BiH WATER AND SANITATION SERVICES
MODERNIZATION PROJECT

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK FOR REPUBLIKA SRPSKA

December 2020

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Abbreviations

APCU	Agricultural Project Coordination Unit
BD	Brcko District
BiH	Bosnia and Herzegovina
BPM	Biodiversity Management Plan
CSOP	Construction Site Organization Plan
E&S	Environmental and Social
EEA	European Environmental Agency
EIA	Environmental Impact Assessment
ESCP	Environmental and Social Commitment Plan
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMAP	Energy Sector Management Assistance Program
ESMP	Environmental and Social Management Plan
ESSs	Environmental and Social Standards
EU	European Union
FBiH	Federation of Bosnia and Herzegovina
GIS	Global Information System
ICPDR	The International Commission for the Protection of the Danube River
KBA	Key Biodiversity Area
LEAP	Local Environmental Action Plan
LG	Local Government
LMP	Labor Management Procedure
M&E	Monitoring and Evaluation
MoFTER	Ministry of Foreign Trade and Economic Relations
MPPCEE	Ministry of Physical Planning, Civil Engineering and Ecology
OHS	Occupational Health and Safety
OP	Operational Procedure
PSA	Public Service Agreements
PIT	Project Implementation Team
RL	Regional Landfill
RP	Resettlement Plan
RPF	Resettlement Process Framework
RS	Republika Srpska
SCADA	Supervisory Control and Data Acquisition
SEP	Stakeholder Engagement Plan
WB	World Bank
WFD	Water Framework Directive
WSS	Water Supply and Sanitation
WSSM	BiH Water and Sanitation Services Modernization Project
WWTP	Waste Water Treatment Plant
WU	Water Utility Companies

1 EXECUTIVE SUMMARY

Project background

The Development Objective of the Project is to support the government of Bosnia and Herzegovina (BiH) to (i) strengthen the enabling environment at Entity and Municipal level for improved service delivery and thus customer satisfaction; and (ii) improve access, quality and efficiency through the modernization of existing public water and sanitation service (WSS) delivery.

This project will implement a series of subprojects with high relevance to the program objectives. The first phase will target an initial number of utilities in terms of technical assistance and eligible investments. The second phase will help consolidate capacity building, reform actions and investment in the phase one utilities while allowing for scale-up of project activities in other Local Governments (LGs) and Water Utilities (WSs) across BiH.

The project consists of three components and accompanying activities as described below:

Component	*Sub-component/ Activities*
Component 1: improving the enabling environment for sector modernization	Sub-component 1.1: Support for water supply and sewerage sector reforms on Entity level
	Technical assistance activities: - development of a WSS sector financing mechanism - institutionalization of a utility benchmarking system - development of a rural WSS data base; - national capacity building program for the professionalization of the sector
	Sub-component 1.2: Project management and coordination of the sector reforms
	Financing of APCU to perform project management-related activities: - audits, training, safeguards and fiduciary management, and all associated Project operating costs - managing beneficiary satisfaction surveys and feedback mechanism, including a grievance redress mechanism, - financial and technical support to line ministries and established Entity Working Groups - technical advice for the formulation of regulatory and policy frameworks, policy facilitation and public consultations
Component 2: Support for water services sector reforms on municipal level	Technical assistance activities: - The preparation of water utility business plans (BP) - Development and signing of Public Service Agreements (PSAs) between the municipality and the water utilities - Preparation of tariff proposal, based on legislation set on Entity level - Support for organizational restructuring - Capacity building on technical, commercial and financial topics
Component 3: Improving access, quality and efficiency of wss service delivery	Infrastructure investments for improving access, quality and efficiency of WSS service delivery including, but not limited to: - Water efficiency investments including NRW reduction (such as leak repair, pressure control, etc.), energy efficiency measures and metering & commercial systems - Water assets renewal and extension, other water components including water system rehabilitation and extension, Water Treatment Plant (WTP) rehabilitation and construction, SCADA, GIS, other measures - Wastewater assets renewal and extension including sewer network rehabilitation and extension, improvements to existing Waste Water Treatment Plants (WWTPs) - New WWTPs construction

The existing Agricultural Project Coordination Unit (APCU) within RS Ministry of Agriculture, Forestry and Water Management will be responsible for implementation of the activities in RS. Water Agency "Vode Srpske" will provide technical support. In each municipality, the Project Implementation Team (PIT) shall be established which should consist of representatives from Municipality/City and Water Utility. Also, the PIT will carry out daily coordination of the activities and regularly report to APCU.

The program will be implemented over a period of 6 years.

Environment and social (E&S) risk of the Project is rated substantial due to the potential nature of the sub-projects and the significant impact on the policy and institutional environment.

Objectives of the Environmental and Social Management Framework (ESMF)

Within the *BiH WSS Modernization Project*, the implementation of specific subprojects will be proposed. In order to facilitate the adequate preparation of such sub-projects, the ESMF is used to define and guide the environmental and social (E&S) due diligence mechanisms for specific activities.

All subprojects to be financed under the Program would be subject to assessment of E&S risks following the procedures described in this ESMF. The ESMF establishes principles, rules, guidelines and procedures for assessment of E&S risks and impacts. The E&S assessment will be based on current information, environmental and social data at the appropriate level with an accurate description and assessment of the project and any associated aspects. As a result, relevant environmental and social instruments will be prepared and used during implementation of each sub-project. The ESMF refers to new activities as well as to activities for which a retroactive financing is sought.

The relevant ESSs and OPs are:

ESS/OP	
ESS1	Assessment and Management of Environmental and Social Risks and Impacts
ESS2	Labor and Working Conditions
ESS3	Resource Efficiency and Pollution Prevention and Management
ESS4	Community Health and Safety
ESS5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
ESS6	Biodiversity Conservation and Sustainable Management of Living Natural Resources
ESS8	Cultural Heritage
ESS10	Stakeholder Engagement and Information Disclosure
OP 7.50	Projects on international waterways

Environmental and social assessment of subprojects

Step 1. Carry out the rapid risk analysis and E&S assessment pursuant to the WB requirements

Rapid risk assessment of each sub-project will be done based on the rapid assessment of two criteria: *project impacts* and *sensitivity of receiving environment*.

The *project impacts* shall be assessed as “high“, “medium“, “low“ and “minor/no impact“ based on the magnitude of the project and scope of works (new construction, rehabilitation and maintenance). Appropriate matrices for water supply and wastewater sub-projects are developed to assess these aspects. The *sensitivity of receiving environment* shall be assessed as “high“, “moderate“ and “low“ taking into account important ecological and sociocultural characteristics in the direct and indirect influence area.

Based on the assessment of the two criteria, the category of risk will be assessed as “high“, “substantial“, “moderate“ and “low“ risk and the following actions taken:

Risk category	*Action to be taken*	*Result of the action*
High risk subprojects	High risk activities are not eligible for financing	Reconsider changing the design or siting characteristics and resubmit the sub-project.

Risk category	*Action to be taken*	*Result of the action*
Substantial risk subprojects	A preliminary environmental assessment is required to decide whether the project can proceed without a full environmental impact assessment. An assessment will be carried out in line with the entity laws, this ESMP and provisions set forth under ESS1 and any other relevant ESS as well as the ESF.	WB requirements on E&S impacts mitigation and monitoring included in the tender dossier/bidding documents. Mitigation obligations assigned to the hired contractor. Monitoring assigned to contractor or supervisor, as relevant.
Moderate risk subprojects	A site-specific ESMP will be produced in line with this ESMF. Sections related to all applicable ESSs shall be included.	WB requirements on E&S impacts mitigation and monitoring included in the tender dossier/bidding documents. Mitigation obligations assigned to the hired contractor. Monitoring assigned to contractor or supervisor, as relevant.
Low risk subprojects	The implementation can start after inclusion of generic ESMP into construction works contract. A generic ESMP has been prepared for the purpose of this project and is provided in Annex B to this ESMF.	WB requirements on E&S impacts mitigation and monitoring included in the tender dossier/bidding documents. Mitigation obligations assigned to the hired contractor. Monitoring assigned to contractor or supervisor, as relevant.

Additionally, APCUs will be required to:

- in case of any land acquisition issues identified, prepare a site-specific Resettlement Plan in line with the guidance given in the Resettlement Framework developed for the WSS Modernization project,
- implement the developed Labor Management Procedure, and update it as necessary,
- undertake stakeholder engagement and disclose appropriate information in accordance with the Stakeholder Engagement Plan developed for the WSS Modernization project,
- conduct monitoring and reporting on the E&S performance of the for the WSS Modernization project against the program-specific ESMF, RPF, SEP and LMP.

Step 2. Carry out an environmental assessment in line with entity regulations

Type of activities	*Action to be taken*	*Result of the action*
Water intakes	In case that the activity involves abstraction of groundwater in volume equivalent to or exceeding 10 million cubic meters Environmental Impact Assessment procedure carried out by the entity ministry of ecology and ultimately ending with issuing of ecological permit. Submit the EIA study. In case that the activity involves abstraction of groundwater in volume of less than 10 million cubic meters Preliminary impact assessment based on which the entity ministry of ecology decides on the necessity to conduct a full EIA and ultimately issues the ecological permit	Ecological permit

Type of activities	*Action to be taken*	*Result of the action*
WTP	Plants for abstraction and treatment of ground water in volume equivalent to or exceeding 10,000 l/h The ecological permit is issued by the Entity Ministry based on the Proofs submitted together with the Request for environemntal permit. Plants for abstraction and treatment of ground water in volume less than 10,000 l/h The ecological permit is issued by the Municipality/ City based on the Proofs submitted together with the Request for environemntal permit. *Note: In case the expansion of WTP is greater than 25% seek the opinion of the entity ministry of ecology on the necessary of environmental impact assessment procedure.*	Ecological permit
WWTPs	Capacity > 50.000 Population Equivalent (PE) Environmental Impact Assessment procedure carried out by the entity ministry of ecology Submit the EIA study. Capacity < 50.000 PE Preliminary impact assessment based on which the entity ministry of ecology decides on the necessity to conduct a full EIA and ultimately issues the ecological permit *Note: In case the expansion of WWTP is greater than 25% seek the opinion of the entity ministry of ecology on the necessary environmental assessment procedure.*	Ecological permit
Sewers	Sewer length > 20 km The ecological permit is issued by the Entity Ministry based on the Proofs submitted together with the Request for environemntal permit. Sewer length < 20 km The ecological permit is issued by the Municipality/City based on the Proofs submitted together with the Request for environemntal permit.	Ecological permit
Pipelines/pump stations/reservoirs	No action needed	-
Other water components (metering, SCADA, GIS, other soft measures)	No action needed	-

Step 3. Organize consultations with stakeholders at the location closest to the project implementation site in line with the requirements of the Stakeholder Engagement Plan (SEP) which has been developed as a separate document under this Project.

Step 4. (*If needed and where applicable*) Obtain various permits and approvals including water management acts and construction related acts.

Pursuant to the WB requirements, a Labor Management Procedure (LMP) has been developed as a separate document and should be implemented during the implementation of all subprojects under this Project.

Monitoring and Reporting

The APCU shall in cooperation with PITs monitor the implementation of this Framework, both at overall Project level and individual subproject level. The APCU shall ensure that the requirements of the site-specific ESMPs and ecological permits are included in employer's requirements. Within their usual monitoring activities, the APCU shall perform monitoring (including on-site monitoring, as needed) to ensure that

Contractors comply with their contractual obligations. The APCU shall establish and maintain records on dissemination of information and engagement of all stakeholders in accordance with the SEP.

It is the responsibility of the Contractor to ensure the proper execution of works and labor management compliance, according to measures prescribed in this Framework and the LMP, and in line with national and international standards.

The APCUs will report on a regular basis to WB on subproject screening, approval and monitoring results.

Public consultations process

TBA

2 INTRODUCTION

2.1 Brief Project Description

2.1.1 Objectives

The Development Objective of the Project is to support the government of Bosnia and Herzegovina (BiH) to:

- Strengthen the enabling environment at Entity and Municipal level for improved service delivery and thus customer satisfaction;
- Improve access, quality and efficiency through the modernization of existing public water and sanitation service (WSS) delivery.

2.1.2 Components

This project will implement a series of subprojects with high relevance to the program objectives. The first phase will target an initial number of utilities in terms of technical assistance and eligible investments. The second phase will help consolidate capacity building, reform actions and investment in the phase one utilities while allowing for scale-up of project activities in other Local Governments (LGs) and Water Utilities (WSs) across BiH.

The project consists of three components as described below:

Component 1: Improving the enabling environment for sector modernization

This component will finance activities at the Entity level with the aim of strengthening policy and regulatory frameworks and institutional capacities to advance sector reform and improve operational efficiency and sustainability, as well as resilience of the WSS sector to climate change effects. This project activities will target key stakeholders, including line ministry for water management, LGs and WUs The component is structured around two sub-components:.

Sub-component 1.1: Support for water supply and sewerage sector reforms on Entity level. This sub-component will finance key activities of the reform process in coordination and in alignment with activities supported by other development partners. This sub-component will finance **technical assistance** for the: (i) development of a WSS sector financing mechanism which promotes performance based financing; (ii) institutionalization of a utility benchmarking system for the tracking, analysis and preparation of monitoring reports to assess the performance of water service providers in targeted municipalities; (iii) the development of a rural WSS data base; (iv) launch of a national capacity building program for the professionalization of the sector.

Sub-component 1.2: Project management and coordination of the sector reforms. This sub-component will finance (i) the Agricultural Project Coordination Units (APCUs) to perform project management-related activities, including monitoring and evaluation (M&E), (ii) Project and entity audits, training, safeguards and fiduciary management, and all associated Project operating costs (iii) beneficiary satisfaction surveys and managing a beneficiary feedback mechanism, including a grievance redress mechanism, (iv) coordination and technical backstopping of the reform process in the mid-term providing financial and technical support to line ministry and established Entity Working Groups; and (v) technical advice for the formulation of regulatory and policy frameworks, policy facilitation and public consultations in cooperation with the UNDP MEG II project.

Component 2: Support for water services sector reforms on Municipal level

This component will finance activities at the municipal levels, which will ultimately contribute to institutional strengthening, building and improving existing capacities.

This component includes the financing activities focused on: (i) Preparation of water utility business plans targeting at improvement and modernization of WSS sector, (ii) Development and signing of Public Service Agreements (PSAs) between the municipality and water utilities, (iii) Preparation of tariff proposal, based on legislation set on Entity level, (iv) Support for organizational restructuring with the aim of increasing efficiency; (v) Capacity building on technical, commercial and financial topics, as well an in environment and social risk management, including gender-specific areas of skill development.

Component 3: Improving access, quality and efficiency of WSS service delivery

Within this component, activities that contribute to improving access, quality and efficiency of WSS service delivery will be financed. It will finance investments according to the water utilities' performance level classification and the needs identified in their business plans prepared under Component 2. Financing under this component would include two categories: (i) performance and efficiency improvements including but not limited to the implementation of non-revenue water reduction, energy efficiency programs and improvements in metering and commercial systems and (ii) construct, upgrade, and modernize WSS infrastructure, including water treatment and distribution facilities and wastewater collection and treatment facilities.

2.1.3 Risk rating

Environment and social risk are rated substantial due to the potential nature of the sub-projects and the significant impact on the policy and institutional environment.

2.1.4 Implementation Arrangements

The existing Agricultural Project Coordination Unit (APCU) within RS Ministry of Agriculture, Forestry and Water Management will be responsible for implementation of the activities in RS. Water Agency "Vode Srpske" will provide technical support. The APCU will be responsible for the implementation of the assigned Entity project activities, carry out procurement and supervision/monitoring of contracts, maintain effective internal control procedures, account for expenditures in their existing budgetary accounting systems, receive funds, make payments and provide the documentation and information related to use of the loan/grant proceeds, statement of expenditures (SOE) documentation of the eligible expenditures, project reporting and monitoring.

In each municipality, the Project Implementation Team (PIT) shall be established which should consist of representatives from Municipality/City and Water Utility. The PIT will prepare documentation needed for tendering procedures and submit to APCU. Also, the PIT will carry out daily coordination of the activities and regularly report to APCU. APCU shall organize needed training to PIT staff in order to strength capacities on local level (including trainings on procurement, financial management and disbursement, financial reporting, monitoring and evaluation, environmental and social safeguards). Details on relations among APCU and PIT will be defined in the Project Operational Manual (POM).

Agricultural Project Coordination Units in RS (APCU) will need to have a clear mandate to coordinate with Entity Intersectoral Working Groups[1] for know-how transfer to the institution upon the end of the Project.

2.1.5 Timeline

The program will be implemented over a period of 6 years.

Expected Approval Date is 11 March 2021.

[1] Intersectoral Entity Working Groups to coordinate the reform process have been established with participation of relevant institutions including Entity Ministries, water utility representatives and representatives of local governance.

Expected Closing Date is 10 May 2027.

2.2 Objectives of this Environmental and Social Management Framework

According to the World Bank (WB) Environmental and Social Framework of 2018 (Environmental and Social Standard (ESS) 1: Assessment and Management of Environmental and Social Risks and Impacts), the *Environmental and Social Management Framework (ESMF)* is **an instrument that examines the risks and impacts when a project consists of a program and/or series of subprojects, and the risks and impacts cannot be determined until the program or subproject details have been identified.**

Within the *BiH Water and Sanitation Services Modernization Project*, the implementation of specific subprojects will be proposed. In order to facilitate the adequate preparation of such sub-projects, the ESMF is used to define and guide the environmental and social (E&S) due diligence mechanisms for specific activities. The environmental and social assessment will be an adequate, accurate and objective evaluation and presentation of the risks and impacts.

The ESMF establishes principles, rules, guidelines and procedures for assessment of E&S risks and impacts. It includes measures and plans for reduction, mitigation and/or compensation of negative risks and impacts, rules for estimating and budgeting costs of such measures, as well as information on the agency or agencies responsible for addressing project risks and impacts, including information on such body's capacity to manage E&S risks and impacts. It also includes adequate information on the area where a subproject is expected to be implemented, including any potential E&S vulnerability of such area; as well as information on the potential impacts and mitigation measures which could be implemented. The environmental and social assessment will be based on current information, environmental and social data at the appropriate level with an accurate description and assessment of the project and any associated aspects.

This ESMF has been prepared with the aim to ensure:

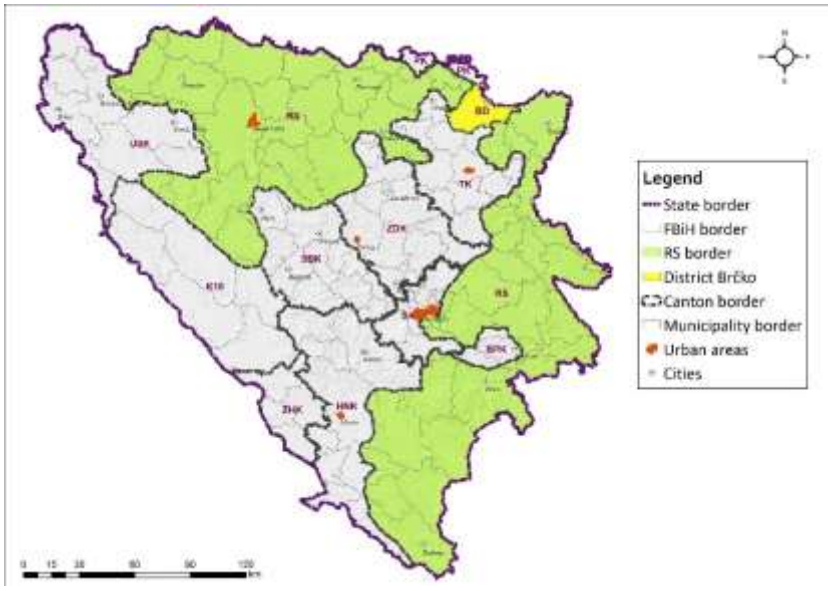
- project compliance with all relevant local polices and legislation, as well as WB requirements, and therefore
- adequate mitigation of all potentially adverse E&S impacts of the Program.

This document provides a detailed description of the procedures related to assessment, management and monitoring of E&S risks and impacts of the subprojects. All subprojects to be financed under the Project will be subject to an assessment of E&S risks by the APCU, following the procedures described in this Framework. For "high" risk subprojects, an *Environmental and Social Impact Assessment (ESIA)* will be developed, while for "substantial", "moderate" and "low" risk subprojects, an assessment will be carried out in line with the RS environmental laws and will include preparation of a site-specific *Environmental and Social Management Plan (ESMP)*, all in line with this ESMF and provisions set forth under the World Bank ESS1 and ESF.

The ESMF refers to new activities as well as to activities for which a retroactive financing is sought.

2.3 Basic Information About the Project Area

Bosnia and Herzegovina is an independent country with a decentralized political and administrative structure, consisting of two entities: Federation of Bosnia and Herzegovina and Republika Srpska and Brcko District. This document will analyze the environmental and social impact of the modernization of the water supply and sewerage sector in the Republika Srpska. Therefore, basic information about the project area are given in the bellow.

Bosnia and Herzegovina	
Abbreviation:	BiH
Capital:	Sarajevo
Area:	51.129 km^2
Population:	3.511.372
Government structure:	BiH is a country with several levels of government: ▪ at BiH level; ▪ at the level of entities/District (FBiH, RS and BD) ▪ at the level of Cantons in FBiH only ▪ at the level of municipalities. The highest legislative body in BiH is the Parliamentary Assembly of BiH. Other institutions at the national level are: Presidency of BiH, Council of Ministers of BiH, Constitutional Court.
EU status:	BiH has an EU candidate status. Accession negotiations with the EU are ongoing.
Republika Srpska	
Abbreviation:	RS
Major cities or towns:	Banja Luka, Bijeljina, Prijedor, Doboj, Istocno Sarajevo, Trebinje
Area:	25.053 km^2
Geographical position:	Republika Srpska is an entity in Bosnia and Herzegovina. BiH borders Croatia, Montenegro and Serbia and the Adriatic Sea.  *Figure 1: Geographical map of RS*
Population:	1.228.423
Languages:	Official languages: Bosnian, Serbian and Croatian
Government structure:	In RS the National Assembly of RS and the Council of Peoples have legislative authority. Entity level institutions include: National Assembly, President of RS with two Vice-Presidents and Senate, Government of RS and The Constitutional Court of RS.
Main industries	Coal, steel, iron, vehicles, tobacco, food, clothing, leather, wood, furniture, paper, chemical, pharmaceutical

Nominal GDP:	BAM 11.233 million (2019)
Nominal GDP per capita:	BAM 9.832 (2019)
Nominal GDP growth:	5,2% (2019)
Water Supply and Sanitation Services in RS:	Water and sanitation sector in RS is in an unenviable position. The weak institutional set-up, incompatibility of tariffs with the principles of cost recovery, the sector's financial challenges, high inefficiencies, weak operations and maintenance practices have caused a reduction in the quality of service delivery to the citizens in RS.

3 BASELINE ENVIRONMENTAL CHARACTERISTICS OF THE PROJECT AREA

3.1 Geographic, Topographic and Geological Characterization

Republika Srpska is situated at the meeting point of two large natural-geographic and social-economic regional wholes - Pannonian and Mediterranean. Like the rest of Bosnia and Herzegovina, RS is split into a Bosnian region in the north and a Herzegovinian region in the far south. Within these two macroregions exist smaller geographical regions, from the forested hills of Bosanska Krajina in the northwest to the fertile plains of Semberija in the northeast.

Elevation varies greatly, with Maglic, a peak in the Dinaric Alps near Montenegro, reaching 2,386 metres and parts nearer the Adriatic going down to sea level (*Figure 2*). The largest and most popular ski resort in Bosnia and Herzegovina is situated on the slopes of the mountain Jahorina, in the eastern part of the entity. Other mountains in Republika Srpska include Kozara, Romanija, Bjelasnica, Motajica and Treskavica.

