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Report No: PAD4068

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF EUR 51.5 MILLION
(US\$60.9 MILLION EQUIVALENT)

AND A TRUST FUND GRANT

IN THE AMOUNT OF US\$7.0 MILLION

FROM THE SWISS STATE SECRETARIAT FOR ECONOMIC AFFAIRS
(BIH SDTF WSSM)

TO

BOSNIA AND HERZEGOVINA

FOR A

WATER AND SANITATION SERVICES MODERNIZATION PROJECT

October 29, 2021

Water Global Practice
Europe and Central Asia Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective August 31, 2021)

Currency Unit = Euro (EUR)

EUR 1 = US\$1.18

US\$1 = EUR 0.84

FISCAL YEAR

January 1 - December 31

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ABBREVIATIONS AND ACRONYMS

AP	Average Performing
APCU	Agriculture Project Coordination Unit
BD	Brcko District
BiH	Bosnia and Herzegovina
BP	Business Plan
CE	Citizen Engagement
COVID-19	Coronavirus Disease
CPF	Country Partnership Framework
D-LeaP	Danube Partnership Framework
DWP	Danube Water Program
ECA	Europe and Central Asia
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
ESMPs	Environmental and Social Management Plans
EU	European Union
FBiH	Federation of Bosnia and Herzegovina
FM	Financial Management
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Global Information System
GP	Good Performing
HP	High Performing
HR	Human Resources
IAWD	International Association of Water Utilities from the Danube Region
IBRD	International Bank for Reconstruction and Development
IFI	International Finance Institution
IFRs	Interim Financial Reports
IPF	Investment Project Financing
LG	Local Government
LMP	Labor Management Procedures
LP	Low Performing
M&E	Monitoring and Evaluation
MEG	Municipal Environmental and Economic Governance Project
MEG II	Phase II of The Municipal Environmental and Economic Governance Project
MFD	Mobilizing Financing for Development
NRW	Nonrevenue Water
O&M	Operation and Maintenance
PE	Population Equivalent

PI	Performance Indicators
PIT	Project Implementation Team
PIU	Project Implementation Unit
PPSDs	Project Procurement Strategies for Development
PSA	Public Service Agreement
RCDN	Regional Capacity Development Framework
RFP	Resettlement Policy Framework
RS	Republika Srpska
SCADA	Supervisory Control and Data Acquisition
SCD	Systematic Country Diagnostic
SECO	State Secretariat for Economic Affairs from The Swiss Federal Government
SEP	Stakeholder Engagement Plan
SOE	State-Owned Enterprise
TA	Technical Assistance
UNDP	United Nations Development Program
WSS	Water Supply and Sanitation
WTP	Water Treatment Plant
WU	Water Utility
WWTP	Wastewater Treatment Plant



TABLE OF CONTENTS

DATASHEET	1
I. STRATEGIC CONTEXT	8
A. Country Context.....	8
B. Sectoral and Institutional Context	10
C. Relevance to Higher-Level Objectives	18
II. PROJECT DESCRIPTION.....	20
A. Project Development Objective	20
B. Project Components	21
C. Project Beneficiaries	26
D. Results Chain	27
E. Rationale for Bank Involvement and Role of Partners	28
F. Lessons Learned and Reflected in the Project Design	30
III. IMPLEMENTATION ARRANGEMENTS	31
A. Institutional and Implementation Arrangements	31
B. Results Monitoring and Evaluation Arrangements.....	33
C. Sustainability.....	33
IV. PROJECT APPRAISAL SUMMARY	34
A. Technical, Economic, and Financial Analysis	34
B. Fiduciary.....	38
C. Legal Operational Policies.....	40
D. Environmental and Social.....	40
V. GRIEVANCE REDRESS SERVICES	44
VI. KEY RISKS	45
VII. RESULTS FRAMEWORK AND MONITORING	47
ANNEX 1: Implementation Arrangements and Support Plan	57
ANNEX 2: Economic and Financial Analysis.....	69
ANNEX 3: GHG Emission Analysis	77
ANNEX 4: Water Services Governance Structure.....	82



DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Bosnia and Herzegovina	BiH Water and Sanitation Services Modernization Project	
Project ID	Financing Instrument	Environmental and Social Risk Classification
P168943	Investment Project Financing	Substantial

Financing & Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternate Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
24-Nov-2021	30-Nov-2027

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The Project development objective is to support Bosnia and Herzegovina to (i) strengthen the institutional capacity at the Republika Srpska (RS), Federation of Bosnia and Herzegovina (FBiH), and local level for improved WSS service delivery, (ii) improve access to safely managed WSS services, and (iii) improve the efficiency of WSS service providers in participating local governments.



