry of Environment and Spatial Planning, Ministry of Finances, Ministry of Economic Development, Pristina Municipality, Pristina Water Company were invited, the participants mostly represented private sector (mining - Feronikel and thermal power plant Kosovo A) and water supplying companies from Pristina and Drenas.

Again, some suggestions such as Mihaliq dam technical details were in focus of the participants. A parallel pipe for drinking water was also suggested as a part of the project. This pipe would go parallel with existing canal. Construction of the reservoir was supported by the attendee as deemed necessary since there is no water storage in Kosovo.

ILC informed the present that lining of reservoir in Mihaliq has not been discussed as the final design is yet to be defined and worked out. The suggested pipe with drinking water that is for the moment out of this investment, could be considered in future, but it is costly.

Participants warned that municipalities should work more in protecting the canal from waste and illegal dumping.

ILC confirmed that project was built with the aim of protecting the water from pollution and other adverse effects and he believed that water companies would have less problems after project completion with quality of water they get from canal.

Feronikel representative was interested in the possibility of having a pipe to supply them directly from main canal. ILC asked for the written request.



Issue of non-functioning water quality laboratories was raised and suggested that it could be solved through this project. ILC confirmed that some laboratories out of function and having functional laboratories maybe would be possible during project implementation.

Second presentation was given to list any potential adverse effect this project might have in terms of social aspects and it was described very detail how the communication with community shall be advocated throughout the project in order to ensure community ownership and also it was explained that there will be a grievance mechanism to address any potential complain of people affected during project implementation.

The project cost, safety of population and raw water price was again a concern of the participants. ILC maintained that price is regulated by Water Regulatory Office.

Figure 27 Participants List - Pristina

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