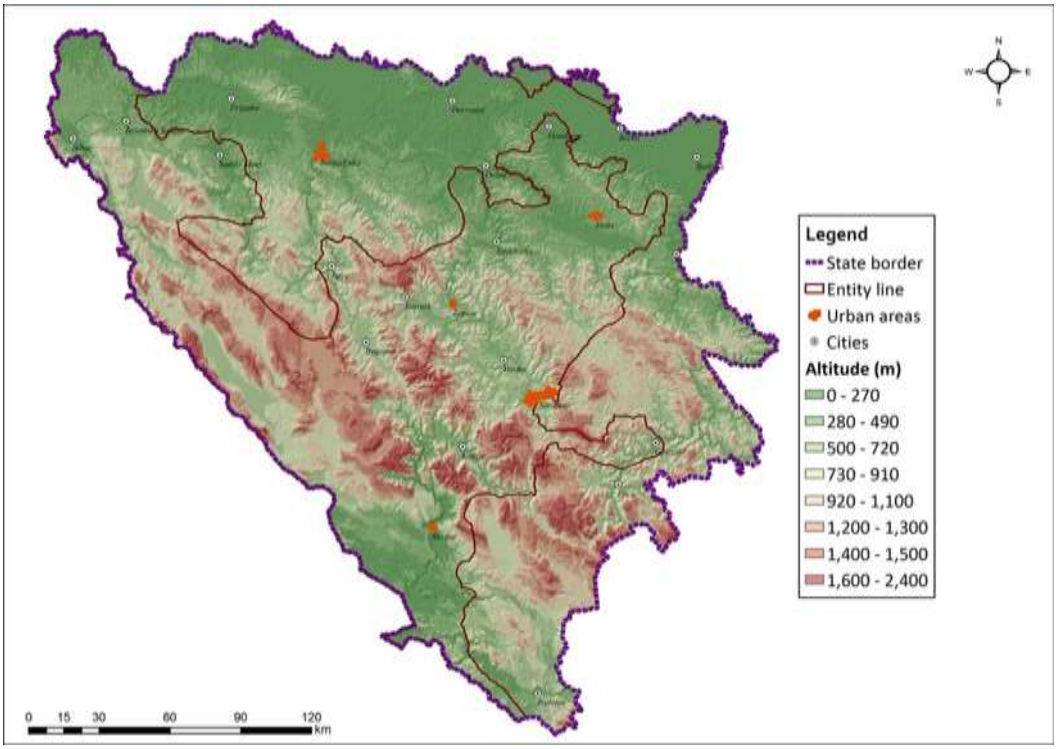


Figure 2: Topographic map of RS

The area of the RS is characterized by different geomorphological forms. There are three specific physiognomic units: The Adriatic region in the southwest, the mountain-valley region in the south and the Peripannonian rim in the north. The terrains of the wider area of the RS are built by rock complexes of different geotectonic units and stratigraphic affiliation. The largest part of our territory is built by the Dinarides, which face the ophiolite belt in the northeastern part, i.e. the western part of the Vardar zone. The Paleozoic complexes at the base of the Dinarides are still unclear even in the phase of today's correlation studies[2]. Going from the northwest to the southeast, the mentioned base consists of five units-terrains, namely: Sana-Una terrain, Central Bosnian slate mountains, Jadar terrain, Drina-Ivanjica unit - terrain and East Bosnian-Durmitor unit-terrain. From the southwest to the northeast, the Dinarides build the following units:

[2] Assessment of vulnerability from natural disasters and other accidents, Republika Srpska

- The Inner Dinarides, represent the formations of the eugeosynclinal sedimentation space, the extreme northeastern part of the Dinarides
- The Central Dinarides represent the threshold or transition between the Outer and Inner Dinarides. The border with the Dalmatian-Herzegovinian composite terrain is relatively clear, while the border with the Inner Dinarides is very complicated due to pronounced pull-ups and subsequent descents of the northeastern blocks.
- The Outer Dinarides represent wide areas, mostly karstified, mountain masses of the southeastern and southern parts of the RS.

In the northern Peripannonian part, the hilly terrains built of Cenozoic deposits gradually descend into the plains with alluvial plateaus and river terraces, which is also the most fertile part of the RS. Several single mountains rise in this area - Kozara, Prosara, Motajica, Vučijak and Trebovac, and the extreme northeastern branches of Majevica.

The vast expanses of the eastern RS are built by the mountain masses of Devetak, Sjemec and Romanija. These are platform, precipice and pre-precipice limestone formations of the Middle and Upper Triassic[3]. The largest masses of megalodon limestones build terrains in two areas. The northeastern zone encompasses the mountain masses south to Han Pijesak, the southwestern parts of Devetak and over Sokolovic, Kalimanic and Borik. The Triassic platform limestones of Devetak, Sjemec and Romanija represent a unique carbonate complex of the Drina-Ivanjica element. During the Middle Triassic, the long-term rupture of the southern rim of the European continent began, i.e. the creation of the tract of the ophiolite belt and separation from the East-Bosnian-Durmitor complexes - the Dinarides.

The territory of the RS is characterized by landslides that are distributed throughout the territory, but quite unevenly. Most of them are on the slopes of Neogene deposits, both in mountainous and hills, and often in slightly undulating areas with a represented clay component. In the clastic development of the Mesozoic, terrains built of the Lower Triassic in the areas of Prijedor, Mrkonjic Grad, Banja Luka, Vlasenica and Foca have a special significance for the formation of landslides. The sand-clay development of the Lower Triassic is associated with the occurrence of about 47 landslides, which are conditioned by the specific mineral composition, structure and textural characteristics of these rocks. Quaternary deposits, composed of all genetic types of terrestrial deposits, are the main carriers of instability on slopes. The municipalities that are most endangered by landslides in the Republika Srpska are: Banja Luka, Derventa, Teslic, Prnjavor, Modrica, Doboj, Lopare, Ugljevik, Zvornik, Višegrad, Foca and Gacko. In the RS, there are no data on the total damage caused by landslides, but it can be quite reliably claimed that landslides caused by natural, anthropogenic or associated processes damage or demolish hundreds of buildings annually, mostly individually owned, endanger or damage more a dozen roads and capital buildings[4].

Earthquakes on the territory of RS are of tectonic autochthonous origin. The concentration of the epicenter of the earthquake is the highest in the area of Herzegovina and the wider area of Banja Luka. Geotectonically, there are regional and other fault structures that are visible signs of pronounced destruction of the terrain. The last strong earthquake in Banja Luka occurred in 1964 with 6.6° Richter / 9.9° MCS.

3.2 Climate

The climate in the RS is determined by the geographical position, relief, geological background, proximity to the Adriatic Sea and flora cover. The Adriatic Sea significantly affects the climate, especially in the coldest part of the year, when it alleviates extreme winter temperatures by releasing a large amount of thermal energy. The climate of RS is also influenced by mountains, plateaus, gorges, lowlands and valleys. In RS is the highest peak of BiH (Maglic, 2386 m).

[3] Herald geological 33 – New edition 1, Republika Srpska, Ministry of Industry, Energy and Mining
[4] Assessment of vulnerability from natural disasters and other accidents, Republika Srpska

The temperate continental climate occurs in the north of RS and the average annual temperature in this area is +10 °C. Summer temperatures can rise over 40 °C, while in winter temperatures drop to -30 °C. In the southwestern part of RS (Herzegovina), the Mediterranean climate is present. The climate in the lower parts of Herzegovina is influenced by the Adriatic Sea, so temperatures in January are between +3 °C and +6 °C, while in the higher parts of Herzegovina they can drop to - 15°C. Often, summer temperatures exceed +40 °C. The line separating these two regions is the area of high mountains, plateaus and gorges in which, depending on the altitude, the mountainous and sub-mountainous climate dominates. In these areas, there are mainly two seasons – winter and summer, where winter temperature can drop to -35 °C, and in summer rise to +35 °C. The southwestern part of RS (Gacko, Nevesinje, Bileca) is also characterized by temperate mountain-Mediterranean climate. As the name suggest, the influences of the Mediterranean and the mountains are mixed in this area. The air temperature decreases with the increase of altitude and distance from the sea, so that the temperatures can drop to -20 °C in winter, and increase over +40 °C in summer.

The amount of precipitation in RS is influenced by air masses coming from the west (from the Atlantic) and from the south (from the Adriatic). In areas of temperate continental climate, the highest amount of precipitation occurs in the warm part of the year, with a maximum in June, and snow is common in these areas. In areas of mountainous and sub-mountainous climates, rainfall occurs in the summer months, while snowfall often occurs in the winter and the snow cover lasts a long time. The Mediterranean climate is characterized by abundant rainfall in autumn and winter, while droughts are common in summer. Snow is a rare occurrence in areas of this climate. For areas of temperate mountain-Mediterranean climate, rainfall in autumn and winter is common, and snowfall also occurs, with abundant formation of high snow cover.

From the hydrological aspect, the area of RS is relatively rich in surface and underground hydrological network. All major river flows hydrologically belong to the Black Sea basin. The backbone of the Black Sea basin is the course of the Sava River, which is low and into which other rivers flow – Una with the Sana, Vrbas, Ukrina, Bosna and Drina. The Drina River has the most developed hydrological system and the most significant hydropower potential. The most important river in Herzegovina is Trebisnjica, which belongs to the Adriatic basin and whose hydrographic potential is almost completely valorized.

In annual distribution, the relative humidity is highest in late autumn (November) and in the first half of the winter period (December and January), and lowest during the summer, mostly in July. This schedule may be partially altered in the spring months due to sudden warming, the end of winter, or due to higher precipitation. The southern and southwestern parts of the entity have the lowest value of relative humidity in the territory of RS. The remaining part of the territory of RS has a continental flow of relative humidity (more than 70%) with certain local specifics. Fogs are characteristics of river valleys and valleys and can occur throughout the year, but are most frequent in spring and autumn.

Characteristic winds for the south of the entity are bora and jugo. In this area, the bora is not as frequent as in FBiH, but it is very often of strong intensity. For mountains areas, winds from the southwest are characteristic, which have the attributes of a foehn wind. In the continental part of the entity, weak to moderate winds of variable direction prevail. Strong winds in this area are rare.

3.3 Climate Change

RS is affected by climate change and is taking significant steps to mitigate this problem on the domestic and international level. As solving of this problem is of strategic importance for BiH, but also for RS as its integral part, the *Strategy for Adopting to Climate Change of Low-Emission Development for BiH* was adopted in June 2013. According to the data from the Strategy, the highest increase in the average temperature of +0,7 °C in the spring and winter months for the period 1981-2010 was recorded in Banja Luka.

The rate of temperature has increased over the last decade, according to reports from Republika Srpska Hydrometeorological Institute. For example, a comparison of the results of monthly synoptic analyzes, which

are available on the website of the Republic Hydrometeorological Institute, shows an increase in the mean temperature in January 2014 compared to average values. Thus, Trebinje had the highest value of the average temperature in January in RS, which was slightly above +8 °C, while the average temperature for this city is slightly below +6 °C. The lowest average value of temperature in this month was measured in Cemerno and was slightly below +2 °C, while the average is around -2 °C. The temperature value in Trebinje in January 2020 was slightly above +6 °C, and in Cemerno around -1,8 °C. These values were closed to the average values, but a slightly warmer month was recorded compared to the usual values. The highest measured value of temperature in January 2014 was in Banja Luka and was around +19 °C, while the lowest temperature of close to -13 °C was measured in Sokolac. In January 2020, the highest temperature of +18,3 °C was measured in Banja Luka, while the lowest value of -20,6 °C was measured in Sokolac. Comparing the values of mean temperatures for June in 2014 and 2020, it is concluded that the average temperature in Trebinje increased by +2,4 °C, while in Cemerno increased by +1,6 °C. Also, the highest measured temperature in July in RS increased by about +1,2 °C.

It is expected that temperatures will be even higher in future, with a tendency of rapid growth, which is confirmed by the analyzes of Strategy. Specifically, it is predicted that in the period 2031-2060, temperatures in the southern areas will increase by 1 °C to 2 °C, and in the range from 2 °C to 3 °C in the interior of subject area. Also, it is predicted that the maximum summer temperature will be higher by 5 °C, while the number of days during which the temperature exceeds 25 °C will increase by two to six weeks a year.

Using the same monthly synoptic analyzes, it is concluded that in Trebinje the precipitation was 67% less than the average in January 2020, while this decrease was almost 100% in July 2020, and very dry period was recorded. In other cities, the situation is very similar and in almost all of them there is a noticeable decrease in the amount of precipitation. The largest increase in precipitation was recorded in Sokolac in July 2020 and amounted to about 38%, while a decrease in precipitation was recorded in all cities of RS in January 2020.

Also, the Strategy estimates that in the period 2031-2060 there will be significant changes in the amount of precipitation. It is expected to reduce the amount of summer precipitation, which could be halved compared to current levels, and thus increase the dry days throughout the area.

RS is rich in water resources. The climate change has a significant impact on water sector. Forecasted changes in air temperatures and precipitation will negatively affect the water resources management system. Proper management of water resources could support RS's economic development and "green economy".

Increasing air temperature and decreasing rainfall in the spring and summer months will cause droughts and water shortages, while increased rainfall in the autumn and winter can cause flooding. The increase in dry, waterless periods in the summer days will occur in parallel with the increase in the evaporation rate, which will have a great impact on water quality. It is expected that such more extreme climatic conditions will become more frequent, as was evident from the large scale flooding in Southeastern Europe in 2014 that also flooded a large portion of Bosnia and Herzegovina.

Since climate change leads to an increase in water temperature, increase in the concentration of CO_2 in water, decrease in the concentration of O_2 in the water, and the acidification of watercourses, this in turn causes stress in fish, which adversely affects biodiversity. In general, the sensitivity of ecosystems to the effects of climate change has increased due to their distributed state, fragmentation and various anthropogenic impacts. It is expected that climate change will significantly affect biodiversity in such a way that 15-37% of terrestrial species will become extinct due to climate change in the next fifty years, and the same trend will be reflected in freshwater species[5].

[5] Third National Communication and Second Biennial Update Report On Greenhouse Gas Emissions of Bosnia and Herzegovina, available at: https://www.undp.org/content/dam/bosnia_and_herzegovina/docs/News/E&E%20Sector/TNC/TNC%20Report%20ENG.pdf

It is therefore important to increase the resilience of the RS to climate variability and long-term climate change. This can be achieved, inter alia, through the efficient use of resources, increase in energy efficiency, utilization of renewable energy resources and improvement of energy and transport infrastructure and services.

3.4 Water Quality

3.4.1 General information

The surface and groundwater resources in BiH belong to two major river basins: the Black Sea Basin (i.e. Sava River Basin in BiH) and the Adriatic Sea Basin. 55% of the Sava River Basin is in the territory of the RS. There are 8 river sub-basins in BiH: Una (with Korana and Glina), Vrbas, Bosna , Drina, Cetina, Neretva, Trebišnjica, and Sava (*Figure 3*).

Apart from the inland waters, BiH has a territorial jurisdiction over a part of the Adriatic Sea along the coast of the Municipality of Neum and a part of the Mali Ston Channel.

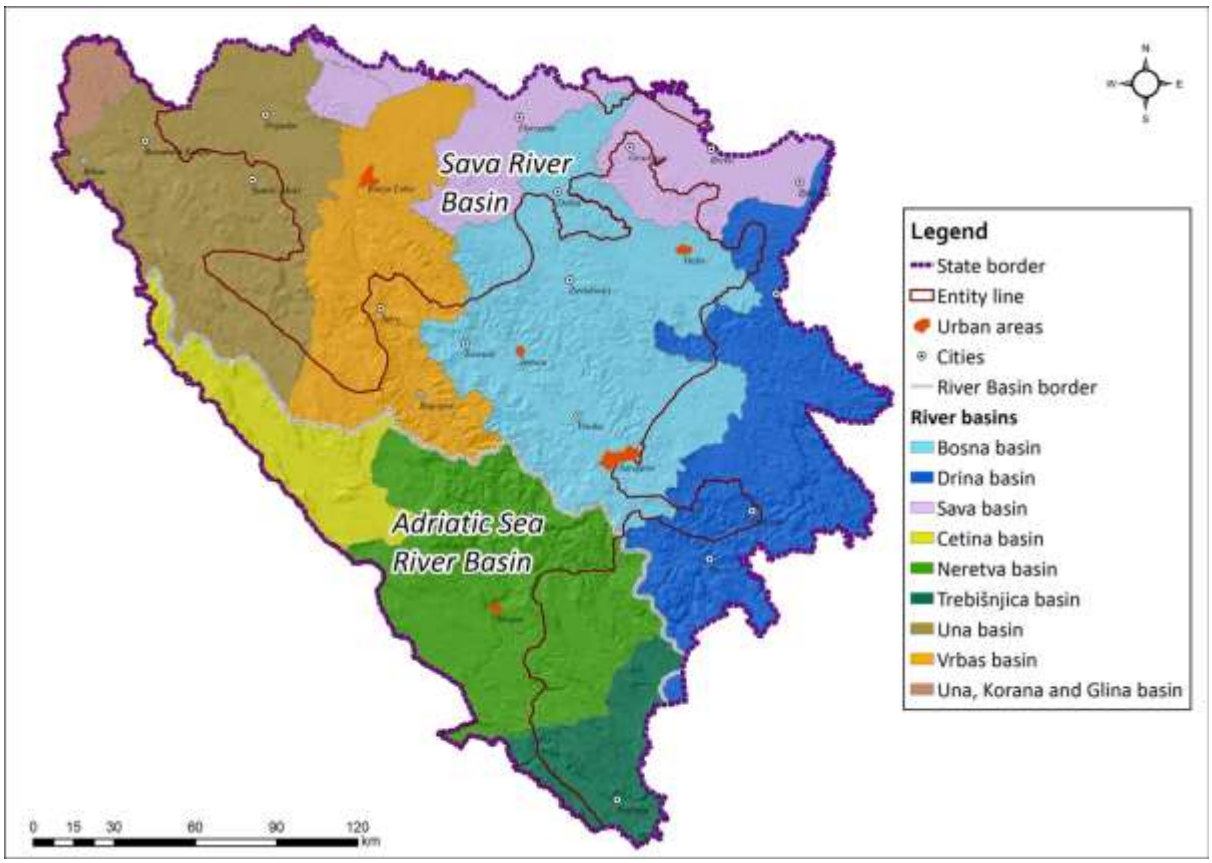


Figure 3: Major river basins and sub-basins in BiH

An average of 58.32 km^3 or 1,141 mm of precipitation was recorded in the period 2013 - 2017 on the BiH territory (51,129 km^2). The average evapotranspiration in the same period was equal to 25.74 km^3. Around 60% of the total precipitation ends up in rivers and outflow to neighboring countries (24.53 million m^3 or 480 mm) and to the Adriatic Sea (10.97 million m^3 or 214 mm). The inflow of water from neighboring countries to BiH is estimated at about 2 km^3 (39 mm)[6].

[6]Data presented in billions of m^3 of water taken from the Report of the Agency for Statistics of BiH, Environment, Renewable Water Resources, Sarajevo, 2 June 2018, Year II. The calculation in mm is based on the equation dm^3/BIH surface area (m^2), if 1 mm precipitation = 1l/m^2.

In the period 2013 – 2017 the total amount of renewable resources in BiH was estimated to be 26 - 51 billion m^3 per year[7]. Various climatic conditions, complexity of the hydrological network and geological substrates resulted in different distribution of water resources. So, for example, the Posavina region of the Sava sub-basin, that has the highest agricultural potential and heavy populated and industrialized Bosna River sub-basin are the two regions poorest in water resource[8].

Almost every year, the agriculture production of the Republika Srpska is exposed to a lack of water during the vegetation period (especially in June-September) when the drought can be very extreme due to high temperature and evaporation rate. On the other hand, uneven distribution of precipitation causes flooding. Drought has been specifically identified as a serious problem in Lijevce polje, a karst area of Semberija and Herzegovina, which have been defined as „hotspots“ in terms of land degradation during the Land Degradation Neutrality Target Setting Process in the Republika Srpska[9].

3.4.2 Use of freshwater resources

Around 60% of the population in RS is covered by organized water supply system (public water supply, local water supply networks)[10]. In the period 2013 – 2018, between 311 to 331 million m^3 of water was abstracted in BiH[11], of which, an average of 30% is used in the RS [12]. Water abstraction in RS, in the period 2012 – 2019, is presented in *Figure 4*[13]. Water abstraction was reduced by an average of 1,2% from 2012 to 2019.

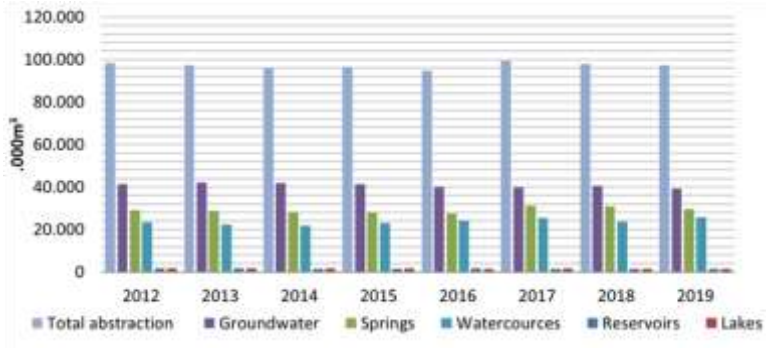


Figure 4: Water abstraction RS in the period 2012 – 2018

Considering the types and the structure of water use, it is important to note that 42 million m^3 or 43% of the total water abstraction in RS is lost in the water supply system. In the period 2013 to 2017, the percentage of water losses from the total water abstraction was very stable (+/- 2%) indicating lack of commitment of water companies and municipalities in BiH to address this problem.

In 2019, the quantity of water used by households was on average about 40 million m3 or 73% (*Figure 5*)[14]. Only 8% of the total amount of water delivered is consumed by industrial and construction consumers, while 8% of the total amount of water delivered is transferred to other water supply systems.

[7] Ibid.
[8] Sava River Basin Management Plan in the Federation of BiH (2016 - 2021), Sava River Basin District Agency, Sarajevo, November, 2016
[9] Marijana -Kapović Solomun, Land Degradation Neutrality Target Setting Programme - Final report for the Republika Srpska, December 2018
[10] Government of the Republika Srpska, Strategy of integrated management of water in Republika Srpska during 2015-2024
[11] Agency for statistics BiH, Public water supply 2015 -2019, five separate reports issued on October 2016 – 2020.
[12] The Brčko District institutions deliver reports on water supply and waste water management to the Agency for Statistics of BiH. However, these data for the Brčko District are not separately reported and the calculation according to the BD = BiH - RS-FBiH principle does not produce data that is reliable, stable, and referential.
[13] RS Office of Statistics, Statistical Yearbook of RS, 2019
[14] Office of Statistics, Statistical Yearbook of RS, 2019

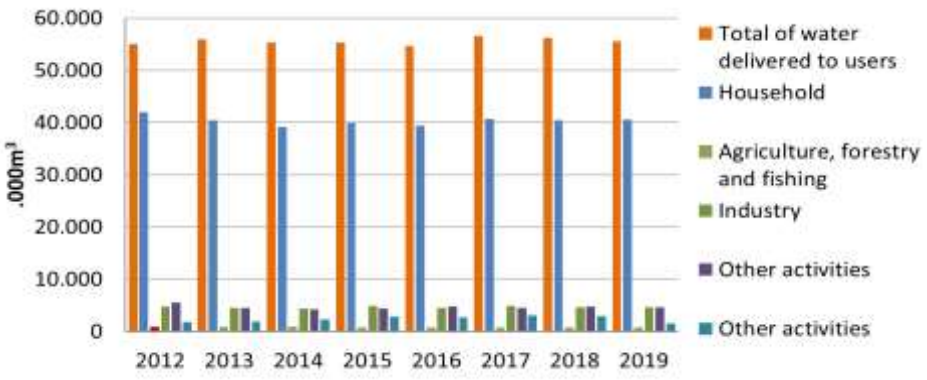


Figure 5: Water users in RS in the period 2012 – 2018

The length of the water mains in RS was in average 1.379 km in the period 2019, and 6.708 km of the distribution network (*Figure 6*)[15]. Compared to 2012, the length of the water mains increased in the observed period by 26%, and the length of the distribution network increased by 0,4%. During the period 2013 – 2018 number of connecting pipes increased by 12%, revealing the expansion of the population and industry coverage with water supply network.

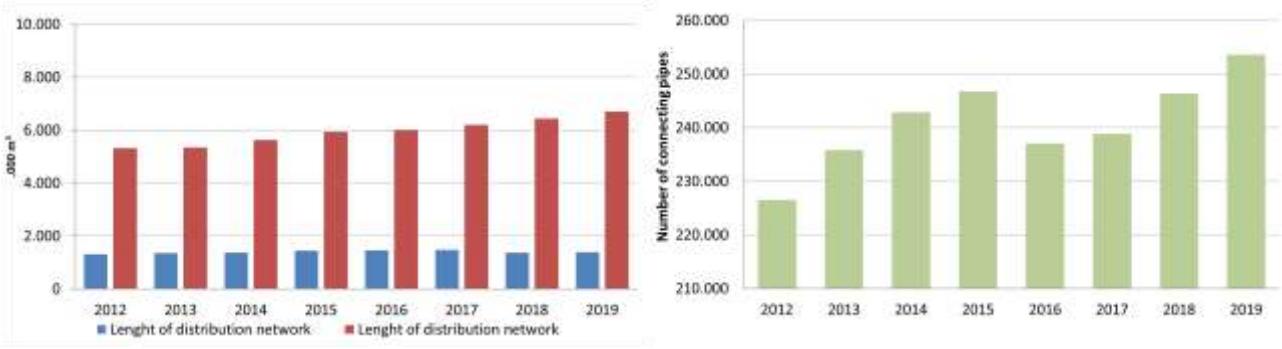


Figure 6: Length of the water mains and connecting pipes in the period 2012 – 2018

Water Exploitation Index (WEI)[16] for BiH in the period 2012-2015 amounted to an average of around 1.23%. In the period 2012-2014, the value of the indicators decreased between 1.49% and 0.81%, while 2015 marks growth at 1.6% (*Figure 7*)[17]. The growth and decline trends of WEI indicator are related to growth and decline trends of available renewable resources. Values of WEI above 20% indicate that the water body is under pressure/stress, while the values above 40% indicate serious vulnerability and clearly unsustainable use of water resources[18]. Considering the EEA guidelines, it can be concluded that in the period 2013 – 2015, the BiH water resources were not under pressure in terms of use of renewable resources.