Components

Component Name	Cost (US\$, millions)
Component 1: Improving the institutional capacity for sector modernization	5.20
Component 2: Supporting improved governance and capacity of the water services at the local level	2.70
Component 3: Improving access to safely managed WSS services and the efficiency of WSS service providers	60.00

Organizations

Borrower:	Bosnia and Herzegovina
Implementing Agency:	Ministry of Agriculture, Water Management and Forestry of Federation of Bosnia and Herzegovina Ministry of Agriculture, Forestry and Water Management of Republika Srpska

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	67.90
Total Financing	67.90
of which IBRD/IDA	60.90
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	60.90
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Non-World Bank Group Financing

Trust Funds	7.00
Bosnia and Herzegovina Water and Sanitation Sector Moderniza	7.00

Expected Disbursements (in US\$, Millions)



WB Fiscal Year	2022	2023	2024	2025	2026	2027
Annual	1.00	4.50	13.50	17.90	18.00	13.00
Cumulative	1.00	5.50	19.00	36.90	54.90	67.90

INSTITUTIONAL DATA

Practice Area (Lead)

Water

Contributing Practice Areas

Urban, Resilience and Land

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	● Substantial
2. Macroeconomic	● Moderate
3. Sector Strategies and Policies	● Moderate
4. Technical Design of Project or Program	● Moderate
5. Institutional Capacity for Implementation and Sustainability	● Moderate
6. Fiduciary	● Substantial
7. Environment and Social	● Substantial
8. Stakeholders	● Substantial
9. Other	
10. Overall	● Substantial



COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

Yes No

Does the project require any waivers of Bank policies?

Yes No

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
Cultural Heritage	Not Currently Relevant
Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank’s due diligence assessment of the Project’s potential environmental and social risks and impacts, please refer to the Project’s Appraisal Environmental and Social Review Summary (ESRS).

Legal Covenants

Sections and Description



Section I.A.2 of the Schedule to the Project Agreements. No later than six (6) months after the Effective Date, the F BiH and RS shall furnish to the Bank a water modernization concept in form and substance acceptable to the Bank, including provisions for regular reporting on its implementation, all as set forth in the Project Operational Manual.

Sections and Description

Section I.A.3 of the Schedule to the F BiH Project Agreement. No later than three (3) months after the Effective Date, F BiH shall acquire and install a Project accounting software with capabilities acceptable to the Bank

Sections and Description

Section I.B.1 of the Project Agreements. No later than three (3) months after the Effective Date, the F BiH and the RS, through their respective line ministries, shall adopt, and thereafter carry out their Respective Part of the Project in accordance with, a manual (the Project Operational Manual), satisfactory to the Bank.

Sections and Description

Section I.C. of the Project Agreements. Prior to carrying out a Sub-project, the F BiH and the RS shall: (a) ensure that the Municipality shall establish a project implementation team with sufficient resources, competent staff in adequate numbers and responsibilities, all acceptable to the Bank and as set forth in the Project Operational Manual; and (b) enter into an agreement with the respective Municipality (the Sub-project Agreement) under terms and conditions acceptable to the Bank and as set forth in the Operational Manual, including inter alia: (1) the Project Implementing Entity’s responsibility to implement the Sub-Project; (2) the Municipality’s responsibility to provide technical contributions for the implementation of the Sub-Project; and (3) the financial obligations of the respective Municipality in accordance with the respective Subsidiary Agreement between the Borrower and Project Implementing Entity and this Agreement

Conditions

Type	Financing source	Description
Effectiveness	IBRD/IDA	The Project Implementing Entity referred to in section 9.01 of the General Conditions has established its Project Implementation Unit (PIU) in a manner, and with staffing, resources and responsibilities acceptable to the Bank.
Effectiveness	IBRD/IDA	The Project Agreement for the Project Implementing Entity referred to in Section 9.01 of the General Conditions has been executed by its parties.
Disbursement	IBRD/IDA	No withdrawal shall be made under Under Categories (1) and (2) unless: (i) the F BiH Project Agreement has been executed by its parties; (ii) the F BiH Subsidiary Agreement has been executed by its parties; and (iii) the F BiH has established its PIU in a manner, and with staffing, resources and responsibilities acceptable to the Bank.