[15] RS Office of Statistics, Statistical Yearbook of RS, 2012-2019

[16] Water exploitation index represents a percentage of total water abstraction available from renewable freshwater resources for BiH

[17] Agency for Statistics of BiH, Sustainable Development Indicators of BiH, TB-16, ISSN 1840 - 104X, Sarajevo 2017

[18] EEA indicator and database Use of freshwater resources, CSI 018, WAT 001 , https://www.eea.europa.eu/data-and-maps/indicators/use-of-freshwater-resources-2/assessment-3 Scientific research used pertaining to the establishment of recommended values published in scientific paper: Raskin, P., Gleick, P.H., Kirshen, P., Pontius, R. G. Jr and Strzepek, K. 1997 Comprehensive assessment of the freshwater resources of the world. Stockholm Environmental Institute, Sweden. Document prepared for UN Commission for Sustainable Development 5th Session 1997 - Water stress categories are described on page 27-29.

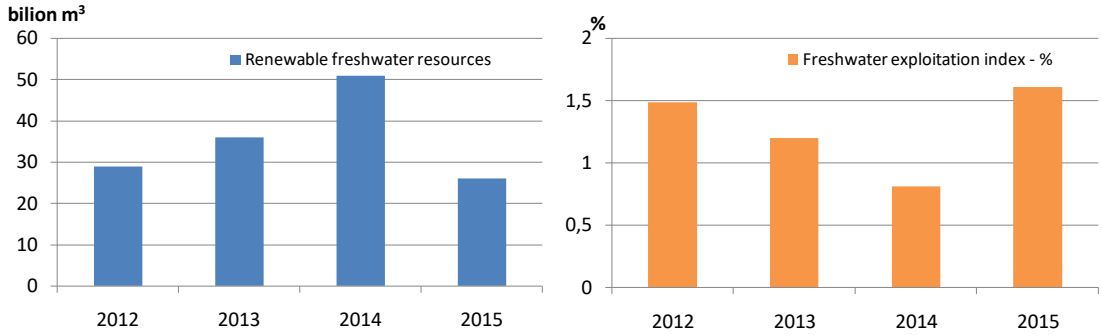


Figure 7: Renewable freshwater resources and water exploitation index in the period 2012 – 2017

3.4.3 Urban waste waters

In the period 2013 - 2019, 27 to 30 million m^3 of wastewater was generated in RS (*Figure 8*)[19]. In the period 2013 - 2019, most wastewater came from households, on average about 77 - 80%, so the population can be considered the source of the greatest pressure on water resources. Waste water is mostly discharged into surface watercourses (96%), while the remaining wastewater is released into groundwater, reservoirs and the sea.

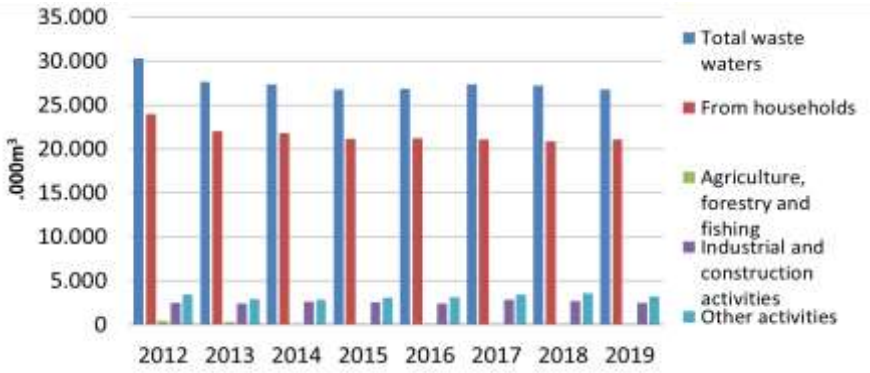


Figure 8: Waste water release in RS in the period 2012 – 2019

Significant progress was made in terms of the quantity of wastewater treated. While only 4% of the total amount of wastewater had been treated in 2012, in 2019 this percentage increasedand to 11% of the total quantity of wastewater collected and discharged into water recipients. It is assumed that this percentage will continue to increase as number of new wastewater treatment plants are either in the tendering phase or under construction (*Table 1*). Here is to be noted that only 36% of the population is connected to public sewage network in RS[20], therefore large quantities of wastewater are still not captured by the existing collection systems.

[19] RS Office of Statistics, Statistical Yearbook of RS, 2012-2019

[20] Government of the Republika Srpska, Strategy of integrated management of water in Republika Srpska during 2015-2024

Table 1: The status of construction of waste water treatment plants in RS
Source: Public Institution "Vode Srpske"

Inhabited area	*Capacity (ES)*	*Treatment level*	*Status*
RS - Sava River			
Bijeljina	40,000	III	Operational since 2015.
Višegrad	10,000	II	Ongoing.
Vlasenica	15,000	II	Ongoing.
Kozarac	7,600	II	Planned.
Omarska	7,000	II	Planned.
Teslić	10,800	II	Planned.
RS– Trebišnjica River			
Bileća	5,000	III	Operational since 2011.
Trebinje	30,000	III	Operational since 2011 in the capacity of 16,000 ES.

The percentage of BiH population connected to waste waters treatment systems with at least secondary treatment increased from 2% in 2000 to 21.7% in 2016 as a result of putting wastewater treatment plants in Sarajevo and Konjic in operation. Newer and separate data for RS are not available.

The length of the closed sewage network in the 2018 was 2791 km on average, of which 44% of the general/mixed sewage system and rest of the separation system. The length of the sewage network increased by 18% in the period 2013 -2019. It is important to note that one of the main issues operators of WWTPs still face is the most suitable method for management of sludge produced.

3.4.4 Surface water quality

The regular monitoring of surface waters is carried out by the Public Institution “Vode Srpske” in line with entity legislation[21] that is aligned with the EU Water Framework Directive.

There are 718 water bodies in RS Sava river basin, and 60 in Trebisnjica river basin identified following the WFD methodology[22]. The results of the water quality monitoring are presented on the following diagrams, separate for the water bodies belonging to the Sava River Basin and the Trebisnjica River Basin[23].

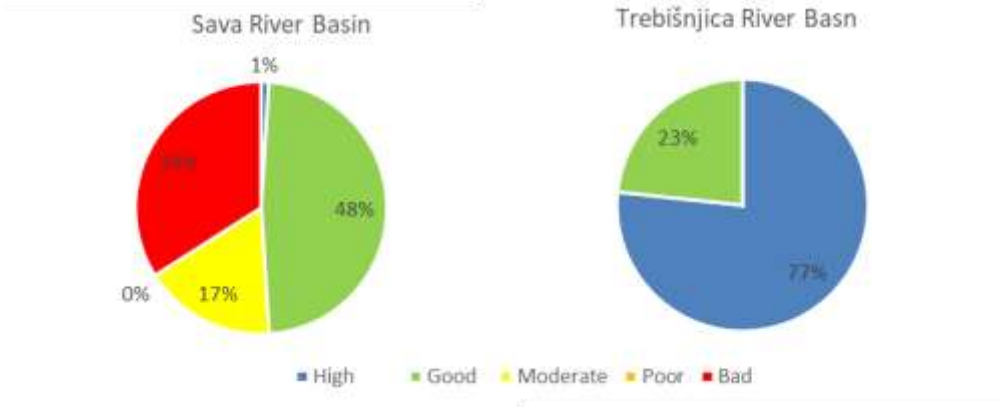


Figure 9: Quantity status of surface water in RS

[21] Law on Waters (Official Gazette of RS, 50/06) and the Regulation on Water Classification and Watercourses Categorization (Official Gazette of RS, 42/01)
[22] Water Management Plan for Sava River Basin in RS (2016 – 2021), Water Management Plan for Trebišnjica River Basin in RS (2016 – 2021) both adopted in 2018
[23] Water Management Plan for Sava River Basin in RS (2017 – 2021), Water Management Plan for Trebišnjica River Basin in RS (2017 – 2021) both adopted in 2018

The results of the conducted watercourses monitoring are used for the development of Water Management Plans managed by relevant water management institutions. The Water Management Plans define necessary measures and activities in order to achieve a good water status. Based on the assessment done, all water bodies in RS will reach good status by 2039.

3.5 Waste Management

It is estimated that in RS 1,170,342 inhabitants produce around 324,660 tons of waste per year with approximately 58% being generated in urban and 42% in rural areas.

According to the composition of the waste, the single dominant fraction in municipal solid waste in Banja Luka Region is organic waste from kitchens and gardens (approximately 38%) while the dry recyclables (plastic, glass, paper/cardboard, cans, PET, foil, metals) accounts for approximately 45% of municipal solid waste. In Prijedor and Bijeljina dominant fraction is biodegradable waste, 56% and 42% respectively while the dry recyclables (plastic, glass, paper/cardboard, metals, aluminium cans, PET) account for 23% in Prijedor and 30% in Bijeljina. Separation at source is in its infancy and it amounts to less that 1% of waste generated.

In the RS only one sorting line for pre-separated dry recyclables is located in Doboj, while a simple, low capacity line (1.5t/h) is planned to be installed soon at the landfill in Banja Luka. The sorting line in Doboj has (temporarily) stopped its operations due to the high financial costs.

The solid waste management in the RS is based on regional concept where several municipalities are served by one regional landfill. There are 4 regional landfills operational in RS i.e. Bijeljina, Banja Luka, Prijedor and Zvornik servicing in total 23 municipalities including 9 municipalities from FBiH. These regional landfills serve a total of 716.715 inhabitants in the RS (64% of total population). There are 22 non-sanitary single municipal landfills in operation, and one non-sanitary regional landfill in Doboj serving 6 municipalities, including 4 municipalities from FBiH[24]. Approximately 8% of the total waste quantities disposed of at landfills is coming from private industrial enterprises as non-hazardous waste

The following table provides data on the amount of generated waste by cities/municipalities where the Project facilities will be located and status information on the landfill of the region to which they belong.

Table 2: Amount of generated waste and Landfill Status of the Project cities/municipalities[25]

City/Municipality	*Laktasi*	*Prnjavor*	*Doboj*	*Zvornik*	*Istocno Sarajevo*	*Trebinje*
Total waste generated (tons/year)	7.832	8.293	17.994	12.945	18.582	9.864
Landfill Status	Operational as Sanitary regional landfill. Used by city of Banja Luka and 7 municipalities (360.000 inhabitants).		Non – sanitary regional landfill is operational. Design for RL is ready including land acquisition.	Operational as RL. Used by 8 RS municipalities (120.000 inhabitants) plus three from FBiH. This landfill became operational in 2017.	No RL was constructed in this region. The municipalities are currently using their own non-sanitary landfills (dumps). In 2012 a site selection study	No RL was constructed in this region. The municipalities are currently using their own non-sanitary landfills (dumps). In 2012 a site selection study

[24] Municipal Solid Waste Management Sector Review: Strategic Directions and Investment Planning up to 2025, 2018

[25] Municipal Solid Waste Management Sector Review: Strategic Directions and Investment Planning up to 2025, 2018

				was completed indicating the site “Rudine” in Rogatica as the best option for a RL.	was completed indicating the site “Metiljave doline” in Gacko as the best option for a RL.

3.6 Biodiversity and Protected Areas

3.6.1 Habitats and Flora

The Red List of Endangered Species of Flora of Republika Srpska contains 818 species of vascular plants. The Flora of the RS established in 2018 is a register of data on the distribution and taxonomy of higher plants in the RS, with almost 70,000 collected spatial data. This was a result of *GIS database of vascular flora in RS* project and represents the list of the vascular flora of RS. It consists of 2683 taxa (at the species and subspecies level), classified into 705 genera, 122 families and 45 orders. Project currently estimates that this number represents no more than 80% of the total vascular flora of RS[26].

Due to high geomorphological diversity, RS is abundant in terrestrial biodiversity features. Northern RS is occupied by a climatogenic forest of sessile oak with common hornbeam. Economically important are lowland pedunculate oak and hornbeam forests (Carpino betuli-Quercetum roboris), edaphic variants of cherry-pedunculate oak communities (Ceraso-Quercetum roboris), and floodplain pedunculate oak forests (Alno-Quercion). In this belt some relict (paleo-Mediterranean) forests may be found: sessile oak and chestnut forests, communities with holly (*Ilex aquifolium*), walnut, and Butcher’s broom (*Ruscus aculeatus*). Hygrophilous communities are diverse: floodplain forests of pedunculate oak, black alder and narrow-leaved ash (Alnion glutinosae), and coastal forests of tall willows of Salicion albae and poplar, Populion albae. In addition, beech forests of a "submontane" character are often present. The rare mountain vegetation consists of beech and fir forests. In the northern part of Bosnia, they often have an island character (mountains Kozara, Ljubic, Trebava, Majevica).

Most of eastern parts of RS belongs to the area of European deciduous forest. These habitats include tree species such as the Turkey oak (*Quercus cerris*), the hop hornbeam (*Ostrya carpinifolia*), the oriental hornbeam (*Carpinus orientalis*) and the manna ash (*Fraxinus ornus*). In the valley of the Drina river, stands of alluvial forest are found with dominant species being the black alder (*Alnus glutinosa*) and white willow (*Salix alba*). Habitats of black pine on the limestone are found in the canyons of Drina river. In the rock crevices of canyon black pine builds few endemo-relict communities. Tree endemic to this part of RS is Serbian spruce (*Picea omorika*). The *Picea omorika* population is still decreasing in BiH (IUCN status: near threatened) and conservation actions are needed.

Going south, the dominant forests at lower altitudes are acidophilous community *Luzulo-Fagetum* with the dominant species European beech (*Fagus sylvatica)* and white woodrush (*Luzula luzuloides).* At higher altitudes, the forests are characterized by fragments of communities of European beech (*Fagus sylvatica*), silver fir (*Abies alba*) and spruce (*Picea abies*) species. In the middle course of the Drina River thermophilous deciduous forests are found. The dominant species in this forest are thermophilous oaks (*Quercus cerris* and *Q. petraea* or *Q. frainetto)*.

In southeastern RS, highest peak of BiH is found – Mt. Maglic. This area of high mountains is characterized by subalpine spruce or beech forest and the belt of *Pinus mugo* at higher altitudes. The most important plant communities of this area are Elyno-Edraianthetum serpyllifolii, Edraiantho-Potentilletum clusianae,

[26] http://florasrpske.rs.ba/

Edraiantho-Daphneetum malyanae, Senecio-Festucetum spadiceae. Characteristic species are: *Valeriana braun-blanqueti*, Durmitor buckthorn (*Plantago durmitorea*), *Daphne malyana*, *Edraianthus sutjeskae*[27].

In the south of RS lies Municipality Trebinje. Some of the species on RS Red list of fauna that can be found in the area are: *Petteria ramentacea, Cyclamen repandum, Dianthus knappii, Dianthus tergestinus, Onosma stellulata, Salvia bertolonii* etc. Orjen Nature Park established in September 2020 is located in this municipality. Bosnian pine (*Pinus heldreichii*) forests give special value to this protected area since this is a species sub-endemic to Dinarides.

Based on the Local Environmental Action Plan (LEAP) of Sokolac Municipality that is located in the City of Istocno Sarajevo, some of the endangered and protected plant species present in Istocno Sarajevo are *Arnika montana, Lycopodium clavatum, Gentiana lutea, Viola tricolor, Anthyllis vulneraria, Verbena officinalis, Leonurus cardiaca* and *Polygonum bistorta*[28].

3.6.2 Fauna

Invertebrates

Regarding invertebrates, Mt. Zelengora (Sutjeska National Park) is ihabitated by 25 dragonfly species, protected in RS. Lakes at Mt. Zelengora are inhabited by southernmost populations of a few species mainly found in central and northern Europe (*Coenagrion hastulatum*, *Aeshna juncea*, *Somatochlora metallica*)[29]. *Rosalia alpina*, HD priority species, is also found in many localities in RS. Some of the cave-dwelling spiders have been first found and described in RS, such as *Troglohyphantes troglodytes* (Trebinje), *T. pugnax* (Fatnicko polje) and *T. salax* (Popovo polje)[30].

Creeks and rivers of Municipalities of Prnjavor and City of Istocno Sarajevo are rich in European crayfish, an important bioindicator of healthy water ecosystems.

Fish

The most important fish species in the region is the Danube Salmon (*Hucho hucho*)[31], whose migration routes are interrupted by dams and the overall population size has decreased significantly. It should be noted that the Danube Salmon is one of the endangered European fish species (IUCN Red List) and endemic for the Danube drainage. Other fish species found in river Drina are rainbow trout (*Oncorhynchus mykiss*), grayling (*Thymalus thymalus)*, brown trout (*Salmo labrax)*, the European mud minnow (*Umbra krameri*, species found only in Gromizelj), Arctic char (*Salvelinus alpinus*), etc. The Sava River is one of the significant aquatic ecosystems in RS and BiH. During the research conducted on the lower reaches of the Sava River[32] in 2013, a total of 15 species from six fish families were collected, among which are: bream (*Abramis brama*), carp (*Cyprinus carpio*), chub (*Squalius cephalus*), ruddroach (*Scardinius erythrophthalmus*), bleak (*Alburnus alburnus*), asp (*Leuciscus aspius*), vimba bream fish (*Vimba vimba*), pike (*Esox lucius*) etc. However, what concerns is that the number of invasive species is growing: *Carassius auratus gibelio, Carassius auratus auratus, Ctenopharyngodon idella, Ameiurus nebulosus, Lepomis gibossus* have been recorded in river Sava[33].

[27] WWF (2011). Natura 2000 u Bosni i Hercegovini. [Natura 2000 in Bosnia and Herzegovina.] Avaliable at: https://www.academia.edu/11689494/Natura_2000_Bosna_i_Hercegovina [in Bosnian]

[28] http://www.opstinasokolac.net/dokumenti/planoviprogrami/LEAP-opstinasokolac.pdf

[29] Project *Protected Areas for Nature and People* (Center for Environment)

[30] Pavlek, M., & Ozimec, R. (2009). New cave-dwelling species of the genus Troglohyphantes (Araneae, Linyphiidae) for the Croatian fauna. *Nat. Croat.*, 18*(1)*, 29-37.

[31] Report *Support to water resources management in the Drina River Basin for BiH*

[32] Nedić, Z., Begović, S., Dogan, M., Hadžiahmetovic Jurida E., Ferizbegovic, J., Terzic, R., (2014). Decreasing of biodiversity of fish population from the Sava River in BiH, Basic Research Journal of Agricultural Science and Review ISSN 2315-6880 Vol. 3(5) pp. 35-40

[33] International Sava River Basin Commission (ISRBC) in cooperation with the Parties to the Framework Agreement on the SRB (2009). The Sava River Basin Analysis Report, Zagreb

Zvornicko lake in the Municipality of Zvornik is an artificial lake on river Drina. Ichthyofauna of Zvornicko lake is dominated by more adaptable autochtonous fish as well as a few allochtonous species, such as: catfish (*Silurus glanis*), along with northern pike (*Esox lucius*) and zander (*Sander lucioperca*)[34]. Aforementioned Danube salmon (*Hucho hucho*) is also present in Zvornicko lake and it is an important biodiversity feature. Zvornicko lake is also a potential Natura 2000 site.

Birds

There are at least 230 bird species in the RS, such as the golden eagle (*Aquila chrysaetos*), the short-toed snake eagle (*Circaetus gallicus*), the peregrine falcon (*Falco peregrinus*), the Black grouse (*Tetrao urogallus*), the Griffon vulture (*Gyps fulvus*), the Eurasian woodcock (*Scolopax rusticola*). Presence of Rock partridge (*Alectoris greaca*) is confirmed, as the only endemic Balkan bird species whose population is declining throughout the region. Nesting species at IBA site Bardaca in the northern RS that are of conservation concern are: *Ixobrychus minutus*, *Nycticorax nycticorax*, *Ardeola ralloides*, *Egretta garzetta*, *Ardea purpurea*, *Plegadis falcinellus*, *Platalea leucorodia*, *Sterna hirundo* and *Chlidonias hybridus*[35].

LEAP of Sokolac Municipality does not assess birds as a separate group, only as game in two hunting grounds – Glasinac and Romanija. The following species are present: *Buteo buteo, Accipiter gentilis, Columba palumbus, Steptopelia turtur, Bubo bubo, Tetrastes bonasia, Corax corax*[36].

Prnjavor Municipality LEAP highlights water habitats in and near river Ukrina, and lists the following water birds amongst others: *Ardea cinerea, Ixobrychus minutus, Alcedo ispida, Podiceps ruficollis, Podiceps cristatus, Larus ridibundus*[37].

Mammals

Forests of southeastern RS are a natural habitat for mammal species, such as the Brown bear (*Ursus arctos*), the Eurasian wolf (*Canis lupus*), the chamois (*Rupicapra rupicapra*), the wild cat (*Felis silvestris*), and along the rivers of the region, the European otter (*Lutra lutra*). These animal species are endangered. Lack of continuous monitoring is recognized as an issue in terms of the conservation. There are also more common species of mammals registered in this entity such as the fox, marten, badger, wild boar, deer, and rabbit.

The Drina River has been confirmed as a corridor for the migration of bats. Important bat species are *Barbastella barbastellus* and *Myotis bechsteinii*, as they are indicators of the quality of forest habitats and both species are common in forests of eastern RS. The presence of 11 bat species in Kozara National Park was confirmed[38], with some of them with registered large maternal colonies: *Miniopterus schreibersii, Barbastellus barbastellus, Rhinolophus ferrumequinum, Rhinolophus hipposideros, Pipistrellus pipistrellus, Pipistrellus pygmaeus, Eptesicus serotinus, Myotis bechsteinii, Myotis mystacinus, Myotis brandtii, Vespertilio murinus*[39].

Again, LEAP of Sokolac Municipality lists only mammals that are hunted, such as: *Ursus arcos, Capreolus capreolus, Lepus lepus, Sus scrofa, Canis lupus* etc[40].

Prnjavor Municipality is rich in common mammal species, such as: *Vulpes vulpes, Meles meles, Mustela putiorius, Clethrionomys glareolus* and allochtonous *Ondantra zibethica*[41].

[34] http://www.ribolovackikonak.rs/sr/ribolovacki-konak/ribe-zvornickog-jezera-2

[35] Nase ptice (2012). Program IBA – Medjunarodno znacajna podrucja za ptice u BiH. [IBA Programme – Important Bird Areas of International Importance in BiH]. Avaliable at: https://ptice.ba/wp-content/uploads/2018/04/Program-IBA-Medjunarodno-znacajna-podrucja-za-ptice-u-BiH.pdf [in Bosnian].

[36] http://www.opstinasokolac.net/dokumenti/planoviprogrami/LEAP-opstinasokolac.pdf

[37] http://www.opstinasokolac.net/dokumenti/planoviprogrami/LEAP-opstinasokolac.pdf

[38] Project *Researching bat fauna of Kozara National Park*

[39] Available at: https://www.rufford.org/files/23263-2%20Bats%20of%20Kozara%20Booklet.pdf [in Bosnian]

[40] http://www.opstinasokolac.net/dokumenti/planoviprogrami/LEAP-opstinasokolac.pdf

[41] http://opstinaprnjavor.net/wp-content/uploads/2016/02/leap.pdf

3.6.3 Protected Areas

In accordance with the current legislation, the area under protection is 48,822.63 hectares, which covers 2% of the RS territory[42]. In total, 27 areas are protected: two nature reserves (IUCN category Ia), three national parks (IUCN category II), 14 nature monuments (IUCN category III), two protected habitats (IUCN category IV), three nature parks (IUCN category V) and three areas with sustainable use natural resources (IUCN category VI). Protected areas in RS are shown in *Figure 10* and *Table 3*.

Spatial Plan of RS (2015-2025) envisages establishing a total of 310 protected areas with spatial coverage of 15-20% of the area of RS.

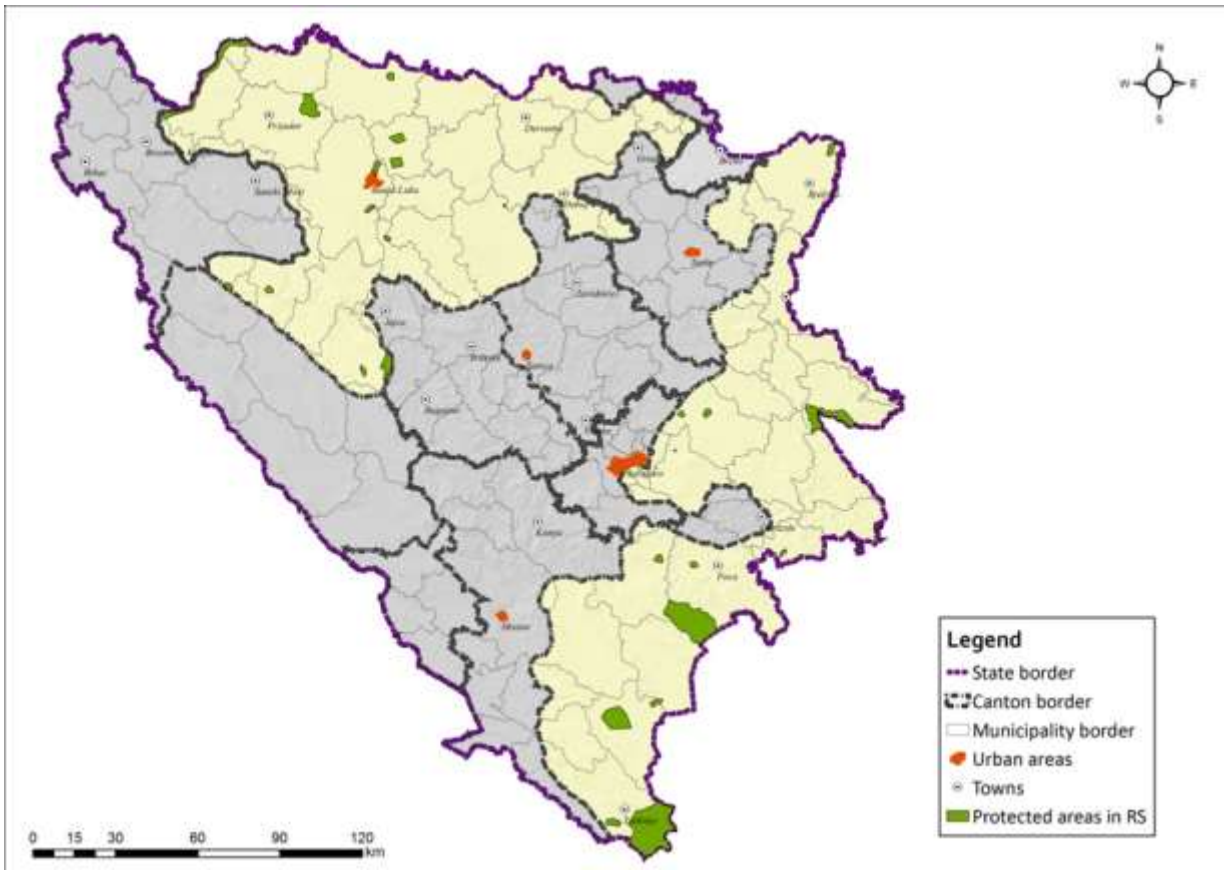


Figure 10: Protected areas in RS

Table 3: List of Protected Areas in RS with IUCN Categorization and Area

No.	Name of protected area	IUCN Category	Area in hectares
1.	Lom Virgin Forest Strict Nature Reserve	I a	295,00
2.	Janj Virgin Forest Strict Nature Reserve	I a	297,82
3.	Sutjeska National Park	II	3.907,54
4.	Kozara National Park	II	16.052,34
5.	Drina National Park	II	6.315,32
6.	Ljubacevo Cave Nature Monument	III	45,45
7.	Zuta Bukva Nature Monument	III	27,01
8.	Orlovaca Cave Nature Monument	III	0,50
9.	Rastusa Cave Nature Monument	III	11,39
10.	Jama Ledana Nature Monument	III	28,26
11.	Vaganska Cave Nature Monument	III	12,00
12.	**Djatlo** Cave Nature Monument	III	43,42
13.	**Pavlova Pecina** Nature Monument	III	13,40

[42] As of September 2020, after proclamation of Orjen-Bijela Gora Nature Park (www.nasljedje.org)

No.	*Name of protected area*	*IUCN Category*	*Area in hectares*
14.	**Girska Cave** Nature Monument	III	25,37
15.	Pecina Pod Lipom (Cave) Nature Monument	III	6,10
16.	Ledenjaca Cave Nature Monument	III	7,40
17.	**Great Cave Nature Monument**	III	820,92
18.	**Kuk Cave Nature Monument***	III	- ***
19.	**Lijevcanski Knez Nature Monument**	III	0,34
20.	Protected Habitat Gromizelj	IV	831,30
21.	Protected Habitat Tisina	IV	196,49
22.	Una Nature Park	V	2.772,60
23.	**Cicelj** Nature Park	V	330,76
24.	**Orjen** Nature Park	V	16.715,83
25.	"University City Banja Luka" Protected Area for Sustainable Use of Nature Resources	VI	27,38
26.	Slatina Forest Park	VI	35,73
27.	Jelica Brdo Forest Park	VI	2,96

*exact area has not been made official as of November 2020

Four protected areas in RS are envisaged by the ongoing project implemented by UNEP in BiH[43]:

1. Orjen-Bijela Gora (Table 3),
2. Cave of the Mokranjska Miljacka Spring,
3. Cave system Govjestica,
4. Tisina (Table 3).

It is important to note that this project is being successfully implemented as Tisina and Orjen-Bijela Gora covered by this project have been proclaimed protected areas in year 2019 and 2020 respectively (Table 3).

There are a total of 11 Key Biodiversity Areas (KBA) in BiH out of which five are found in RS. These sites have qualified for KBA as IBA sites as a site identified in the CEPF Ecosystem Profile of the Mediterranean Hotspot[44]. Bardaca is the only IBA and Ramsar site in RS, while the other four KBA are characterized as potential biodiversity hotspots: Dabarsko and Fatnicko fields, Trebinjsko lake, Orjen-Bijela Gora and North Travunija. North Travunija covers the area of Popovo field and river Trebisnjica and part of this KBA is in FBiH.

With regard to the municipalities that are part of this project, the presence of protected areas should be stressed. Orjen Nature Park and **Pavlova Pecina** Nature Monument are located in Trebinje municipality. **Girska Cave** Nature Monument and Pecina Pod Lipom Nature Monument are located in Sokolac municipality that is a part of City of Istocno Sarajevo. Municipality of Laktasi has two protected areas: Slatina Forest Park and Jelica brdo Forest Park.

3.6.4 Potential Natura 2000 sites

Former Nature Protection Law of RS [45] is harmonized with the respective EU Directives on Habitats and on Birds[46].

A total of 62 potential Natura 2000 sites have been identified in RS[47]. They cover 11.96% of RS territory (Figure 11). Considering the fact BiH is not part of the EU, Natura 2000 sites are still not mandatory for protection in RS. However, areas that have been identified as potential Natura 2000 sites are part of the RS ecological

[43] Project *Achieving Biodiversity Conservation through Creation and Effective Management of Protected Areas and Capacity Building for Protection of Nature in BiH*

[44] Avaliable at: https://www.cepf.net/sites/default/files/mediterranean-basin-2017-ecosystem-profile-summary-english.pdf

[45] Nature Protection Law of RS – Official Gazette of RS, No. 20/14

[46] Directive 2009/147/EC, and the Directive 92/43/EEC

[47] Project *Support to Implementation of the Birds and Habitats Directives in Bosnia and Herzegovina*

network[48]. With the formal processes of Natura 2000 designation in BiH and entities as the county approaches EU Candidate status, it is expected that the numbers and surface area of protected areas will increase.

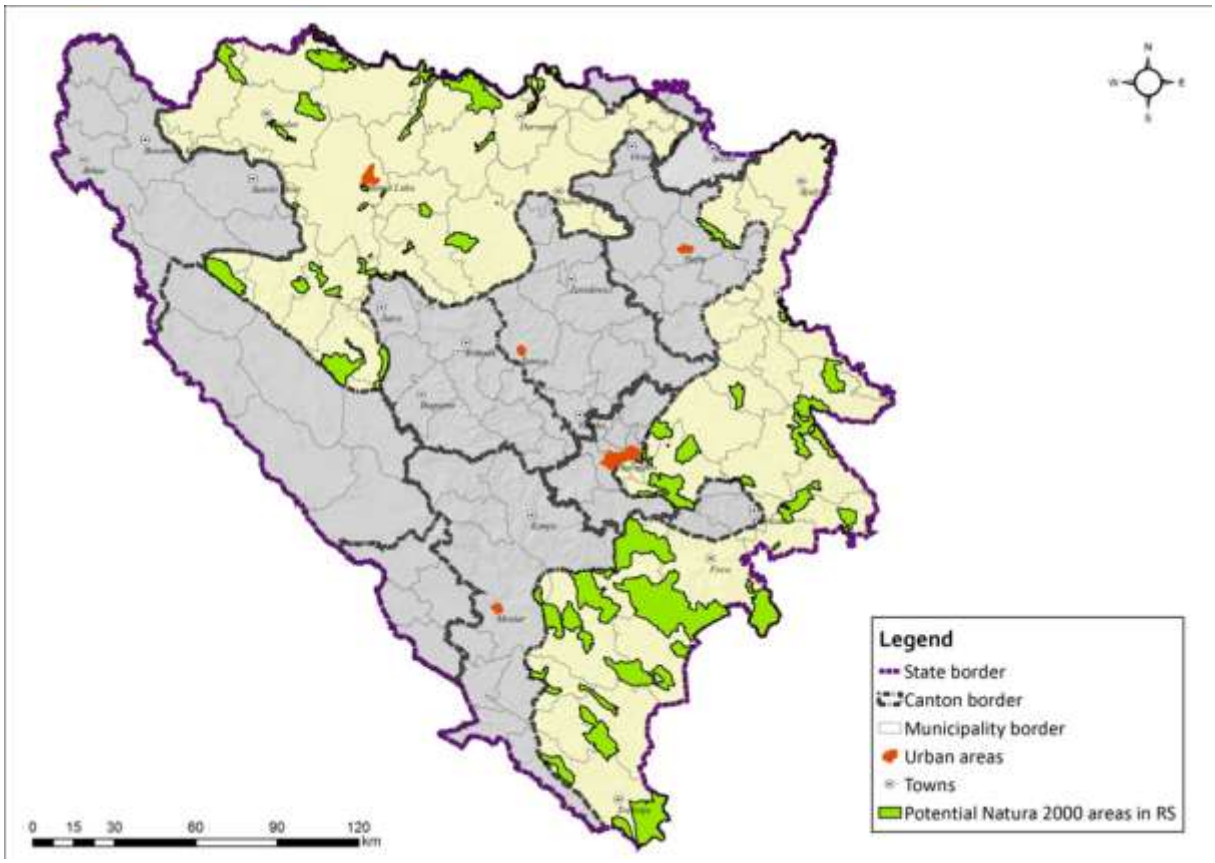


Figure 11: Potential Natura 2000 sites in RS

Project municipalities register 11 potential Natura 2000 sites: Laktasi, Zvornik and Prnjavor with one registered potential Natura 2000 site, and Istocno Sarajevo and Trebinje with four registered potential Natura 2000 site each (*Table 4*). Potential Natura 2000 sites are not found in Doboj Municipality.

Table 4: Potential Natura 2000 sites in Project municipalities

Project Municipality	*Potential Natura 2000 Area*	
	Code	*Name*
Laktasi	BA7300002	Bardaca-donji Vrbas
Istocno Sarajevo	BA7300033	Jahorina-Ravna planina
	BA7200003	Bentbasa-Miljacka
	BA7200011	Crepoljsko-Bukovik
	BA7200074	Romanija
Zvornik	BA7300096	Zvorničko jezero
Prnjavor	BA7300070	Ribnjak Prnjavor
Trebinje	BA7200076	Sozina
	BA7300054	Orjen-Bijela gora
	BA7200090	Viduša
	BA7300062	Popovo polje-Vjetrenica

[48] Amendments to Spatial Plan of RS by 2025

3.7 Cultural and Historical Heritage

The cultural and civilizational waves on the territory of today's RS region have interlaced and reconciled, manifesting the specific historical coexistence of opposite and cultural differences. Due to the mineral resources and the favorable geographic position, different cultures and civilizations have come and gone in this area, each of which has left significant monumental buildings that testify to the distant past. It started with the emergence of Illyrian civilization, which evolved into the Bosnia Kingdom. The kingdom eventually became an annexation of the Ottoman Empire and later, the Austro-Hungarian Monarchy. Long years of war followed, from WWI to the fight for independence in the mid-1990's. The Historical Museum of BiH contains nearly half a million historical artifacts that epitomize the long, gruesome and rich history of the entity. More interesting relics can be found in the Museum of the National Struggle for Liberation.

There are many cultural and historical sites in the RS including old fortresses, mosques, churches, old towns, memorials and other sites and structures having archaeological, historical, architectural, religious significance, as well as natural sites with cultural values. According to the List of National Monuments of BiH[49], there are over 200 sites registered in RS.

RS has one property inscribed on the World Heritage List which is the Mehmed-Pasha Sokolovic Bridge in Visegrad. As of 2020, BiH has recorded ten sites on the tentative list, of which one is located in RS.

Annex **Error! Reference source not found.** contains the list of the cultural and heritage sites in the pre-identified project municipalities.

[49] Commission to Preserve National Monuments of BiH, List of National Monuments of BiH

4 BASELINE SOCIO-ECONOMIC CHARACTERISTICS OF THE PROJECT AREA

4.1 Demography

According to the official results of the 2013 Census, the total population of Bosnia and Herzegovina was 3,531,159 (*Table 5*). RS accounts for 35% of population, FBiH around 63% and BD around 2%.

Table 5: BiH population in 2013, and 2018 estimates

Population	2013	2018 (estimate)
RS	1,228,423	1,147,902
FBiH	2,219,220	2,196,233
BD	83,516	83,234
Total	3,531,159	3,427,369

According to data of the RS Institute for Statistics[50] majority of population belongs to 15-64 age group, which accounts for 67 percent. Age groups 0-14 and over 65 have similar share of population. In RS, 19.6 percent of population belongs to age group over 65, while 13.4 percent belong to age group 0-14 (*Figure 12*).

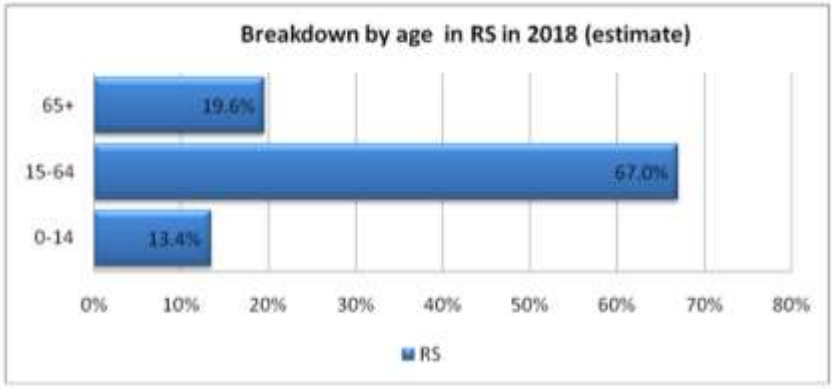


Figure 12: Breakdown by age in RS in 2018. (estimate)

For number of years now, population growth rate in BH has been continuously negative. Latest positive one was recorded back in 2008 (*Figure 13*).

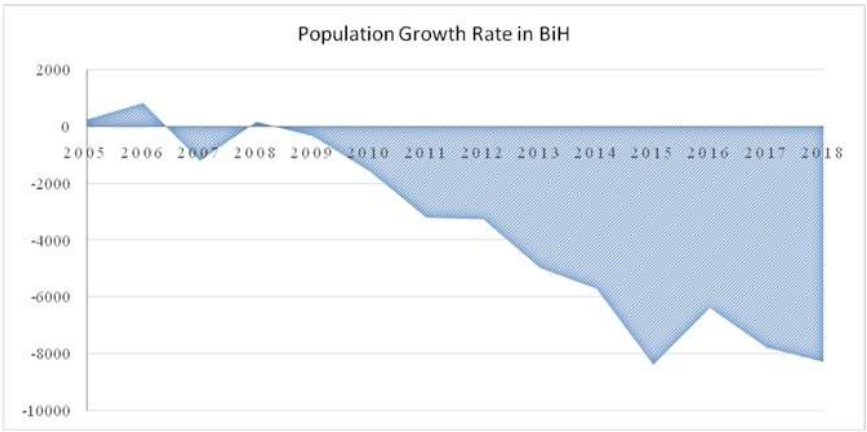


Figure 13: Population Growth Rate in BH

Statistic data in BiH indicate population shrinking trend as well as birth rate drop. According to United Nations Agency for Sexual and Reproductive Health (UNFPA), desirable fertility rate which enables replacement is 2.1.

[50] Source: RS Institute for Statistics, 2019

In 2017, in BiH, the number of live births per woman was 1.26 children, which is well below the desirable level[51]. According to United Nations Secretariat[52], BiH population would be 3.4 and 3 million in 2030 and 2050, respectively.

4.1.1 Demography in Municipalities/Cities covered by the Project during the First Year

The six Municipalities/Cities will be covered by the Project during the first year of Project implementation are: City of Doboj, City of Istocno Sarajevo, Municipality of Laktaši, Municipality of Prnjavor, City of Zvornik, City of Trebinje. The total number of inhabitants in these Local self-Governments (LSGs) is 291,933 inhabitants (2013 Census). The population density in this area is 98.97 inhabitants/km^2. The Municipality of Istocna Ilidza (as part of the City of Istocno Sarajevo) has the highest population density in this area, with 504.30 inhabitants/km^2. The lowest density is in the Municipality of Istocni Stari Grad (City of Istocno Sarajevo)(12.9 inhabitants/km^2). In addition to other Municipalities which form the City of Istocno Sarajevo (such as Sokolac and Trnovo) the City of Trebinje has a low population density (33.9 inhabitants/km^2).

According to the presented demographic profile this Project will have a positive social impact on about 291,933 people living in Municipalities/Cities covered by the Project during the first year of Project implementation.

4.2 Rural and Urban Areas

The urban and rural parts of RS are considerably different. In RS the urban parts include major cities: Banja Luka, Foca, Gacko, Trebinje. In total 45 villages are urban while the rest of RS is mainly rural (2.700 rural villages). According to Census 2013, 499.558 (40.7%) RS inhabitants live in urban areas, while the rest (1.257.603) lives in rural areas.

4.2.1 Rural and Urban Areas in Municipalities/Cities covered by the Project during the First Year

The six Municipalities/Cities will be covered by the Project during the first year are characterized by high rate of rural population. Only City of Trebinje is characterizes by a high rate of the urban population (81.4%), and two Municipalities within the City of Istocno Sarajevo (Istocna Ilidza 93.7% and Pale 61.7%).

Among the LSGs with rural population four Municipalities within the City of Istocno Sarajevo have the highest rate of rural population: Trnovo and Sokolac (100%), Istocno Novo Sarajvo (99.2%) and Istocni Stari Grad (96.7%). The other LSGs have a share of rural population with a range between 84.5% (Municipality of Laktasi) and 64.8 % (City of Doboj). All these LSGs are formed by one urban village and several rural villages.

4.3 Key Economic Indicators

The key economic indicators for BiH and RS are presented in *Table 6.*

Table 6: Key Economic Indicators in BiH and RS in the period 2016-2019
Source of 2019 data: BiH Central Bank, BiH Statistics Agency, RS Institute for Statistics

Item	Level	2016	2017	2018	2019
Nominal GDP (in BAMmillion)	BiH	30,977	31,376	33,444	35,229
	RS	9,631	10,077	10,680	11,251
Nominal growth rate (in %)	BiH	4.4	3.1	3.9	4,34
Real growth rate (in %)	BiH	3.3	3.0	3.6	2.68
	RS	3.5	3.1	3.9	-
GDP per capita (in BAM)	BiH	8,805	9,057	9,556	10.108
	RS	8,320	8,740	9,304	9,848

[51] Source: Agency for Statistics BiH, Demography 2017.

[52] Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat: World Population Prospects 2017, available at: https://population.un.org/wpp/Publications/Files/WPP2017_KeyFindings.pdf, [accessed on: 07 May 2020]

*Estimate/assumption by Economic Planning Directorate according to BH Economic Trends Annual Report, April 2018

Item	Level	2016	2017	2018	2019
Average net wage (in BAM)	BiH	838	851	878	921
	RS	836	831	857	906
CPI (Consumer Price Index)	BiH	-1.1	1.3	1.4	0.6
	RS	-1.2	0.5	1.2	-

According to the Central Bank's 2019 Annual Report, industrial production has seen the sharpest decline in the last decade. Segmented by industry, the annual decline in industrial production was primarily driven by a sharp decline in manufacturing industry production and by the decrease of electricity and gas production and distribution. Manufacturing of coke and refined petroleum products recorded the strongest impact on the decline of the manufacturing industry, following the overhaul of the oil refinery, and the production of textiles and leather products, which rely on the business of the European car industry. Furthermore, in the second part of the year, a sharp decline in the production of base metals was recorded, following the business termination of the strategic company in the field of aluminum processing.

The trends of general prices, measured by the Consumption Price Index, showed significantly lower growth rates. The average annual growth of consumer prices is 0.6% and is the lowest in the region. The labor market, according to administrative data and the 2019 Labor Force Survey data, reports a significantly reduced number of unemployed persons (unemployment rate 15.7%) and increased number of employed persons, with increased demographic changes. Nominal net wages report strong growth, with somewhat slower growth of real net wages.

4.4 Local Economy of the Project Area

4.4.1 Local Economy in Municipalities/Cities covered by the Project during the First Year

Local economy of the six LSGs covered by the Project during the first year of its implementation is mainly based on agriculture, trade and manufacturing. The main agriculture activities are cultivation of fruits, vegetables and cereals, and farming for milk and meat production. Food production is well developed in the City of Trebinje and the Municipality of Prnjavor (meat and meat products, farinaceous products, products processed from fruit and vegetables and other food products). Production of drinking water is located in the City of Doboj. Fishery is another branch of agriculture that has been developing in the area of the City of Trebinje in recent years and for which there is great potential. Natural fish farms are also present in the City of Zvornik (i.e. fish farms "Zvornik" (1,380 ha)).

The local economy in the City of Trebinje is also characterized by electric power generation. In the area of Trebinje, there are four hydro power plants (HPP) with a total installed capacity of 880 MW and production of about 2,300 GWh of electricity: HPP Dubrovnik Phase I, HPP Trebinje I, HPP Trebinje II and PHE Capljina. In the next period, the construction of other HPPs is expected, such as HPP Dubrovnik II phase and HPP Boka. In addition to the HPPs, the potential of solar energy is significant in the area of Trebinje, so solar power plants SPP) are planned to be constructed: SPP Trebinje I with a capacity of 73 MW, and two more SPPs, SPP Trebinje II and SPP Trebinje III with a total capacity of 70 MW.

Wood processing industry is mainly located in the City of Istocno Sarajevo and Municipalities of Prnjavor and Laktasi. In addition to wood processing industry, metal processing industry is as well developed in the Municipalities of Prnjavor and Laktas, while construction industry is in expansion in the City of Istocno Sarajevo due to the internal migrations and increasing demand for new buildings.

The development of tourism represents a substantial source of income in the Municipality of Laktasi (healts tourism) and the Cities of Istocno Sarajevo (winter tourism) and Trebinje (natural resources related tourism). Laktasi and Doboj are known for thermal water, which offer several possibilities for health tourism development.

4.5 Impacts of Climate Change and Water Pollution on Local Economy

Climate change related risks in BiH (mainly droughts, flash floods, landslides and increasing temperatures) are significant and will amplify development challenges in the water sector. In the past years BiH has been experiencing temperature increases of 1.2°C in the summer months and 0.8°C in the winter. Seasonal onset and distribution of rainfall over the past two decades has reportedly been highly variable, causing unexpected flooding and periods of drought, along with high temperatures.[53] Changes in historical precipitation patterns have resulted in increased aridity in agricultural areas, arable lands, low river flow and over-stressed water sources. In fact, the catastrophic floods and landslides in May 2014, affected more than one million people, disrupted the provision of basic services and cost the country more than EUR 2 million in damages and losses, particularly in the agriculture and energy sectors.[54] Significant damage was inflicted on the transport infrastructure (roads, bridges and railways). The assessment of flood damage in BiH in 2014 amounted to about 15% of GDP – damages (9.3%) and losses (5.6%).[55]

In the area the four LSGs covered by the Project during the first year, water resources are used for agricultural activities. Agricultural activities in this area can be negatively affected by the climate change effects (such as floods and landslides) and pollution, and negatively impact the food industry which is based on agricultural activities. The main impacts due to climate change (floods) and pollution can cause damages to fish farmers (Trebinje and Zvornik). The area of Prnjavor and Laktasi is characterized by the metal processing industry which is a source of additional pollution. Climate change is expected to exacerbate problems related to low river flows. The expected summer precipitation decreases in inland areas could lead to a fall in the production of hydroelectric power in the City of Trebinje, which could also jeopardize energy security and electricity exports. Prior experience has shown that droughts have contributed to reductions in the production of HPPs.[56] Possible droughts in the summer months, will have an impact on the potable water supply (particularly affecting rural communities), and on tourism (well developed in the City of Trebinje and Laktasi). Key climate change impacts are likely to be felt in winter tourism. Impacts are expected to include shorter seasons and and less reliable snow cover, which may affect the tourism int he City of Istocno Sarajevo based on winter tourism (Mountain Jahorina). Economies relying on wood processing and furniture making, among which are Istocno Sarajevo, Prnjavor and Laktasi, will also be negatively impacted as climate change is likely to affect the more vulnerable forest ecosystems due to multiple stresses on trees and forest environments, including drought, pest and disease attack, increased fire risks and changes in soil.[57]

4.6 Employment

According to the Statistical Yearbook of RS on Employment, Unemployment and Wages published in 2020 by the RS Institute for Statistics, in the last decade number of employed persons in RS grew compared to the previous years (*Table 7*). The share of males employed is higher than the share of females employed, however it is slowly decreasing compared to the previous years.

Table 7: Number of employed persons, by gender, in RS in 2017, 2018 and 2019
Source: RS Institute for Statistics

Item	2017	2018	2019
Total employed persons	260,608	266,309	272,366
Females	44.38%	44.77%	45.13%
Males	55.62%	55.23%	54.87%

The majority of employed people work in the service sector (*Table 8*).

[53] https://climateknowledgeportal.worldbank.org/country/bosnia-and-herzegovina/climate-data-historical
[54] The estimated cost of the floods in terms of lost output and damages was equivalent to 15 percent of GDP (World Bank, 2015).
[55] BiH Floods. (2014) Recovery Needs Assessment, Ministry of Foreign Affairs of the Grand Duchy of Luxembourg, the EU, UN, WB, and the Global Facility for Disaster Reduction and Recovery
[56] Climate Change Adaptation and Low-Emission Development Strategy for BiH (2013)
[57] Ibid.

Table 8: Employment by Sectors in RS in 2019
Source: RS Institute for Statistics

Employment sector	Employment rate	Female employment rate	Male employment rate
Agriculture	29,8%	33,9%	27,1%
Industry	27,1%	15,3%	34,9%
Services	43,1%	50,8%	38,0%

In 2019, there were 46,000 unemployed persons with a decreasing trend compared to the previous years. In terms of gender, more women was unemployed than man in 2019, while in other previous two years more men was unemployed than women. The highest share in unemployed persons makes people unemployed for longer than three years. People with completed secondary education accounts for the highest share of unemployed persons.

Table 9: Unemployed Persons by Gender in RS in 2017, 2018 and 2019
Source: RS Institute for Statistics

Item	2017	2018	2019
Total unemployed persons (thous.)	83	69	46
Females	49.4%	42%	52%
Males	50.6%	58%	48%

4.7 Poverty

According to the 2017 Social Inclusion Report[58], a large share of BiH population is affected by poverty. Children, people with low education, elderly and weak, as well as rural population are the ones who are most likely to live below poverty line.

The key poverty and inequity indicators in BIH (comparative figures for 2011 and 2015), according to the data published by the BiH Statistics Agency, are presented in *Table 10*.

Table 10: Poverty and Inequity Indicators in BiH, 2011 and 2015
Source: BiH Statistics Agency

Item	2011	2015
Number of relatively poor households	177,277	170,619
Number of relatively poor individuals	566,025	505,816
Relative poverty rate	17.9%	16.9%
Relative poverty line for single-member household	BAM 416	BAM 389
Absolute poverty rate	15%	-
Poverty gap	25.2	24.6

The poverty rate for the elderly (65+) and children (<15years) is higher than the country average. The elderly poverty rate is 19.6%, and the share of children who live in relatively poor households is 18.7%.

4.8 Labor Conditions

Breaches of labor legislation and occupational health and safety legislation are fairly common in BiH. In BiH, the share of informal employment in total employment is relatively high (30 percent)[59]. Informal labor is most common among the young, old, and unskilled workers and in the agricultural sector. In addition, self-employed persons are counted as informally employed. The Association of Independent Trade Unions of BiH has stated that the most common violations of labor rights include (a) preventing workers to use annual leave and (b)

[58] 2017 Annual Report, Council of Ministers (Economic Planning Directorate), December 2018

[59] https://www.ilo.org/budapest/countries-covered/bosnia-herzegovina/WCMS_471903/lang--en/index.htm [accessed on: 27 November 2020]

avoiding concluding long-term employment contracts and giving preference to fixed-term employment contracts.

In RS, according to the official report published by the RS Administration for Inspection Affairs within the Informative Bulletins for the first two trimesters of 2019, the Labor Inspection visited 2,589 organizations in the first six months of 2019, and labor law breaches were found in 32 percent. 198 workers were found without a signed employment contract and without insurance. In this period, 42 serious work-related injuries were recorded, of which 5 deaths. The most frequent breaches of the labor legislation are related to calculations and payments of wages and compensations, termination of employment, working hours, lack of employment contracts, and holidays and leave. Under-declaration of wages or envelop wages are widespread, particularly in construction and sectors with a lot of cash use (hospitality, logistics, retail). Labor inspectorates are understaffed, and the sanctions they issue are not dissuasive due to low fines and long delays in delivering court decisions.

4.9 Main Gender and Citizens Engagement Gaps Relevant to this Project

During the development of this ESMF a *Gender Gap and Citizen Engagement Analysis* was prepared as a standalone document. This Analysis focuses on three main issues, as follows:

a) employment opportunities and decision making in WSS Utilities;
b) gender and other social vulnerabilities in utility customer feedback mechanisms (information, satisfaction and opportunity for feedback, complaints resolution, ability to connect to services), and
c) project entry points for strengthening citizen engagement and customer orientation.

Employment Opportunities and Decision Making in WSS Utilities

The Analysis shows that women are overall underrepresented in the BiH water sector (only 22.6% of all workers in consulted WSS utilities in the project area). Gender-based division of jobs is present in the consulted WSS utilities. The range of jobs suitable for women within the utility has expanded to include engineers, but other technical jobs are reserved for men. Of all female employees in the sample WSS utilities, 31.4% are engineers and managers. The top leading positions are occupied by men (in BiH few WSS utilities directors are women). Gender pay gap does exist but in favor of women as on average women occupy better paid positions. The proposed interventions to increase to enhance women's employment and decision making in the water sector are:

- Annual outreach program designed and conducted in primary and secondary schools to motivate girls and young women to choose technical professions and pursue a career in the water sector,
- Scholarship program targeting girls attending technical and general secondary schools,
- Internships in the WSS Utility offered to students of the final year in the technical schools have balanced participation from women and men,
- Establishment of the gender balanced recruitment committees in utilities,
- Capacity building plans for staff and managers include a goal of gender sensitization for the purpose of eliminating unconscious gender biases/indirect discrimination,
- Infrastructure improvements should provide for separate sanitation facilities for women and men,
- Promotion process and promotion criteria are specified and made known to all.

Gender and Other Social Vulnerabilities in Utility Customer Feedback Mechanisms

Both stakeholders and the WSS utility representatives report a high level of mutual communication on the issues of customers' immediate concern (such as water bills, disconnections, leaks). The channels of communication are primarily in-person contacts on the utility premises, then via telephone, and also electronically via email and Viber. The citizens' perception is that a two-way communication with their WSS utility exists, although they think that the utility could take into consideration more of their suggestions. An

important issue is that citizens generally do not know enough about the problems that affect the sector, from the persistent lack of resources for operation and maintenance to low tariffs that do not cover costs and the subsequent regular budget transfers to mitigate losses from the utilities.

Grievance redress mechanisms (GRMs) exist in surveyed WSS utilities but not all are sufficiently robust. They are formal accountability mechanisms for citizens to give feedback on public services when problems arise. Feedback and complaints by individuals are allowed and can be made by email, by phone and in person. The most efficient procedure is perceived to be through direct contact, visiting the utility. Feedback is also collected in a survey and the utilities report to aggregate it and use for improving the services.

Women participate in the local decision-making mechanisms to a significant extent. As reported in the Analysis, Citizens' consultation meetings should be gender balanced and women should be explicitly invited to participate in policy dialogue. The WSS utilities can ensure that women's organizations and other organizations, such as youth and pensioners, are reached for dissemination of invitations and ensuring wide citizens' representations. Alternatively, smaller and more focused consultation events can be held in order to encourage women's participation, particularly of women from vulnerable groups, where they can feel freer to speak.

Project Entry Points for Strengthening Citizen Engagement and Customer Orientation

Local Communities (LCs) (in local language Mjesne Zajednice) are active in holding public meetings on different issues concerning their community and participate in meetings held by other organizations. The WSS utility representatives participate in those meetings when it is necessary to solve some specific problem such as planning improvements, changes, alternative solutions and citizens ask them questions. LCs have recently had success in engaging more women and youth on the projects designed based on their needs and are perceived as centers of direct citizen participation in democratic processes.

Consultative meetings have a potential of creating long-term policy dialogue between citizens and WSS utility. They can be facilitated by the LCs or CSOs. These meetings should be regular, at least four times a year, and well structured, resulting in an action plan that will be result-oriented and will identify actors responsible for their implementation. In addition, focus groups and community score cards can be introduced for gathering feedback from service users and improve communication between communities and service providers.

4.10 Gender-based Violence, Sexual Harassment, Sexual Exploitation and Abuse

According to the findings from the research conducted by OSCE[60] in 2018, the issue of violence against women is a fairly widespread concern in BiH. This study emphasizes that just under half (48%) of women in BiH have experienced some form of abuse, sexual harassment since the age of 15. More specifically, nearly four in ten (38%) say they have experienced psychological, physical or sexual violence since the age of 15 at the hands of a partner or non-partner (FBiH: 36%, RS: 39%). However, significantly fewer women said they experienced violence compared to women in the EU, with 35% experiencing psychological (43% in the EU), 10% physical (20% in the EU) and 4% sexual violence (7% in the EU) at the hands of partner.[61] BiH has ratified or inherited a number of international commitments on gender equality and GBV prevention, including the UN Convention on the Elimination of All Forms of Discrimination against Women (1980) and the Council of Europe's Istanbul Convention on Preventing and Combating Violence against Women (2013).

4.11 Vulnerable Groups

Disadvantaged / vulnerable individuals or groups are potentially disproportionally affected and less able to benefit from opportunities offered by the project due to specific difficulties to access and/or understand

[60] OSCE-led Survey on Violence Against Women, BiH Results Report, 2019

[61] Ibid.

information about the project and its environmental and social impacts and mitigation strategies. Such groups are also more likely to be excluded from the consultation process. Such groups are also more likely to be excluded from the consultation process. It also includes groups who may be difficult to reach due to communication barriers (language, illiteracy) and those who are in the informal housing market or informal economy and those who are very poor and may find it hard to pay regular tariffs.

Disadvantaged / vulnerable individuals or groups in the project area include “low-income households”; women; youth; women-headed households; elder-headed households (≥ pension age) without any other household member bringing in income; persons with limited mobility; or persons with disabilities; women in rural communities, Roma groups, individuals and habitat communities. Various types of barriers may influence the capacity of such groups to articulate their concerns and priorities about project impacts. The Roma population is categorized among the most vulnerable social groups, and Roma women, in particular, as they are less educated than Roma men. In case they have a job, which is very rare, it is usually some unregistered and lower paid job. Many Roma families have been severely affected by economic consequences of the covid-19 pandemic as they have lost their precarious jobs. Women in many rural communities wash clothes by hand in addition to other domestic chores. Even if they live in the vicinity of the water or sanitation system, some low-income families do not have a connection to such systems. Persons with disabilities in one of the sample municipalities are said to be living in very poor conditions and are often cut-off from water supply due to accumulated unpaid. Elderly citizens, men and women of 65 and older can be a good but underrated target group for citizen engagement.

Vulnerable groups within the communities affected by the project will be further confirmed and consulted through dedicated means, as appropriate. Description of the methods of engagement that will be undertaken by the project is provided in the SEP developed for this Project.

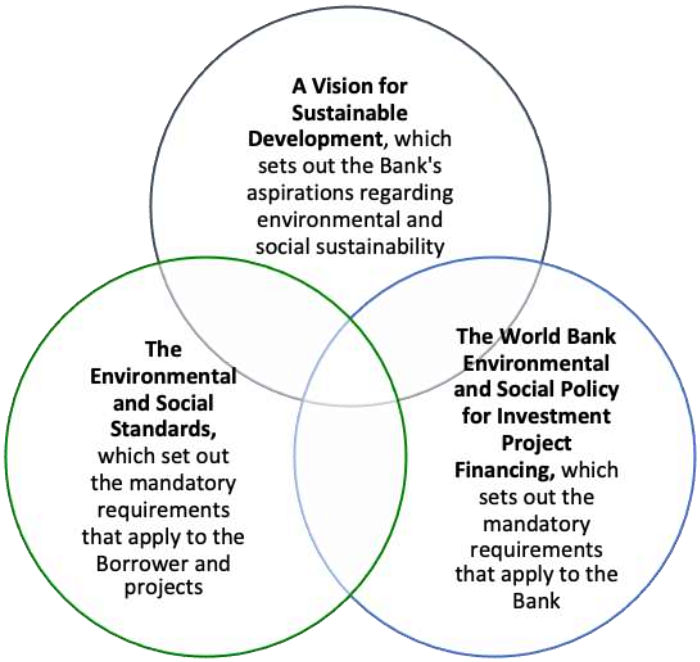
5 LEGAL FRAMEWORK

5.1 The World Bank Requirements

5.1.1 The World Bank Environmental and Social Framework (2016)

World Bank Environmental and Social Framework

WB's Environmental and Social Framework (2016)[62] became effective in October 2018. The Framework sets out the Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity. The Bank's Framework consists of three parts:



Risk Classification

The Bank classifies all projects into one of four classifications:

- High risk
- Substantial risk
- Moderate risk
- Low risk.

In determining appropriate risk classification, the Bank takes into account relevant issues such as:

- Type, location, sensitivity and scale of the project,
- Nature and magnitude of potential environmental and social risks and impacts,
- The capacity and commitment of the Borrower (including any other entity responsible for the implementation of the project) to manage the E&S risks and impacts in a manner consistent with the ESSs.

[62] Available in English at: http://pubdocs.worldbank.org/en/837721522762050108/Environmental-and-Social-Framework.pdf

Other areas of risk may also be relevant to the delivery of E&S mitigation measures and outcomes, depending on the specific project and the context in which it is being developed. These could include legal and institutional considerations; the nature of the mitigation and technology being proposed; governance structures and legislation; and considerations relating to stability, conflict or security.

Projects involving multiple small subprojects

For projects involving multiple small subprojects, that are identified, prepared and implemented during the course of the project, the Bank will review the adequacy of national E&S requirements relevant to the subprojects, and assess the capacity of Borrower to manage the E&S risks and impacts of subprojects. When necessary, the project will include measures to strengthen the capacity of the Borrower.

The Borrower is required to carry out appropriate E&S assessment of subprojects, and prepare and implement such subprojects, as follows:

(a) High risk subprojects, in accordance with ESSs;

(b) Substantial, moderate and low risk subprojects, in accordance with national law and any requirement of the ESSs that the Bank deems relevant for such subprojects.

Environmental and Social Standards

The Bank is committed to supporting Borrowers in the development and implementation of projects that are environmentally and socially sustainable, and to enhancing the capacity of Borrowers E&S frameworks to assess and manage the E&S risks and impacts of projects. To this end, the Bank has defined specific ESSs, which are designed to avoid, minimize, reduce or mitigate the adverse E&S risks and impacts of projects. The desired outcomes are described in the objectives of each ESS, followed by specific requirements to help Borrowers achieve them. The projects supported by the Bank must comply with the following ESSs:

Environmental & Social Standard 1	• Assessment and Management of Environmental and Social Risks and Impacts
Environmental & Social Standard 2	• Labor and Working Conditions
Environmental & Social Standard 3	• Resource Efficiency and Pollution Prevention and Management
Environmental & Social Standard 4	• Community Health and Safety
Environmental & Social Standard 5	• Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
Environmental & Social Standard 6	• Biodiversity Conservation and Sustainable Management of Living Natural Resources
Environmental & Social Standard 7	• Indigenous Peoples
Environmental & Social Standard 8	• Cultural Heritage
Environmental & Social Standard 9	• Financial Intermediaries
Environmental & Social Standard 10	• Stakeholder Engagement and Information Disclosure

These ESSs are accompanied by non-binding Guidelines, Best Practice Notes, Templates and Checklists[63].

Standards applicable to this Project are described in more details below.

Environmental and Social Standard 1 – Assessment and Management of E&S Risks and Impacts is applied to all projects supported by the Bank through Investment Project Financing. The objective is to identify, evaluate and manage E&S risks and impacts associated with each stage of project, in order to achieve E&S outcomes consistent with Bank requirements.

ESS1 is also applied to all Associated Facilities/Activities which must meet ESSs requirements to the extent that the Borrower has control or influence over such Associated Facilities/Activities.[64]

Within ESS1, the Borrower is obliged to:

- Conduct an E&S assessment of the propose project, including stakeholder engagement,
- Undertake stakeholder engagement and disclose appropriate information in accordance with ESS10,
- Develop an Environmental and Social Commitment Plan (ESCP) and implement all measures and actions set out in the legal agreement including the ESCP,
- Conduct monitoring and reporting on the environmental and social performance of the project against the ESSs.

The aim of the requirements set out in ESS1 is to help Borrowers plan and design project, manage project risks and impacts in a systematic way.

The environmental and social assessment will be proportionate to the risks and impacts of the project and will assess in an integrated way all relevant direct, indirect and cumulative E&S risks and impacts throughout project life cycle, including those specifically identified in the ESS2-10. Also, ways of improving project selection, siting, planning, design and implementation will be identified in order to apply hierarchy of mitigation and create opportunities to enhance the positive impacts. The E&S assessment process shall apply mitigation hierarchy according to which: (a) risks and adverse impacts needs to be anticipated and to the extent possible avoided, while positive impacts and benefits for the community and physical environment need to be maximized, (b) where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; (c) residual adverse impacts and risks need to be removed or mitigated to the acceptable level; (d) where significant residual impacts remain, compensate where technically and financially feasible.

For projects which involve a set of subprojects, identified, prepared and implemented during the Project, environmental and social assessment is carried out using the instrument of Environmental and Social Management Framework (ESMF). The ESMF sets out the principles, rules, guidelines and procedures to assess the environmental and social risks and impacts of any future subprojects.

Environmental and Social Standard 2 – Labor and Working Conditions regulates working conditions, and scope of its application depends on type of employment relations between the Borrower and project workers. The term “project worker” is related to:

a) people employed or engaged directly by the Borrower (including the project proponent and the project implementing agencies) to work specifically in relation to the project (direct workers);

[63] Available in English at: http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-framework-resources#guidancenotes

[64] The term “Associated Facilities” means facilities or activities that are not funded as part of the project and are: (a) directly and significantly related to the project; (b) carried out, or planned to be carried out, contemporaneously with the project; and (c) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist. For a facility or an activity to be defines as associated facility, all three criteria must be fulfilled.

b) people employed or engaged through third parties to perform work related to core functions of the project, regardless of location (contracted workers);
c) people employed or engaged by the Borrower's primary suppliers (primary supply workers); and
d) people employed or engaged in providing community labor (community workers).

ESS2 objectives are:

- To promote safety and health at work.
- To promote the fair treatment, nondiscrimination and equal opportunity of project workers.
- To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers.
- To prevent the use of all forms of forced labor and child labor.
- To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law.
- To provide project workers with accessible means to raise workplace concerns.

Environmental and Social Standard 3 - Resource Efficiency and Pollution Prevention and Management sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle consistent with Good International Industrial Practice. Applicability of this EES is established during environmental and social assessment.

ESS3 objectives are:

- To promote the sustainable use of resources, including energy, water and raw material.
- To avoid or minimize adverse impact on human health and the environment by avoiding or minimizing pollution from project activities.
- To avoid or minimize project-related emissions of short and long-lived climate pollutants.
- To avoid or minimize generation of hazardous and non-hazardous waste.
- To minimize and manage the risks and impacts associated with pesticide use.

The Borrower shall be obliged to apply technically and financially feasible measures to improve efficient consumption of energy, water and raw material, as well as other resources. Such measures shall integrate cleaner production principles into the product design and production processes in order to conserve raw material, energy, water and other resources.

Besides, the Borrower will avoid the release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures specified in national law or the World Bank Group Environmental, Health and Safety Guidelines[65], whichever is most stringent. This applies to the release of pollutants to air, water and land due to routine, non-routine, and accidental circumstances, and with the potential for local, regional, and transboundary impacts.

Pollution prevention and management includes management of:

- Air pollution
- Hazardous and non-hazardous waste
- Chemicals and hazardous material
- Pesticides.

[65] World Bank Group Environmental, Health and Safety Guidelines (EHSG), available at: https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/EHS-Guidelines/

Environmental and Social Standard 4 – Community Health and Safety addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.

Objectives of ESS4 are the following:

- To anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and non-routine circumstances.
- To promote quality and safety, and considerations relating to climate change, in the design and construction of infrastructure, including dams.
- To avoid or minimize community exposure to project-related traffic and road safety risks, dis-eases and hazardous materials.
- To have in place effective measures to address emergency events.
- To ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.

Environmental and Social Standard 5 – Land Acquisition, Restriction on Land Use and Involuntarily Resettlement is applicable to this project. A Resettlement Policy Framework has been developed and any subproject involving land acquisition and involuntary resettlement, regardless of whether physical relocation is present, will develop a Resettlement Plan as per the RPF and this will be approved by the World Bank and disclosed in-country. The screening process will screen for all the subprojects which may involve involuntary land acquisition.

Environmental and Social Standard 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources is applicable to all projects that potentially affect biodiversity or habitats, either positively or negatively, directly or indirectly, or that depend upon biodiversity for their success. It is also applied to projects that involve primary production and/or harvesting of living natural resources[66].

ESS6 objectives are:

- To protect and conserve biodiversity and habitats.
- To apply the mitigation hierarchy in the design and implementation of projects that could have an impact on biodiversity.
- To promote the sustainable management of living natural resources.
- To support livelihoods of local community.
- To avoid or minimize generation of hazardous and non-hazardous waste.

The Borrower is obliged to avoid adverse impacts on bio-diversity and habitats. When avoidance of adverse impacts is not possible, the Borrower will implement measures to minimize adverse impacts and restore biodiversity in accordance with the mitigation hierarchy provided in ESS1 and with the requirements of this ESS. Where significant risks and adverse impacts on biodiversity have been identified, the Borrower will develop and implement a Biodiversity Management Plan[67]. A Biodiversity Management Plan (BMP) includes key biodiversity objectives, activities to achieve the objectives, an implementation schedule, institutional and gender-inclusive responsibilities, cost and resourcing estimates.

Environmental and Social Standard 7 – Indigenous Peoples is not applicable to this Project given the fact that in Bosnia and Herzegovina, there are no any social or cultural groups of specific

[66] Harvesting of living natural resources, such as fish and all other types of aquatic and terrestrial organisms and timber, refers to productive activities that include extraction of these resources from natural and modified ecosystems and habitats.

[67] Depending on the nature and the scale of the risks and impacts, to address cultural heritage as an integral aspect of sustainable development the project, the Biodiversity Management Plan may be a stand-alone document or it may be included as part of the Environmental and Social Commitment Plan prepared under ESS1.

characteristics defined in ESS7.

Environmental and Social Standard 8 – Cultural Heritage sets out general provisions on risks and impacts to cultural heritage from project activities. The term "cultural heritage" encompasses tangible and intangible heritage, which may be recognized and valued at a local, regional, national and global level. Cultural heritage provides continuity in tangible and intangible forms between the past, present and future.

Objective of ESS8 are the following:

- To promote the equitable sharing of benefits from the use of cultural heritage.
- To address cultural heritage as an integral aspect of sustainable development.
- To promote meaningful consultation with stake-holders regarding cultural heritage.
- To protect cultural heritage from the adverse impacts of project activities and support its preservation.

The requirements of this ESS8 will apply to all projects that are likely to have risks or impacts on cultural heritage. This will include a project which:

a) Involves excavations, demolition, movement of earth, flooding or other changes in the physical environment;
b) Is located within a legally protected area or a legally defined buffer zone;
c) Is located in, or in the vicinity of, a recognized cultural heritage site;
d) Is specifically designed to support the conservation, management and use of cultural heritage.

Environmental and Social Standard 9 – Financial Intermediaries is not applicable to this Project.

Environmental and Social Standard 10 – Stakeholder Engagement and Information Disclosure recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.
ESS10 objectives are the following:

- To establish a systematic approach for stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties.
- To assess the level of stakeholder interest and support for the project and to enable stake-holders' views to be taken into account in project design and environmental and social performance.
- To promote and provide means for effective and inclusive engagement with project-affected par-ties throughout the project life cycle on issues that could potentially affect them.
- To ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format.
- To provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow Borrowers to respond to and manage such grievances.

5.2 Overview of Environmental and Social Requirements

5.2.1 Environmental Assessment Procedure

In RS, the procedure for issuing an Ecological permit and the Environmental Impact Assessment (EIA) procedure is prescribed by:

- the Law on Environmental Protection[68],
- the Regulation on Projects Subject to EIA and Criteria for Determining if EIA is Needed and Its Scope[69] (hereinafter: the RS Regulation on EIA)
- the Regulation on Plants and Facilities that May be Constructed and Operated Only with a Valid Ecological permit[70] (the RS Regulation on permitting).

The RS Regulations on EIA defines projects for which an EIA is mandatory, projects for which the RS Ministry of Physical Planning, Civil Engineering and Ecology (RS MPPCEE) determines whether an EIA is needed, and the criteria based on which RS MPPCEE determines in individual cases whether EIA is needed and the scope of EIA. The RS Regulation on permitting defines projects for which EIA is not needed but ecological permit is mandatory.

The EIA procedure is conducted in two phases:

1. Preliminary EIA procedure, determining:
   a) whether an assessment is needed,
   b) the scope of the assessment, in case it is needed.
2. EIA procedure

The preliminary EIA procedure is launched by the Application submitted by the applicant to RS MPPCEE, which is obliged to forward a copy of the Application to and enable review of the accompanying documentation by the following entities: administrative authority responsible for construction in the local self-governance units in which the project would be implemented[71]; administrative authorities and organizations responsible for environmental protection, authorities and organizations which may be affected significantly by the project[72], FBiH and BD or another country's authority responsible of environment, in case of a project with significant environmental impacts in FBiH, DB or another country. Such authorities are entitled to provide their opinions within 30 days after receiving a copy of the Application in written form.

RS MPPCEE shall decide on the Application by issuing a Decision which:

(i) Establishes the applicant's obligation to conduct an EIA and develop an EIA Study and
(ii) Defines the tentative scope and content of the study or
(iii) Establishes that an EIA and study are not necessary.

RS MPPCEE decides on the need to conduct an impact assessment for projects bases on the following criteria specified in the RS Regulation:

- Project characteristics (project size, cumulative impact with other projects, use of natural resources, waste generation, adverse environmental effects);
- Risk of accidents given the materials used and technology applied;
- Project location and sensitivity of the local environment which may be affected by the projects, particularly in terms of:
  - Existing use of land
  - Relative availability, quality and regeneration capacity of natural resources in the area, and
  - Absorption capacity of the nature, with particular attention to wetlands, costal and water protection zones, karst areas, mountain and forest areas, areas of rare and endangered flora and fauna, protected nature areas and national parks, monuments of nature and protected landscape,

[68] Official Gazette of RS, No. 71/12 and 79/15
[69] Official Gazette of RS, No. 124/12
[70] Official Gazette of RS, No. 124/12
[71] In case the RS Ministry is responsible for issuing Site Requirements.
[72] Authorities responsible for nature protection, authorities responsible of protection of cultural and historical and natural heritage, authorities responsible of agriculture, forestry, water management, authorities responsible of plant protection and other interested authorities.

areas where environment quality standards have been exceeded by existing facilities and activities, areas with high density of population, landscape of historical, cultural and archeological importance;

- Characteristics of the potential impact (scope of impact (particularly in terms of geographic area and population density), likelihood, duration, frequency, complexity, intensity and reversibility of the impact).

When determining the scope of the impact assessment, the RS MPPCEE takes into account, for each individual case, the following factors: site description, presentation of the environment, project description, description of potential impacts, specification and description of mitigation measures, reduction and/or elimination of environmental impact, specification and description of impact monitoring measures and activities, description of the considered alternatives and reason of choosing particular alternative, description of potential environmental impact in FBiH, BD or another country, as well as their inter-relations.

Within 15 days upon sending to the applicant the Decision which determines an obligation to conducts the assessment and the scope of the assessment, RS MPPCEE shall forward the Decision to other responsible authorities and post it on its website or RS Government website for a period of 30 days.

EIA Procedure. After receiving the Decision on the obligation to conduct the EIA, the applicant shall be obliged to submit to the authorized legal entity a request for developing the EIA Study. Within 15 days upon receiving the Application for Approval of the EIA Study (including the EIA Study), RS MPPCEE shall be obliged to forward a copy of the Application to other responsible authorities, which shall provide their written opinions on both the Application and particularly on the study, within 30 days. The EIA procedure also includes an obligation to carry out public consultations, as well as an audit of the study which should verify the technical quality of the Study. RS MPPCEE shall issue the Decision on Approval of the EIA Study within 60 days upon receipt of the final version of the study.

Ecological permitting procedure. For the facilities that do not require an EIA, RS MPPCEE issues Ecological Permit on the basis of the Application for Ecological Permit and Proofs submitted with the Application. RS MPPCEE shall notify the public and the relevant stakeholders about the content of the Application in one of the daily newspapers in the RS. In case of transboundary issues, the Application will also be sent to the concerned entity, Brcko District or other country. The public may submit a written opinion on the application and the supporting documentation within 30 days from the date of publishing of the notification. RS MPPCEE shall issue a Decision on the Issuance of Ecological Permit or Decision on Rejecting the Application within 60 days following the receipt of the complete application for ecological permit. Ecological permit is valid for five years.

5.2.2 Waste Management Regulations

In RS, pursuant to the *Law on Waste Management*[73], all the subject to obtaining an ecological permit must prepare and adopt a Waste Management Plan, which should include:

- Documentation on waste generated during plant operating process, as well as on waste used in the plant or disposed by the plant (type, composition and volume of waste),
- Measures taken in order to reduce waste, particularly hazardous waste generation,
- Procedures and manner of separation of various types of waste, particularly hazardous waste and recyclable waste, in order to reduce volume of waste for final disposal, and
- Manner of storage, treatment and disposal of waste.

Categories of waste which may be generated as a result of the activities potentially covered by this Project, pursuant to the Regulation on Waste Categories, Testing and Classification[74] are specified below.

[73] Official Gazette of RS, No. 111/13, 106/15 and 16/18

Table 11: Waste from the Activities Potentially Covered by the Project – RS

Activity from which the Waste Originates	Regulation Code
Waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	02 00 00
Waste from the production, formulation, supply and application of coatings (paints, varnishes and glass enamels), adhesives, sealants and printing inks	08 00 00
Waste from oils and residues of liquid fuels (excluding edible oils and those in chapters 05, 12 and 19)	13 00 00
Packaging waste, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified	15 00 00
Waste not otherwise specified in the catalogue	16 00 00
Construction waste and demolition waste	17 00 00
Waste from waste treatment plant, off-site wastewater treatment plant and water treatment for human and industrial use	19 00 00
Municipal waste and similar waste from industrial facilities and small craft, including separately collected fractions	20 00 00

5.2.3 Water Management Regulations

In RS, the *Law on Water of RS*[75] prescribes that in case of a project which includes e.g. construction of flood protection facilities, as well as any other activity which may affect volume and quality of water, the following water management acts must be obtained:

- Water Guidelines, which prescribes the terms and conditions under which the responsible Ministry will allow use of water (issued in the stage of Urban Permit and Site Requirements in RS, respectively).
- Water Approval, which confirms that the documentation attached to the Application for Water Approval is in compliance with the Preliminary Water Approval and Water Guidelines in RS respectively, water regulations and planning documents (issued before the Construction Permit in RS).
- Water Permit, which confirms that all the requirements set in the Water Approval are met (issued before the Use Permit in RS). The Water Permit defines purpose, terms and conditions of water use, facility and plant operating regime, terms and conditions of wastewater discharge, terms and condition of solid waste and liquid waste disposal and other terms and conditions. It also defines the applicant's obligations related to wastewater measurement, measurement frequency, quality control and records keeping on used water, as well as obligations related to water fees accounting and payment.

The entity law on water foresees that the ecological permit is issued based on the previously obtained Preliminary Water Approval/Water Guidelines. It is thus ensured that the environmental ministry can integrate in the ecological permit any water protection-related recommendations and measures. In RS, water documentation is issued by Public Institution "Vode Srpske" and local self-governance units.

5.2.4 Construction Regulations

In RS, pursuant to the Law on Physical Planning and Construction[76], for design and construction of buildings it is necessary to obtain Site Requirements, Construction Permit and Use Permit. Depending on the type of construction, these permits are issued by the RS MPPCEE or by the local self-government units (Cities or Municipalities).

[74] Official Gazette of RS, No. 19/15 and 79/18
[75] Official Gazette of RS, No. 50/06, 92/09, 121/12 and 74/17
[76] Official Gazette of RS, No. 40/13, 106/15, 3/16, 84/19

The mentioned Law specifies the documents that must be kept at construction sites, including a Construction Site Organization Scheme. The Scheme includes a Safety Plan developed by the Contractor.

5.2.5 Land acquisition

Land acquisition in RS is regulated by the Law on Expropriation of RS[77] which defines the conditions and procedure for expropriation of property for construction of facilities in public interest, compensation eligibility and amounts, handling of grievances and disputes handling and other issues pertaining to the expropriation process.

5.2.6 Regulations on Working Conditions

Labor legislation and safety at work are regulated at RS level by the following regulations:

- RS Labor Law[78]: Governs employment relations, rights, obligations and responsibilities under employment contract, conclusion of employment contract, working hours, breaks and leave, general protection of workers, salaries, allowances and other receipts, employment contract termination, protection of workers' rights, as well as organization of workers and employers.
- RS Law on Safety at Work[79]: Prescribes safety and health at work as an activity of general interest, responsibility of implementation and improvement of safety and health at work, rights, obligations, responsibilities and preventive measures.

The key provisions of the **labor law** in RS are as follows:

- **Employment contracts** can be concluded as **open ended or fix-term**, part-time, for temporary and occasional work, as well as for work outside of the employer's premises. The laws prescribe the detail terms and condition and duration of such contracts.
- The law **prohibits discrimination** in terms of employment requirements and selection of candidates, education, training and professional development, promotion and employment contract termination. Pregnancy and maternity leave cannot be a reason not to hire a woman or extend her employment contract.
- The law prescribes the **minimum employment age** of 18 for concluding an employment contract, with exception of allowing persons between 15 and 18, with the consent of their legal custodians and based on a medical certificate issued by health facility, and provided that the given job does not endanger the minor's health, moral and education.
- **Employers are required** to register workers for pension and disability, health and unemployment insurance.
- **Workers are entitled** to a salary and salary compensation during absence from work, as well as to working conditions which ensure safety and protection of their life and health at work.
- **Full time work** is, as a rule, 40 hours a week. **Overtime** work is allowed in RS in the duration of maximum 10 hours a week.
- Workers are entitled to an **increased** salary for overtime, night work and work during holidays.
- The law defines in detail **breaks** from work to which workers are entitled (breaks during working hours, daily, weekly and annual leave).
- The law foresees that a worker who believes that the employer violated any of his/her employment-related rights can **request from the employer to provide him/her with such right**. The RS Law

[77] Official Gazette of RS, No. 112/06, 37/07, 66/08 and 110/08
[78] Official Gazette of RS, No. 1/16 and 66/18
[79] Official Gazette of RS, No. 1/08, 13/10

prescribes that the employer is obliged to respond to such request within 30 days. Law envisages a mechanism of **amicable dispute resolution** as well as **lodging court suits**[80].

The key provisions of **the legislation on occupational health and safety** (OHS) in RS are as follows:

- Employers are obliged to **ensure OHS and provide the necessary means** to implement and improve OHS, as well as to organize **OHS training** for workers,
- Workers must be provided with a working environment, assets for work and personal protection equipment that do not endanger the safety or health of workers and other persons,
- Workers are obliged to use personal protection equipment and comply with other instructions related to safety at work.

[80] According to the survey published on the website of the Initiative for Monitoring European Integrations in BiH, average duration of employment-related disputes in BiH is 313 days (source: Initiative for Monitoring European Integrations in BIH) http://eu-monitoring.ba/trajanje-sudskih-postupaka-u-antidiskriminacijskim-predmetima/#_ftn7 [accessed on: September 29, 2019]. Although, pursuant to RS Litigation Procedure Law, employment-related disputes are considered to be of urgent nature, they last several years and have negative implications on economic position.

6 INSTITUTIONAL STRUCTURE

6.1 BiH Level Institutions

According to the Dayton Agreement, issues such as foreign policy, foreign trade policy and customs policy fall within the area of competence of BiH institutions. All governmental functions and authorities that are not expressly assigned to the institutions of BiH, are those of the entities/District. This includes water management, environmental protection, agriculture, land and forestry. However, the national level does have some competences in the fields related to implementation of international treaties, environmental protection and water management.

At the state level, the Ministry of Foreign Trade and Economic Relations (MoFTER) is responsible for, among others, tasks and duties falling within the competence of BiH which are related to definition of policy, basic principles, coordination of activities and harmonization of plans of entity-level authorities and institutions on the international level in the areas of agriculture, energy, environmental protection, development and use of natural resources and tourism. In relation to water management, the Water Resources Department within MoFTER contributes, through regional and international cooperation, as well as cooperation with entity institutions, to better management and use of water resources in BiH and wider.

BiH is a signatory to several conventions and protocols in this area, among which are the **Convention on the Protection and Sustainable Use of the Danube River** and the **Framework Agreement on the Sava River Basin**, with a number of related protocols. The Water Resources Department is actively involved in the implementation of the mentioned agreements. In addition, this Department participates in the implementation of a number of projects in the country as well as at the regional level, which contribute to the sustainable management of water resources in BiH.

6.2 RS Level Institutions

The Constitution of RS[81] defines that the RS level authorities organize and provide environmental protection. Table 12 provides an overview of institutions responsible for environmental protection in RS.

Table 12: RS level institutions responsible for water management and environmental issues relevant for this Project

Institution	Responsibilities
Ministry of Agriculture, Forestry and Water Management of RS	Administrative, professional and other tasks in the field of water management, management of two river basins (Sava River Basin and Trebisnjica River Basin). This Ministry is responsible for development and adoption of plans in water management sector, balance water, enforcement of protection from harmful water, determining conditions and issuing water permits, implementation and organization of quality control of water, monitoring, hydro melioration, establishment and maintenance of information systems, keeping registers; preparation of strategies, programs, monitoring and coordination of the work of other organizations in the field of water management and other activities determined by law.
Public Institution “Vode Srpske“	Organizes hydrological monitoring and water quality monitoring, monitoring of the ecological status of surface waters, monitoring of ground water quality. Prepares reports on the status of water quality and recommends measures necessary for achievement of goals related to water protection of waters,

[81] Official Gazette of RS, No. 21/92 – revised text, 28/94, 8/96, 13/96, 15/96, 16/96, 21/96, 21/02, 26/02, 30/02, 31/02, 69/02, 31/03, 98/03, 115/05 and 117/05.

Institution	Responsibilities
	regulation of waters, protection from adverse effects of waters, and use of waters. Issues water-related acts and orders measures which entities must observe in the period of validity of these acts. Establishes and manages the water information system.
Ministry of Spatial Planning, Civil Engineering and Ecology of RS	Integral planning and spatial planning, implementation of the Spatial Plan of RS, approval of spatial plans of local self-government units and special areas, urban and regulatory plans, integral protection and promotion of the environment and nature in general, research, planning and management through environmental measures, protection of the ozone layer, monitoring of climate change, comprehensive protection of goods of general interest, natural resources, natural and cultural heritage, issuance of ecological permit.
Ministry of Finance of RS	System of financing general social needs, system of taxes, contributions and other fees, system of financing and formation of development funds, cash flow management, daily monitoring of funds, supervision over the intended use of funds of the Republic and social income activities determined by law.

7 ENVIRONMENTAL AND SOCIAL RISK ASSESSMENT

7.1 ESSs Relevant to the Project

Following is an overview of the WB E&S standards considered applicable to the WSS Modernization Project at the time of the appraisal and a brief explanation of their relevance.

Table 13: ESSs considered relevant for the WSS Modernization Project at the time of the appraisal

ESS		Relevance to the WSSM
ESS1	Assessment and Management of E&S Risks and Impacts	This standard guides the preparation of E&S instruments including those that have been prepared for WSSM Project: (i) ESMF, (ii) SEP, (iii) RPF (iv) LMP and appropriate risk assessment for individual activities implemented under the project.
ESS2	Labor and Working Conditions	This standard guides the creation of sound worker-management relationships. The primary labor risk is the risk of informal work. The risks of unpaid and underpaid work, work overload, poor terms and conditions of engagement, lack of occupational health and safety measures, and denied access to social security, pension or health insurance are associated with informal work. Labor Screening and Compliance Checklist, and Monitoring and Evaluation procedures have been developed to be included as mandatory in the tender documentation providing compliance of third parties i.e. different contractors to the ESS2 requirements.
ESS3	Resource Efficiency and Pollution Prevention and Management	This standard sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle. Considering that most of the activities involve construction works, the major risk is that Contractors will not be aware of best practices to avoid or minimize pollution from project activities or avoid or minimize adverse impacts on human health and the environment. The site-specific ESMP will guide contractors to implement adequate pollution prevention and management measures.
ESS4	Community Health and Safety	This ESS sets out the requirements to avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials and to have in place effective measure to address emergency events. The works anticipated in this project will be carried out mostly in remote or publicly restricted areas and will not employ use or generation of hazardous substances and waste. The main risk associated with the project is related to workers health and safety that is addressed by ESS2.
ESS5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	This ESS guides the procedures to avoid or implement involuntary resettlement and economic displacement with least possible impacts. The WSS Modernization Project involves the possibility of land acquisition and economic displacement. To minimize the risk, an appropriate RPF has been developed at the project level, while a site-specific RAP will be developed where needed. The main risk is associated with appropriate implementation of the RPF.
ESS6	Biodiversity Conservation and Sustainable Management of	The project area is the whole entity, which includes several nationally and internationally recognized natural and critical habitats, protected areas,

ESS		Relevance to the WSSM
	Living Natural Resources	wetlands and Ramsar sites as well as hundreds of locally designated nature sites. The activities will be assessed for relevant risks, and the mitigation hierarchy will be applied. Development of site-specific ESMPs will be considered as part of screening and approval procedure. Environmental screening will ensure that no activities with potential negative impacts are eligible for funding in natural or critical habitats. In case of activities to be funded by the project and to be implemented in modified habitats, the project-level will present requirements to avoid or minimize the respective impacts on biodiversity and implement mitigation measures as appropriate.
ESS8	Cultural Heritage	Information that are available in the project appraisal phase indicate that it is very unlikely that there will be any interaction of construction works with known cultural heritage sites. In the event of chance finds, the Borrower will deal with it taking into account national legal requirements that are fully consistent with UNESCO and good international practice.
ESS10	Stakeholder Engagement and Information Disclosure	This ESS guides the inclusion of relevant stakeholders in the project lifecycle. In line with the requirements of this ESS, a Stakeholder Engagement Plan including a Grievance Mechanism has been developed for this project. The main risk is associated with appropriate implementation of SEP.

7.2 Preliminary Identification of Potential E&S Impacts

This chapter provides preliminary E&S risk assessment of activities that will be financed under the three project components.

Component 1 is mainly focused on financing technical assistance activities and work of APCU to successfully perform management project management-related activities. It is not expected that those activities will have any impact on environment since they involve mainly office based desktop research activities and capacity building trainings. Considering the social aspect of these activities, it is possible to experience social issues related to labor aspects that are contrary to the requirements of ESS2 and ESS4. Therefore, it will be important that appropriate social instruments are implemented including the Labor Management Procedure (LMP) and the Stakeholder Engagement Plan (SEP) prepared for this Project, that reflect the principles and requirements of ESS2, ESS 4 and ESS 10. The same is valid for activities financed under **Component 2** which support technical assistance with the aim of institutional strengthening and capacity building activities at municipal level. All technical assistance and planning or design documents produced under these two components will integrate environmental and social best practices in line with the ESSs and the ESF from a design standpoint, ie throughout the document.

Component 3 is focused on infrastructure investments for improving access, quality and efficiency of WSS service which are likely to have negative environmental and social impacts. These include but are not limited to:

Water efficiency investments
- NRW reduction (leak repair, pressure control, etc.)
- Energy efficiency measures (pipes and pumps replacement, better planning and zoning, etc.)
- Metering & commercial systems
Water assets renewal and extension, other water components
- Water system rehabilitation and extension
- WTP rehabilitation and construction

- SCADA, GIS, other measures
Wastewater assets renewal and extension
- Sewer network rehabilitation and extension
- Improvements to existing WWTPs
WWTP construction
- New WWTPs

In the pre-construction phase, only social impacts related to land acquisition and livelihood restoration may possibly occur. For this phase it is important that the principles of ESS5 set in the Resettlement Policy Framework (RPF) developed for this Project are implemented and appropriate Resettlement Action Plans (RAPs) prepared. For all planning purposes, the protected and sensitive areas will be avoided, however, if this is not a possibility the relevant aspects of ESS6 will be integrated into the design and due diligence documentation. A similar approach is to be used for cultural heritage and provisions of ESS8.

In the construction phase, The infrastructure investments envisioned within the project may have certain negative impacts on the environment during construction/ reconstruction and removal of materials/ old equipment (e.g. old pumps, water meters, etc.). The common environmental and social impacts are those resulting from construction works and generation of construction and demolition waste and other types of special waste categories. These may include impacts such as dust and noise, waste management, potential finds of hazardous materials such as asbestos-cement pipes, chance finds for pipe network, Occupational Health and Safety (OHS) and labor issues. If it is known that reconstruction activities will include removal of asbestos-cement pipes, it will be necessary to conduct a hazard analysis to systematically identify the system and procedures to be implemented. If the generated waste is considered hazardous, the Borrower will comply with existing national requirements for management of hazardous wastes (including storage, transportation and disposal) including national legislation and applicable international conventions, including those relating to transboundary movement. The provisions on pollution prevention and resource sustainability of ESS3 will be integrated here, and any aspects of Community Health and Safety from ESS4.

In the *operational/maintenance phase* environmental and social impacts may include procurement, use, management and disposal of chemicals for water supply treatment, odor and noise of the wastewater treatment plants, sludge management from such facilities, OHS and labor issues. One of the key concerns related to environmental sustainability is the management of sludge from wastewater treatment plants, as management of such wastes in already existing facilities is questionable and sometimes environmentally unsustainable. The Bank team will work with the Borrower to further advance management of such wastes in line with Environmental and Social Standard 3 (ESS3).

A brief summary of the potential negative impacts, together with the proposed mitigation measures, is given in *Table 14*.

Table 14: Preliminary identification of environmental and social impacts of proposed subprojects

NAME OF THE COMPONENT/ SUB-COMPONENT	DESCRIPTION OF ACTIVITIES	PRELIMINARY E&S IMPACT ASSESSMENT
COMPONENT 1: IMPROVING THE ENABLING ENVIRONMENT FOR SECTOR MODERNIZATION		
Sub-component 1.1: Support for water supply and sewerage sector reforms on Entity level	Technical assistance activities: - development of a WSS sector financing mechanism - institutionalization of a utility benchmarking system - development of a rural WSS data base; - national capacity building program for the professionalization of the sector	No environmental impacts. Social impacts in the operational phase are mainly related to possible labor issues, occupational health and safety, setting up grievance mechanism and necessity to engage stakeholders in all project activities.
Sub-component 1.2: Project management and coordination of the sector reforms	Financing of APCU to perform project management-related activities: - audits, training, safeguards and fiduciary management, and all associated Project operating costs - managing beneficiary satisfaction surveys and feedback mechanism, including a grievance redress mechanism, - financial and technical support to line ministries and established Entity Working Groups - technical advice for the formulation of regulatory and policy frameworks, policy facilitation and public consultations	No environmental impacts. Social impacts in the operational phase are mainly related to possible labor issues, occupational health and safety, setting up grievance mechanism and necessity to engage stakeholders in all project activities.
COMPONENT 2: SUPPORT FOR WATER SERVICES SECTOR REFORMS ON MUNICIPAL LEVEL	Technical assistance activities: - The preparation of water utility business plans (BP) - Development and signing of Public Service Agreements (PSAs) between the municipality and the water utilities - Preparation of tariff proposal, based on legislation set on Entity level - Support for organizational restructuring - Capacity building on technical, commercial and financial topics	No environmental impacts. Environmental practices shall be integrated into the documents as needed. Social impacts in the operational phase are mainly related to possible labor issues, occupational health and safety and necessity to engage stakeholders in all project activities.

NAME OF THE COMPONENT/ SUB-COMPONENT	DESCRIPTION OF ACTIVITIES	PRELIMINARY E&S IMPACT ASSESSMENT
COMPONENT 3: IMPROVING ACCESS, QUALITY AND EFFICIENCY OF WSS SERVICE DELIVERY	Infrastructure investments for improving access, quality and efficiency of WSS service delivery including, but not limited to: - Water efficiency investments including NRW reduction (such as leak repair, pressure control, etc.), energy efficiency measures and metering & commercial systems - Water assets renewal and extension, other water components including water system rehabilitation and extension, Water Treatment Plant (WTP) rehabilitation and construction, SCADA, GIS, other measures - Wastewater assets renewal and extension including sewer network rehabilitation and extension, improvements to existing Waste Water Treatment Plants (WWTPs) - New WWTPs construction	**Impacts:** *In the pre-construction phase:* acquisition of land at the locations of the works. *In the construction phase:* a) environmental impacts: construction specific impacts relates to emissions of dust and noise, waste management including management of old equipment (pumps, water meters, etc.) and other special waste categories, potential finds/removals of hazardous materials such as asbestos-cement pipes, chance finds for pipe networks, etc. b) social impacts: OHS and labor issues relevant to construction workers; community health and safety during construction; minor negative impacts could be expected through human presence and nature of construction works at site, which are limited to the location of works or its surrounding vicinity; public exclusion from project activities; large influx of workers from outside communities is not expected. *In the operational/maintenance phase:* a) the expected impacts are mainly related to maintenance of network structures and have a similar effect on the environment as the construction works involve the presence of workers and machinery on the site. In addition, procurement, use, management and disposal of chemicals for water supply treatment, odor and noise of the wastewater treatment plants and sludge management from such facilities are identified as major environmental impacts. b) OHS and labor issues and community health and safety as a consequence of inadequate waste management (chemicals, sludge).

7.3 Environmental and Social Requirements for the Project

Since the WSS Modernization Project involves a set of subprojects to be identified, prepared and implemented during the project, pursuant to the WB E&S requirements described in ESS 1 – Assessment and Management of E&S Risks and Impacts, the APCU will assess the E&S impacts of each sub-component and related subprojects using this ESMF.

For each individual sub-project, the APCUs will prepare an ESIA or ESMP using guidance provided in this ESMF. The selection of the E&S instrument will be based on the screening process and the determined subproject E&S risk.

Table 15 provides a review of the activities that will be implemented in the framework of the three components versus the WB and the national E&S requirements that need to be fulfilled in the process of project approval. The entity requirements stem from the legal requirements in the field of environmental protection, water management and physical planning and construction, previously described in detail in *Chapter 5.2 Overview of Environmental and Social Requirements.*

In case of prolonged pandemic caused by coronavirus, the capacity building activities within Component 1 and 2 will be organized in line with Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings (March 20, 2020).

In case the Borrower proposes other types of activities which are not mentioned in the table below, the decision to finance such activities will be made through a dialogue with the Bank and based on project categorization and adequate due diligence.

In case of development of any strategic or other referent documents the Borrower will include any social and environmental risk management aspects in an integrated manner as part of the design.

For activities and purchases that are submitted as retroactive financing (i.e. will seek funds from the project after commencement or completion of such activities) the APCU specialists will need to conduct a screening in line with this ESMF and develop due diligence, as if the activity is going to be financed. Once the due diligence is prepared, the specialist will make an assessment of the present status on the ground compared to the due diligence, indicate any non-compliance and gaps, and present an action plan how to address those gaps in a given time period.

Table 15: Environmental and social requirements for the Project

Type of activities	WB requirements			National requirements		
	Risk category pursuant to WB	Environmental assessment instrument	Social instrument	Environmental protection	Water management	Physical planning and construction
COMPONENT 1: IMPROVING THE ENABLING ENVIRONMENT FOR SECTOR MODERNIZATION / COMPONENT 2: SUPPORT FOR WATER SERVICES SECTOR REFORMS ON MUNICIPAL LEVEL						
Technical assistance activities	No risk	-	LMP, SEP	-	-	-
COMPONENT 3: IMPROVING ACCESS, QUALITY AND EFFICIENCY OF WSS SERVICE DELIVERY						
Water efficiency investments including NRW reduction (such as leak repair, pressure control, etc.), energy efficiency measures and metering & commercial systems	To determine the risk carry out the sub-project screening in line with the procedure in Chapter 7.4.	"High" risk projects are not eligible for financing. For "substantial" risk subprojects, ESIA with a site-specific ESMP will be prepared in line with this ESMF. For "moderate" risk subprojects, a site-specific ESMP will be prepared in line with this ESMF. For "low" risk subprojects, a generic ESMP will be prepared in line with this ESMF.	LMP, SEP	-	-	-
Water assets renewal and extension, other water components including water system rehabilitation and extension, WTP rehabilitation and construction, SCADA, GIS, other measures			RPF/RAP, SEP, LMP	In case that the activity involves abstraction of groundwater in volume equivalent to or exceeding 10 million cubic meters Environmental Impact Assessment procedure carried out by the entity ministry of ecology and ultimately ending with issuing of ecological permit In case that the activity involves abstraction of groundwater in volume of less than 10 million cubic meters a preliminary impact assessment carried out by the entity ministry of ecology based on which a decision on the necessity to conduct a full EIA is made and ultimately ecological permit issued In case that the activity involves construction of plants for abstraction and treatment of ground water in	Water Management Acts except in case of expansion or reconstruction of the water system that is in use, i.e. for which the water permit is issued in accordance with the Law, if this expansion does not involve the capture of new amounts of water	Construction related permits

Type of activities	WB requirements			National requirements		
	Risk category pursuant to WB	Environmental assessment instrument	Social instrument	Environmental protection	Water management	Physical planning and construction
				volume equivalent to or exceeding 10,000 l/h the ecological permit is issued by the Entity Ministry based on the Proofs submitted together with the Request for environemntal permit. In case that the activity involves construction plants for abstraction and treatment of ground water in volume less than 10,000 l/h the ecological permit is issued by the Municipality/ City based on the Proofs submitted together with the Request for environemntal permit. In case the expansion of WTP is greater than 25% seek the opinion of the ministry of ecology on the necessary of environmental impact assessment procedure.		
Wastewater assets renewal and extension including sewer network rehabilitation and extension, improvements to existing WWTPs			RPF/RAP, SEP, LMP	Sewer length > 20 km The ecological permit is issued by the entity ministry of ecology based on the Proofs submitted together with the Request for environemntal permit. Sewer length < 20 km The ecological permit is issued by the Municipality/City administration based on the Proofs submitted together with the Request for environemntal permit. In case the expansion of WWTP is greater than 25% seek the opinion of the entity ministry of ecology on the	Water Management Acts except for expansion or reconstruction of the sewage system for which the water permit was issued in accordance with the Water Law for transporting of wastewater from the corresponding collection area to the existing WWTP	Construction related permits

Type of activities	WB requirements			National requirements		
	Risk category pursuant to WB	Environmental assessment instrument	Social instrument	Environmental protection	Water management	Physical planning and construction
				necessary environmental assessment procedure.		
New WWTPs construction			RPF/RAP, SEP, LMP	> 50.000 Population Equivalent (PE) Environmental Impact Assessment procedure carried out by the entity ministry of ecology and ultimately ending with issuing of ecological permit < 50.000 PE Preliminary impact assessment based on which the entity ministry of ecology decides on the necessity to conduct a full EIA and ultimately issues the ecological permit	Water Management Acts	Construction related permits

7.4 Environmental and Social Screening Process (Step-by-Step)

This chapter describes the methodology to be followed by the APCU in identifying an managing environmental and social risks of each sub-project implemented under Component 3 of the Project. The review of the process is given in the following scheme.

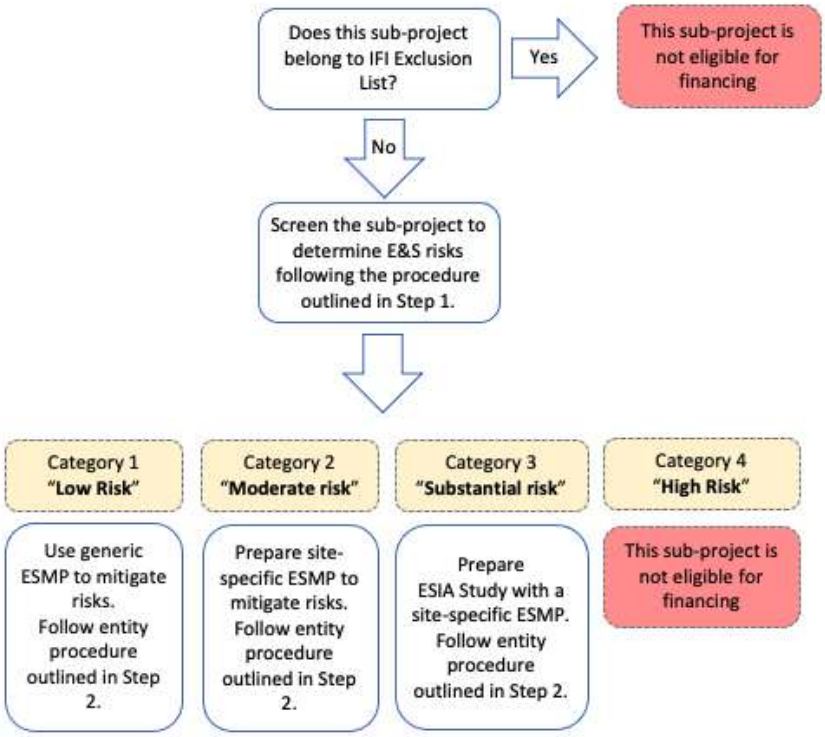


Figure 14: Schematic overview of the risk assessment process

Step 1. Carry out the rapid risk analysis and E&S assessment pursuant to the WB requirements

Rapid risk assessment of each sub-project will be done mased on the rapid assessment of project impacts and sensitivity of receiving environment. The steps to follow are described below.

1. Assessment of project impact based on:

- **Magnitude of the project** : depending on the project technical characteristics such as length of the pipeline, capacity of treatment plant, etc.
- **Scope of works**:

  New construction - when the proposed project constitutes a new investment, usually in new areas where, in most cases, land and/or households will be affected. The extension of pipeline/plant is also considered as a new project.

  Rehabilitation - When the existing structure requires specific work in order to recover its original characteristics, however, an increase in original design is not expected. No affectation of land or households.

  Maintenance - periodic works that the WSS or SS requires in order maintaining the project in optimal conditions.

Rapid assessment of impacts of water supply sub-project will be done using the following matrix:

Component	*Magnitude*	*Scope*	*Impact*
Water intake	[ ] Volume equivalent to or exceeding 3 million cubic meters	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Medium [ ] Medium [ ] Low
	[ ] Volume of between 1 - 3 million cubic meters	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Medium [ ] Low [ ] Low
	[ ] Volume of less than 1 million cubic meters	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Medium [ ] Low [ ] Minor or no impact
Water treatment plant	[ ] Volume equivalent to or exceeding 3 million cubic meters	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] High [ ] Medium [ ] Low
	[ ] Volume of between 1 - 3 million cubic meters	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Medium [ ] Low [ ] Low
	[ ] Volume of less than 1 million cubic meters	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Medium [ ] Low [ ] Low
Pipeline/ distribution network (including rehabilitation as a part of NRW or EE measures)	[ ] Length more than 10 km	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Moderate [ ] Moderate [ ] Low
	[ ] Length between 1 and 10 km	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Moderate [ ] Low [ ] Minor or no impact
	[ ] Length less than 1 km	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Low [ ] Low [ ] Minor or no impact
Storage tank/Reservoir	[ ] Volume more than 5000m^3	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Moderate [ ] Moderate [ ] Low
	[ ] Volume between 500-5000m^3	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Moderate [ ] Low [ ] Minor or no impact
	[ ] Volume less than 500m^3	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Moderate [ ] Minor or no impact [ ] Minor or no impact
Pumping station	[ ] Capacity more than 100 kWh	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Moderate [ ] Moderate [ ] Low
	[ ] Capacity between 10-100 kWh	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Moderate [ ] Low [ ] Minor or no impact
	[ ] Capacity less than 10 kWh	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Low [ ] Minor or no impact [ ] Minor or no impact
Metering		[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Low [ ] Low [ ] Minor or no impact
Other water components (SCADA, GIS, other soft measures)	-	-	[ ] No impact

Rapid assessment of impacts of water supply sub-project will be done using the following matrix:

Component	*Magnitude*	*Scope*	*Impact*
Sewage network	[ ] Length more than 10 km	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Moderate [ ] Moderate [ ] Low
	[ ] Length between 1 and 10 km	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Moderate [ ] Low [ ] Minor or no impact
	[ ] Length less than 1 km	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Low [ ] Low [ ] Minor or no impact
Pumping station	[ ] Capacity more than 100 kWh	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Moderate [ ] Moderate [ ] Low
	[ ] Capacity between 10-100 kWh	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Moderate [ ] Low [ ] Minor or no impact
	[ ] Capacity less than 10 kWh	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Low [ ] Minor or no impact [ ] Minor or no impact
Waste water treatment plant	[ ] Capacity more than 50.000 PE	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] High [ ] Medium [ ] Low
	[ ] Capacity between 10.000 and 50.000 PE	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Medium [ ] Low [ ] Low
	[ ] Capacity less than 10.000 PE	[ ] New construction [ ] Rehabilitation [ ] Maintenance	[ ] Medium [ ] Low [ ] Low

2. Assessment of sensitivity of receiving environment:

- High sensitivity: Areas with important ecological and sociocultural characteristics in the direct influence area. Commonly inside national parks or protected areas. High degree of biodiversity, endemism, and threat. Great danger of environmental degradation (deforestation, hunt), critical ecosystem (wetlands, forests, etc.), areas with a high index of natural disasters (floods, earthquake, etc.), and places of significant cultural and historical interest.
- Moderate sensitivity: Areas with important ecological and sociocultural characteristic in the indirect influence area. Commonly in “buffer” zones. Moderate decree of biodiversity, endemism, and threat, Moderate danger of environmental degradation (deforestation, hunt), critical ecosystem (wetlands, forests, etc.), areas with high index of natural disasters (floods, earthquake, etc.), and places of significant cultural and historical interest.

- Low sensitivity: Area previously affected or with no critical ecosystem and social aspects in the direct or indirect influence area. Low degree of biodiversity, endemism and threat; low danger of environmental degradation (deforestation, hunt, etc.); low risk to natural disasters (floods, earthquake); and no presence of cultural/historical sites in the direct or indirect influence area.

Sensitivity	*Description*
HIGH	[ ] Protected areas in the direct influence area [ ] High danger of environment degradation (deforestation, hunting, others) [ ] Sensitive or critical ecosystem in the direct influence area (wetlands, peatlands, primary or secondary forests, and others) [ ] Mountainous topography (>35% of slope) when the project anticipates construction of access road, pipelines, etc. [ ] Vulnerable areas to natural disasters (floods, earthquake, and others) [ ] Presence of places of significant cultural and historical interest in the direct influence area
MODERATE	[ ] Protected Areas in the indirect influence area or in buffer zones [ ] Moderate danger of environment degradation (deforestation, hunting, others) [ ] Sensitive or critical ecosystems in the indirect influence area (wetlands, peatlands, primary or secondary forests, and others) [ ] Wavy topography (15-35% of slope) where the construction of access road, pipelines, etc. is expected [ ] Moderate risk to natural disasters (floods, earthquake, and others) [ ] Presence of places of cultural and historical significance in the indirect influence area
LOW	[ ] Intervened areas out of protected areas (national parks, or buffer areas) [ ] Low danger of environmental degradation (deforestation, hunt, and so forth) [ ] Sensitive or critical ecosystem areas not in the direct influence area (wetlands, peatlands, primary or secondary forests, and others) [ ] Flat topography (<15% of slope), when the project expects the construction of access road, pipelines, etc. [ ] Zones at low risk to natural disasters (floods, earthquake, and others) [ ] Absence of places with cultural and historical significance

If at least one setting triggers the high variables, the evaluator can conclude that the project or component has a **HIGH** site sensitivity; if there is no setting in high, but at least one setting is triggered in the moderate variables, the evaluator can conclude that the project or component has a **MODERATE** site sensitivity; and if there are no triggers in the high or moderate settings, the evaluator can conclude that the project or component has a **LOW** site sensitivity.

3. Determine the category of risk

The following matrix will be used to determine the category of risk:

Project impact	Sensitivity of receiving environment		
	High	Moderate	Low
High	High	Substantial	Moderate
Moderate	Substantial	Moderate	Moderate
Low	Moderate	Moderate	Low
Minor or no impact	Moderate	Low	Low

Description of risk categories:

HIGH risk level: Project is likely to have a significant adverse impact on the environment

SUBSTANTIAL risk level: Project is likely to have a significant adverse impact on the environment, but the magnitude of that impact is not well known.

MODERATE risk level: Project is likely to have a significant adverse impact on the environment, and the magnitude of that impact is known

LOW risk level: Project is likely to have no significant adverse environmental and social negative impacts

If a project has more than one component, this process should be applied for each component. The final result of the environmental risk level for the project will be the higher classification obtained in each component. For example, if the project includes the construction of a new pipeline and the rehabilitation of a reservoir, and the first component was classified as ”low risk” and the second component was classified as “moderate risk”, the entire projects should be classified as “moderate risk”.

According to the rapid risk assessment the following actions will be taken:

Risk category	*Action to be taken*	*Result of the action*
High risk subprojects	High risk activities are not eligible for financing	Reconsider changing the design or siting characteristics and resubmit the sub-project.
Substantial risk subprojects	A preliminary environmental assessment is required to decide whether the project can proceed without a full environmental impact assessment. An assessment will be carried out in line with the entity laws, this ESMP and provisions set forth under ESS1 and the ESF.	WB requirements on E&S impacts mitigation and monitoring included in the tender dossier/bidding documents. Mitigation obligations assigned to the hired contractor. Monitoring assigned to contractor or supervisor, as relevant.
Moderate risk subprojects	A site-specific ESMP will be produced in line with this ESMF. Sections related to all applicable ESSs shall be included.	WB requirements on E&S impacts mitigation and monitoring included in the tender dossier/bidding documents. Mitigation obligations assigned to the hired contractor. Monitoring assigned to contractor or supervisor, as relevant.
Low risk subprojects	The implementation can start after inclusion of generic ESMP into construction works contract. A generic ESMP has been prepared for the purpose of this project and is provided in Annex B to this ESMF.	WB requirements on E&S impacts mitigation and monitoring included in the tender dossier/bidding documents.

Risk category	*Action to be taken*	*Result of the action*
		Mitigation obligations assigned to the hired contractor. Monitoring assigned to contractor or supervisor, as relevant.

Additionally, APCUs will be required to:

- in case of any land acquisition issues identified, prepare a site-specific Resettlement Plan in line with the guidance given in the Resettlement Framework developed for the WSS Modernization project,
- implement the developed Labor Management Procedure, and update it as necessary,
- undertake stakeholder engagement and disclose appropriate information in accordance with the Stakeholder Engagement Plan developed for the WSS Modernization project,
- conduct monitoring and reporting on the E&S performance of the for the WSS Modernization project against the program-specific ESMF, RPF, SEP and LMP.

Step 2. Carry out an environmental assessment in line with entity regulations

For the activities listed in the table below, carry out an environmental assessment depending on the subproject location, as explained in *Chapter 5.2.1 Environmental Assessment Procedure*.

If the assessment indicates that a subproject is high risk this activity is not eligible for financing.

For subprojects for which the Bank requires the development of a site-specific ESMP, the ESMP requirements shall be integrated in the environmental documentation submitted to responsible authorities.

Type of activities	Action to be taken	Result of the action
Water intakes	In case that the activity involves abstraction of groundwater in volume equivalent to or exceeding 10 million cubic meters Environmental Impact Assessment procedure carried out by the entity ministry of ecology and ultimately ending with issuing of ecological permit. Submit the EIA study. In case that the activity involves abstraction of groundwater in volume of less than 10 million cubic meters Preliminary impact assessment based on which the entity ministry of ecology decides on the necessity to conduct a full EIA and ultimately issues the ecological permit.	Ecological permit
WTP	Plants for abstraction and treatment of ground water in volume equivalent to or exceeding 10,000 l/h The ecological permit is issued by the Entity Ministry based on the Proofs submitted together with the Request for environemntal permit. Plants for abstraction and treatment of ground water in volume less than 10,000 l/h The ecological permit is issued by the Municipality/ City based on the Proofs submitted together with the Request for environemntal permit.	Ecological permit
WWTPs	Capacity > 50.000 Population Equivalent (PE) Environmental Impact Assessment procedure carried out by the entity ministry of ecology Submit the EIA study.	Ecological permit

Type of activities	Action to be taken	Result of the action
	Capacity < 50.000 PE Preliminary impact assessment based on which the entity ministry of ecology decides on the necessity to conduct a full EIA and ultimately issues the environmental permit *Note: In case the expansion of WWTP is greater than 25% seek the opinion of the entity ministry of ecology on the necessary environmental assessment procedure.*	
Sewers	Sewer length > 20 km The ecological permit is issued by the Entity Ministry based on the Proofs submitted together with the Request for environemntal permit. Sewer length < 20 km The ecological permit is issued by the Municipality/ City based on the Proofs submitted together with the Request for environemntal permit.	Ecological permit
Pipelines/pump stations/reservoirs	No action needed	-
Other water components (metering, SCADA, GIS, other soft measures)	No action needed	-

Step 3. Organize consultations with stakeholders

Stakeholder consultations shall be organized at the location closest to the project implementation site in line with the requirements of the SEP developed for the WSS Modernization Project. If the subprojects require the development of a nationally required and regulated EIA, such process also includes public involvement, public hearings and a publicly disclosed study in the manner prescribed by the entity legislation (comments on public document recorded and responses provided by the institution/organization responsible for preparing the EIA). Ensure such public consultations are also in line with the requirements of WB and the Stakeholder Engagement Plan prepared for the WSS odernization Project. For certain activities, a decision on the necessity to undertake an EIA procedure shall be requested by the relevant entity authority.

In case of prolonged pandemic caused by coronavirus, the stakeholder engagement will be organized in line with Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings (March 20, 2020).

Step 4. (*If needed and where applicable*) Obtain various permits and approvals

- *Water Management Acts* in line with the requirements of the Water Law as described in Chapter 5.2.3,
- *Construction related acts* in line with the requirements of the construction regulations as described in Chapter 5.2.4.

7.5 Labor Management

Pursuant to WB requirements, a Labor Management Procedure has been developed as a separate document. The procedure aims to ensure fair treatment of workers and provision of safe and healthy working conditions.

Contractors' labor management compliance with local legislation requirements related to labor and safety at work would be monitored based as described in *Chapter 7.6 Monitoring and Reporting*. In case any irregularities are identified based on such reports or the project grievance redress mechanism, APCUs would notify the responsible Labor Inspection.

7.6 Monitoring and Reporting

The APCU in cooperation with PITs shall monitor the implementation of this Framework, both at overall Project level and individual subproject level. The APCU shall ensure that the requirements of the site-specific ESMPs and ecological permit are included in employer's requirements for the construction works. Within their usual monitoring activities, APCU will perform monitoring (including on-site monitoring, as needed) to ensure that Contractors comply with their contractual obligations.

It is the responsibility of the Contractor to ensure the proper execution of works, according to prescribed measures and in line with entity and international standards. Therefore, the Contractor should appoint a person responsible for environment protection (B.Sc. environmental engineering or similar) with adequate experience to be responsible for the implementation of all environment protection requirements and ESMP implementation. The appointed person shall ensure compliance with environmental standards and is responsible for environmental protection according to the ESMP, in line with clearly defined tasks and responsibilities, which include, among others: works are executed in line with good construction practices, waste is adequately managed at the construction site, environmental protection issues are communicated with the supervising body and the local community. The works are supervised by the nominated supervising body, which controls that the activities are taken in line with the environmental management plan.

Preparation of site-specific ESMPs for priority investments will be undertaken by qualified staff. They will also be responsible for the initial screening of the Project to determine risk categorization and other environmentally related documentation during the project execution. In each APCU, a dedicated environmental specialist will be in charge of this process, as well as environmental monitoring and reporting. Details of these arrangements will be fully specified in the Project Operational Manual.

Contractors' labor management compliance with local legislation requirements related to labor and safety at work would be monitored based on the basis of Reports on Compliance of Conditions of Work with the ESS 2, which the contractors shall submit to the APCUs and Supervision Consultant (external consultant) on a semi-annual basis. The format of the report is provided in LMP's Annex.

The APCUs shall establish and maintain records on information and engagement of all stakeholders including records of grievances in accordance with the SEP.

The APCUs will report on regular basis to WB on subproject screening, approval and monitoring results.

8 PUBLIC CONSULTATIONS PROCESS

TBA

ANNEXES

Error! Reference source not found.	Sites of Cultural and Historical Heritage in Municipalities of the RS
B	Generic Environmental and Social Management Plan for the Project
C	Indicative outline of ESIA
D	Indicative outline of site-specific ESMP
E	Minutes from the public consultations

A. Sites of Cultural and Historical Heritage in Municipalities of the RS

City/Municipality	Site
Doboj	Fortress of Doboj, the architectural ensemble and historic monument
	Old town of Doboj, the architectural ensemble
	Mulalic house, the historic building
	Roman camp and civilian settlement at Makljenovac, the archaeological site
	The Church of the descent of the Holy Spirit in Boljanic, the architectural ensemble
	Cemetery Chapel and Cemetery in Dragalovci, the historic site
	The Church of Christ's Ascension in Srpska Grapska, the architectural ensemble
Istocno Sarajevo	Gradac on Ilinjaca in Gornji Kotorac, the historic site
	Necropolis of tombstones in Krupac, the historic site
	Necropolis of tombstones Crnac in Gornji Kotorac, the historic site
	Necropolis of tombstones Pavlovic in Pale, the historic site
	Necropolis of tombstones Mramorje in Pale, the historic site
	The Church of the Dormition of the Holy Virgin in Pale, the architectural ensemble
	Parish church of St. Joseph the worker in Pale, the architectural ensemble
	Old towns Pavlovac, Gradina, Lipovac and Hodidjed in Pale
	House of Cekovici in Pale, the architectural ensemble
	Necropolis of tombstones in Luburic field, the historic site
	Necropolis of tombstones at Crkvina in Bjelosavljevici, the historic site
	The temple of the Holy Prophet Elijah in Sokolac, historic site and architectural ensemble
	Selimija mosque in Knezina near Sokolac, the site and remains of the historic building
	Necropolis of tombstones in Trnovo, the historic site
	The church of St. George the Great Martyr in Trnovo, the architectural ensemble
Laktasi	Parish church of St. Francis of Assisi and the cemetery in Mahovljani, the architectural ensemble and historic site
	The log cabin church in Mali Blasko, the architectural ensemble
	The Church of St. Nicholas in Romanovci, the architectural ensemble
	Resetarica, the archaeological site with remains of Early Christian basilica from the 5th/6th century, the necropolis from the 9th/10th century, the Mediaeval necropolis Queen's dyke and the movable heritage
	St. John's Cemetery, the archaeological site
	Thermo-mineral water spring facility in Slatina park, historical and natural site
	Spa facilities in Slatina, historical and natural site
Prnjavor	Parish church of St. Ante of Padua, the architectural ensemble
	Municipal building, the historic building
	Harem of the Town Mosque
	The Church of the Holy Apostles St. Peter and Paul in Palackovci, together with its movable heritage, the architectural ensemble
	The Church of St. George, the architectural ensemble
	The branch church in Doline, the architectural ensemble
	The branch church in Drenova, the architectural ensemble
Zvornik	Old town of Zvornik, the architectural ensemble
	The Church of nativity of St. John the Baptist, the architectural ensemble
	Hadzibegova house (the house of Ljubovic Hasanbey), the residential architectural ensemble
	Rodevic – Lake, historical and natural site
Trebinje	Gymnasium "Jovan Ducic", the architectural ensemble
	Osman-pasha Resulbegovic mosque, the architectural ensemble
	Sultan Ahmed – Emperor's mosque, the architectural ensemble
	Arslanagica Bridge, the historic monument
	The Old bridge in Mostaci, the historic building and architectural ensemble
	Old town of Trebinje, the architectural ensemble
	Old town of Klobuk in Trebinje, the architectural ensemble
	Old town of Micevac in Trebinje, the architectural ensemble
	Resulbegovic family house (Bey's house), the architectural ensemble
	Villa Lastva, the architectural ensemble
	The Church of the Holy Transfiguration of God, the site of remains of the architectural ensemble
	The Catholic cathedral in Trebinje, the architectural ensemble
	The Church of St. Panteleimon and the old school in Aleksina Meda, the architectural ensemble
	The Orthodox church of Holy Archangels Michael with necropolis of tombstones in Arandelovo, the architectural

City/Municipality	Site
	ensemble
	Churches of St. Petar and St. Paul in Cicevo, the archaeological site of the ruins
	The Church of St. Barbara with burial ground and necropolis of tombstones in the village of Strujici, the historic site
	The Church of St. George in Gomiljani, the site and remains of the historic monument
	St. Kliment church in Mostaci, the historic monument
	The Church of the Holy Archangel and necropolis of tombstones in Velicani, the architectural ensemble
	Medieval fort of Micevac, the architectural ensemble
	Remains of a prehistoric settlement, necropolis of tombstones and the remains of a church dating from the medieval period, Klicanj in Krajkovici, the archaeological site
	The Mosque in Kotezi (The Mujo Kotezlija mosque), the architectural ensemble
	The Cathedral church dedicated to the Nativity of the Blessed Virgin Mary (Mala Gospa), the architectural ensemble
	The Church of St. Nedelja, necropolis of tombstones and remains of prehistoric settlement in Talez, the historic site
	Prehistoric hill fort on Brijeg in Mostaci, the archaeological site
	Hill fort of Varina gruda in Dzivar, the archaeological site
	Prehistoric tumuli in Mosko, the archaeological site
	Spahovic tower and manors in Bihovo, the architectural ensemble
	The Church of the Assumption of the Virgin with necropolis of tombstones in Lug, the architectural ensemble
	The Church of St. Elijah with a prehistoric grave mound (tumulus) and necropolis of tombstones in Mesari, the historic site
	The Orthodox church of Vracevica (church of the Healing Saints) with a prehistoric mound (tumulus) in Gomiljani, the historic site

B. Generic Environmental and Social Management Plan for the Project

Project Phase / Activities	Possible Environmental Impacts	Mitigating Measures	Monitoring parameters	Responsible Body
Construction phase				
Mobilization/ Temporary facilities/ Construction/ De-mobilization	**General Site Conditions and Safety Notifications**			
	• Notification of public and Overall Site Safety	• The local construction and environment inspectorates and communities have been notified of upcoming activities • 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) • All legally required permits have been acquired for construction and/or rehabilitation • The Contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment • Fencing the construction site • Control unauthorized persons' access to the site • Workers' personnel protective equipment (PPE) will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) • Appropriate signposting of the sites will inform workers of key rules and regulations to follow and emergency contact numbers • Provide on-site medical services and supplies for any emergency, through institutional and	• Keep written proof of notifications, local permits, and/or media announcement, clippings • Supervisor to ensure use of PPE • Supervisor to visually inspect adequate signage	• Site supervisor • APCU • Contractor for execution of civil works

Project Phase / Activities	Possible Environmental Impacts	Mitigating Measures	Monitoring parameters	Responsible Body
		administrative arrangements with the local health unit • Provide portable water & sanitary facilities for construction workers		
Mobilization/ Temporary facilities/ Construction/De-mobilization	**Material supply**			
	• Indirect impact on environment by purchasing material for unlicensed companies	• Sourcing of materials from authorized and licensed sites	• Insight in contracts with suppliers	• Site supervisor • APCU • Contractor for execution of civil works
	• Use of borrow pits for materials	• Borrow pits shall be subject to complete restauration works following closure	• Inspection of borrow pits following closure	• Site supervisor • APCU
Mobilization/ Temporary facilities/ Construction/De-mobilization	**Traffic and Pedestrian Safety**			
	• **Increased traffic** due to heavy equipment/vehicle movement/works in vicinity of main/local roads • **Decreased public access** through the construction area	• Schedule vehicle movement during lean daytime traffic hours or at night • Provide traffic aides/flagmen, traffic signs to help ensure the free and safe flow of traffic • Maintain & Repair temporary alternative route of vehicles & pedestrians • Supervision and management of the number of construction machines and operation time • Provide adequate lighting on the site • Provide adequate lighting in the places where passers-by or entry by public is likely • Designate an alternate route for pedestrian and/or vehicles in coordination with the Municipal	• Presence of traffic signs • Public complaints received • Occurrence of traffic jams • Number and type of construction machines • Public complaints received	• Contractor • APCU

Project Phase / Activities	Possible Environmental Impacts	Mitigating Measures	Monitoring parameters	Responsible Body
		Authorities or provide safe passageway through the construction site • Provision of timely information to citizens through the media about upcoming works and alternative routes		
	Air Quality – dust and noise suppression			
	• **Gas & particulate** emissions from vehicles, equipment & generators	• Regular equipment maintenance • The equipment and machinery need to be shut down when not in use • High quality fossil fuels (with low percentage of sulfur and lead) need to be used as motor fuel for machinery and equipment • Carry out construction by stages • Contractor to present proof of compliance with emission standards as part of the annual vehicle registration process	• Presence of black smoke from construction vehicles • Attestation documentation • Daily site inspection	• Contractor • Site supervisor
	• **Dust suspension** vehicle movement in unpaved roads & construction works	• Wet areas of dust sources to minimize discomfort to nearby residents • Control of vehicle speed to lessen suspension of road dust • Use of covered trucks while hauling powder construction materials	• Public complaints received • General observation • Daily site inspection	• Contractor • Site supervisor
Mobilization/ Temporary facilities/ Construction/De-mobilization	• **Noise generation** from equipment & operations	• Use of modern, well maintained equipment fitted with noise enclosures • Schedule equipment movement during non-peak hours of daytime vehicular traffic • Avoid night-time construction activities and abide by local laws on	• Public complaints received • Measure a noise level in case of complaints • Timing of operation activities	• Contractor • Site supervisor • APCU

Project Phase / Activities	Possible Environmental Impacts	Mitigating Measures	Monitoring parameters	Responsible Body
		construction hours • Equipment and machinery need to be shut down when not in use • Observance of standards norm of noise pollution • Provide silencers/mufflers for heavy equipment • Observance of seasonal sensitivity (breeding and animal mitigation seasons in the area)		
	Waste, Inert and Hazardous Material Management			
	• Environmental pollution caused by improper **waste management**	• Preparation of waste management plan for safe disposal of management • Avoid use of hazardous material • Waste collection and disposal pathways and sites will be identified for all major waste types expected from construction activities. • Mineral construction will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. • Construction waste will be collected and disposed properly by licensed collectors • No open burning of wastes on or off site	• Periodic visits to sites • Visual inspection of separate waste management piles • Written receipts of all separate waste streams handled by the designated authorities • Visual inspection of burn marks on site	• Contractor for execution of civil works • APCU
	• Managing and disposal of **asbestos-containing waste**	• Prepare a work procedure for asbestos removal or maintenance in line with *World Bank Good Practice Note: Asbestos:*	• Control of exposure to asbestos waste • During reconstruction, use the previous documentation if it exists, in order to determine the exact position and material of	• Contractor for execution of civil works • Site supervisor

Project Phase / Activities	Possible Environmental Impacts	Mitigating Measures	Monitoring parameters	Responsible Body
		Occupational and Community Health Issues (May 2009)[82] • Dispose of asbestos-containing waste to a specially designated area at the landfill • Adhere to safety instructions at work, and workers must have appropriate protective equipment and masks • It is forbidden to mix asbestos waste with other types of waste	the pipe • Written receipts of asbestos-containing waste handled by the designated authorities	• APCU
	• Disposal of **special types of waste** due to replacement of water meters, pumps and painting of tanks	• Temporary store such waste in an appropriate manner and later dispose of it adequately • If dismantled old equipment is in working order, store it for spare parts • Old dismantled pipes and equipment (replaced with new, more efficient equipment), which are not in functional condition, sold as scrap metal • Dispose of cans of paints, varnishes, thinners in a appropriate manner and prevent them from spilling into water and soil • If possible, replace solvent-based paint with a water-based paint • Wash the painting equipment properly and in a safe place, so as not to pollute the environment	• Periodic visits to sites and inspections • Visual inspection of dismantled equipment • Complaints received • Visually for presence of turbidity in surface water	• Contractor for execution of civil works • Site supervisor • APCU
Mobilization/	**Soil quality – pollution, erosion and vegetation cover**			

[82] https://www.surrey.ca/sites/default/files/media/documents/WorkingWithAsbestosCementPipes.pdf

Project Phase / Activities	Possible Environmental Impacts	Mitigating Measures	Monitoring parameters	Responsible Body
Temporary facilities/ Construction/De-mobilization	• **Soil pollution** caused by waste disposal and oil spills	• Removal and dumping/burial waste at proper site • Storage and handling of lubricating materials in designated areas with soil protective measures and prohibition of discarding lubricating materials on site • Vehicles and machines need to be regularly maintained to prevent leakage of oil • Measurements to prevent accidental spills	• Periodic inspections • Monitor level of soil quality	• Contractor for execution of civil works • Site supervisor
	• **Soil erosion and landslides** due to clearing and/or excavation	• Control during earthworks to prevent degradation of terrain stability is required • Avoid steep slopers • Provide slope protection through bank compaction, riprapping on critical sections, or vegetative stabilization • The inclinations should be retained to prevent erosion and intensive side erosion process nearby the rivers and tributaries. • Designate a Spoils Storage Area, with topsoil set aside for later use and allow maximum re-use of spoils	• Presence of eroded areas near the site • Signs of a potential/imminent landslide (unstable soil, signs of slippage, etc.) • Regular inspection	• Contractor for execution of civil works • Site supervisor

Project Phase / Activities	Possible Environmental Impacts	Mitigating Measures	Monitoring parameters	Responsible Body
		• Use material for restoration of degraded areas		
	• **Removal of vegetation**	• Do replacement planting that would restore removed vegetation • Secure: (i) ecological permit, (ii) Urban consent and (iii)Tree cutting consent	• Area replanted • Number and type of plants replanted	• Contractor
	Water Quality and Quantity			
	• **Increased surface and groundwater turbidity & siltation**, causing inconvenience in community use of the affected surface or ground waters along the path of the irrigation canals	• Set up sediment traps along rivers and/or gabions along banks to filter out eroded sediments • Proper drainage of spillage and mud water retrieved by rehabilitation and removal of silt • Same measures above for erosion control and slope stabilization	• Complaints received • Visually for presence of turbidity in surface water • Monitor level of bacteriological physical and chemical level in water • Analyze surface water quality in case of complaints (for pH, turbidity, conductivity and suspended solids) • If groundwater is used for drinking water supply, analyze tap water for drinking water • quality parameters as prescribed in national legislation	• Contractor • Site supervisor
	• **Oil & grease contamination of water bodies** due o for poor equipment M&R & refueling	• Provide oil & grease traps in stilling ponds • Provide ring canals around fueling tanks/motor pool/maintenance areas • Prohibition of discarding lubricants and other oil products into rivers/canals • Collect used oils in containers and hand over to authorized agency for handling	• Complaints received • Analyze surface water quality in case of complaints (for COD and total mineral oils) • If groundwater is used for drinking water supply, analyze tap water for drinking water quality parameters as prescribed in national legislation • Presence of oil film on water surface	• Contractor • Site supervisor

Project Phase / Activities	Possible Environmental Impacts	Mitigating Measures	Monitoring parameters	Responsible Body
Mobilization/ Temporary facilities/ Construction/De-mobilization	**Biodiversity – Flora and Fauna**			
	• **Biodiversity can be negatively impaired** during the works period	• Careful location of ancillary sites so as to avoid critical habitat areas • Provide wildlife bypass area • Careful location of new extraction pits so as to avoid critical habitat areas • Careful location of dumping areas so as to avoid critical habitat areas • Do not allow backfilling of shrubs and tree trunks with soil	• Visual inspection • Analysis of flora and fauna of a given area	• Contractor • APCU
Mobilization/ Temporary facilities/ Construction/De-mobilization	**Cultural Property and Chance Findings**			
	• **Damage to cultural property** or chance findings which may be traversed reencountered during construction	• Stop the works and observe reporting and conservation protocols based on prior coordination with the responsible agency: Institute for Protection of Cultural & National Heritage	• Approval to continue or other relevant documentation from the nationally competent institution	• Contractor
Operation and Maintenance				
Maintenance	**Traffic and Pedestrian Safety**			
	• **Access restrictions** during maintenance	• Introduce appropriate traffic signalization and appropriate warning signs • Implementation of SEP, in particular the provisions on providing timely information to citizens through the media about upcoming maintenance, expected duration of the works, alternative	• Visual inspection of warning signs • Insight in information published	• Contractor

Project Phase / Activities	Possible Environmental Impacts	Mitigating Measures	Monitoring parameters	Responsible Body
		routes, etc.		
Maintenance	**Noise suppression**			
	• **Noise** emission and noise disturbance	• In case of noise complaints by local residents, the reduction of permissible vehicle speed limit should be performed	• Limit noisy activities (e.g. earthmoving, truck unloading, etc.) to the least noise-sensitive times of day and schedule activities to occur at the same time. Machinery should be shut down or throttled down to a minimum when not in use.	• Contractor
Maintenance	**Waste management**			
	• Improper **management of waste** from maintenance activities	• Waste collection and disposal pathways and sites will be identified for all major waste types expected from maintenance activities. • All waste will be collected and disposed properly by licensed collectors • No open burning of wastes/removed vegetation on or off site	• Visual inspection of separate waste management piles • Written receipts of all separate waste streams handled by the designated authorities • Visual inspection of burn marks on site	• Contractor

C. Indicative outline of ESIA

(a) Executive Summary

- Concisely discusses significant findings and recommended actions.

(b) Legal and Institutional Framework

- Analyzes the legal and institutional framework for the project, within which the environmental and social assessment is carried out, including the issues set out in ESS1, paragraph 26[83].
- Compares the Borrower's existing environmental and social framework and the ESSs and identifies the gaps between them.
- Identifies and assesses the environmental and social requirements of any co-financiers.

(c) Project Description

- Concisely describes the proposed project and its geographic, environmental, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power supply, water supply, housing, and raw material and product storage facilities), as well as the project's primary suppliers.
- Through consideration of the details of the project, indicates the need for any plan to meet the requirements of ESS1 through 10.
- Includes a map of sufficient detail, showing the project site and the area that may be affected by the project's direct, indirect, and cumulative impacts.

(d) Baseline Data

- Sets out in detail the baseline data that is relevant to decisions about project location, design, operation, or mitigation measures. This should include a discussion of the accuracy, reliability, and sources of the data as well as information about dates surrounding project identification, planning and implementation.
- Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions.
- Based on current information, assesses the scope of the area to be studied and describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences.
- Takes into account current and proposed development activities within the project area but not directly connected to the project.

(e) Environmental and Social Risks and Impacts

- Takes into account all relevant environmental and social risks and impacts of the project. This will include the environmental and social risks and impacts specifically identified in ESS2–8, and any other environmental and social risks and impacts arising as a consequence of the specific nature and context of the project, including the risks and impacts identified in ESS1, paragraph 28.

(f) Mitigation Measures

- Identifies mitigation measures and significant residual negative impacts that cannot be mitigated and, to the extent possible, assesses the acceptability of those residual negative impacts. Identifies

[83] ESS1, paragraph 26, states that the environmental and social assessment takes into account in an appropriate manner all issues relevant to the project, including: (a) the country's applicable policy framework, national laws and regulations, and institutional capabilities (including implementation) relating to environment and social issues; variations in country conditions and project context; country environmental or social studies; national environmental or social action plans; and obligations of the country directly applicable to the project under relevant international treaties and agreements; (b) applicable requirements under the ESSs; and (c) the EHSGs, and other relevant GIIP.

differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable.

- Assesses the feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of proposed mitigation measures, and their suitability under local conditions; and the institutional, training, and monitoring requirements for the proposed mitigation measures.
- Specifies issues that do not require further attention, providing the basis for this determination.

(g) Analysis of Alternatives

- Systematically compares feasible alternatives to the proposed project site, technology, design, and operation—including the "without project" situation—in terms of their potential environmental and social impacts.
- Assesses the alternatives' feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of alternative mitigation measures, and their suitability under local conditions; and the institutional, training, and monitoring requirements for the alternative mitigation measures.
- For each of the alternatives, quantifies the environmental and social impacts to the extent possible, and attaches economic values where feasible.

(h) Design Measures

- Sets out the basis for selecting the particular project design proposed and specifies the applicable EHSGs or if the EHSGs are determined to be inapplicable, justifies recommended emission levels and approaches to pollution prevention and abatement that are consistent with GIIP (if applicable).

(i) Key Measures and Actions for the Environmental and Social Commitment Plan (ESCP)

- Summarizes key measures and actions and the timeframe required for the project to meet the requirements of the ESSs. This will be used in developing the Environmental and Social Commitment Plan (ESCP).

(j) Appendices

- List of the individuals or organizations that prepared or contributed to the environmental and social assessment.
- References—setting out the written materials both published and unpublished, that have been used.
- Record of meetings, consultations and surveys with stakeholders, including those with affected people and other interested parties. The record specifies the means of such stakeholder engagement that were used to obtain the views of affected people and other interested parties.
- Tables presenting the relevant data referred to or summarized in the main text.
- List of associated reports or plans.

D. Indicative outline of site-specific ESMP

The content of the site-specific ESMP will include the following:

(a) Mitigation

- The ESMP identifies measures and actions in accordance with the mitigation hierarchy that reduce potentially adverse environmental and social impacts to acceptable levels. The plan will include compensatory measures, if applicable. Specifically, the ESMP:

  i) identifies and summarizes all anticipated adverse environmental and social impacts (including those involving indigenous people or involuntary resettlement);
  ii) 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;
  iii) estimates any potential environmental and social impacts of these measures; and takes into account, and is consistent with, other mitigation plans required for the project (e.g., for involuntary resettlement, indigenous peoples, or cultural heritage).

(b) Monitoring

- The ESMP identifies monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed in the environmental and social assessment and the mitigation measures described in the ESMP. Specifically, the monitoring section of the ESMP 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.

(c) Capacity Development and Training

- To support timely and effective implementation of environmental and social project components and mitigation measures, the ESMP draws on the environmental and social assessment of the existence, role, and capability of responsible parties on site or at the agency and ministry level.
- Specifically, the ESMP provides a specific description of institutional arrangements, identifying which party is responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training).
- To strengthen environmental and social management capability in the agencies responsible for implementation, the ESMP recommends the establishment or expansion of the parties responsible, the training of staff and any additional measures that may be necessary to support implementation of mitigation measures and any other recommendations of the environmental and social assessment.

(d) Implementation Schedule and Cost Estimates

- For all three aspects (mitigation, monitoring, and capacity development), the ESMP 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 ESMP. These figures are also integrated into the total project cost tables.

(e) Integration of ESMP with Project

- 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 ESMP (either stand alone or as incorporated into the ESCP) will be executed effectively. Consequently, each of the measures and actions to be implemented will be clearly specified, including the individual mitigation and monitoring measures and actions and the institutional responsibilities relating to each, and the costs of so doing will be integrated into the project's overall planning, design, budget, and implementation.

MITIGATION PLAN TABLE FORMAT

Phase	Issue	Mitigation measure	Cost of mitigation (If substantial)	Responsibility*	Supervision observation and comments (to be filled out during supervision)
Preparation phase					
Project Execution / operate					
Post-project phase					

*Items indicated to be the responsibility of the contractor shall be specified in the bid documents

MONITORING PLAN TABLE FORMAT

Phase	What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored/ type of monitoring equipment?	When is the parameter to be monitored- frequency of measurement or continuous?	Monitoring cost/ what is the cost of equipment or contractor charges to perform monitoring?	Responsibility*	Supervision observation and comments (to be filled out during supervision with reference to adequate measuring reports)
Preparation phase							
Project Execution / operate							
Post-project phase							

*Items indicated to be the responsibility of the contractor shall be specified in the bid documents

E. Minutes from the public consultations

TBA