Type Disbursement	Financing source IBRD/IDA	Description No withdrawal shall be made under Category (3) unless: (i) the RS Project Agreement has been executed by its parties; (ii) the RS Subsidiary Agreement has been executed by its parties; and (iii) at least one Sub-project Agreement referred to in Section I.B.1 in Schedule 2 of this Agreement has been executed by its parties.
Type Effectiveness	Financing source IBRD/IDA	Description The Subsidiary Agreement between the Borrower and the Project Implementing Entity referred to in Section 9.01 of the General Conditions has been executed by its parties.
Type Disbursement	Financing source IBRD/IDA	Description No withdrawal shall be made under Category (4) unless: (i) the RS Project Agreement has been executed by its parties; and, (ii) the RS Subsidiary Agreement has been executed by its parties.
Type Disbursement	Financing source Trust Funds, IBRD/IDA	Description No withdrawal shall be made for payments made prior to the Signature Date.
Type Disbursement	Financing source IBRD/IDA	Description The Borrower shall not request withdrawals for Eligible Expenditures that have already been financed by the Grant, or for which withdrawals have been requested under the Grant.
Type Disbursement	Financing source Trust Funds	Description The Recipient shall not request withdrawals for Eligible Expenditures that have already been financed by the Loan, or for which withdrawals have been requested under the Loan.
Type Disbursement	Financing source Trust Funds	Description No withdrawal shall be made under Category (1) unless: (i) the FBiH Grant Project Agreement has been executed by its parties; (ii) the FBiH Grant Subsidiary Agreement has been executed by its parties; and (iii) the FBiH has established its PIU in a manner, and with staffing, resources and responsibilities acceptable to the Bank.
Type Disbursement	Financing source Trust Funds	Description No withdrawal shall be made under Category (2) unless: (i) the RS Grant Project Agreement has been executed by its parties; and (ii) the RS Grant Subsidiary Agreement has been executed by its parties.
Type Effectiveness	Financing source Trust Funds	Description This Agreement shall not become effective until evidence



		<p>satisfactory to the Bank has been furnished to the Bank that the conditions specified below have been satisfied: (a) the execution and delivery of this Agreement on behalf of the Recipient and the Grant Project Agreements on behalf of one Project Implementing Entity have been duly authorized or ratified by all necessary governmental action; (b) the Grant Subsidiary Agreement for the Project Implementing Entity referred above has been executed on behalf of the Recipient and the Project Implementing Entity; (c) The Loan Agreement has been executed and delivered and all conditions precedent to the effectiveness of said agreement, or to the right of the Recipient to make withdrawals under said agreement have been fulfilled.</p>
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I. STRATEGIC CONTEXT

A. Country Context

1. **Bosnia and Herzegovina (BiH) is a country with a per capita gross national income of US\$6,150.**¹ For the past 25 years and, despite a complex political setup, BiH has been able to achieve significant results. Much of the infrastructure destroyed in the war has been rebuilt, and institutions have been established to govern the country at all levels of authority. A framework for economic and fiscal management has been established that has brought lasting macroeconomic stability. Multiple reform efforts have improved economic links between the Federation of Bosnia and Herzegovina (FBiH) and Republika Srpska (RS), and some progress has been made in creating a better environment for private sector development and job creation. Still, much more needs to be done if BiH is to achieve sustainable prosperity for its citizens and fulfill its aspiration to join the European Union (EU).

2. **COVID-19 poses the most serious social and economic challenge to the country since the 2008–2009 global financial crisis.** Globally as well as in BiH, the COVID-19 pandemic has caused a massive health crisis, while measures to contain its spread have resulted in an economic slowdown and threatened economic security. As of October 27, 2021, 251,264 COVID-19 cases have been confirmed in BiH with 11,450 COVID-19 associated deaths.² The pandemic has had a major impact on the country's economy through a slowdown in key productive sectors, lower demand for BiH exports, and a spike in unemployment. Real gross domestic product (GDP) contracted by 3.2 percent in 2020, nevertheless it is estimated to rebound by 4.0 percent in 2021 (vs. 5.9 percent for the Western Balkans).³ The sectors most affected by the pandemic were health, tourism, transport, and agriculture. BiH's fiscal outlook deteriorated in 2020 and has slowed down much of the work the government has done recently on fiscal consolidation. Higher public spending on crisis-related measures, slump in revenues and higher current spending led to a fiscal deficit estimated at 1.8 percent of GDP in 2020, down from an estimated surplus of 2.0 percent of GDP in 2019. Because BiH has no access to international markets, the fiscal deficit has been financed primarily through borrowing domestically and from multilateral lenders.

3. **Unemployment was high even before the crisis and is expected to increase.** Although the unemployment rate fell from 18.4 percent in 2018 to 15.7 percent and 15.9 percent in 2019 and 2020, respectively, it remains one of the highest among the Western Balkan countries after Kosovo and North Macedonia. On the positive side, employment⁴ increased slightly from 34.3 to 35.5 percent between 2018 and 2019, though the activity rate remained unchanged. However, the labor market still suffers from high structural unemployment, and the falling unemployment rate partly reflects the country's aging and shrinking workforce. Job creation has been minimal, and COVID-19 now threatens the loss of a significant share of existing jobs, especially in the services industry. The BiH labor market presents a formidable challenge in the unfolding crisis, with approximately 17,500 (end June 2020) jobs lost in the country since the start of the pandemic. According to official estimates based on administrative data, the number of people in paid employment decreased by 1.6 percent year-on-year in October 2020. Sectors with a relatively large share of employment have been especially negatively affected. The number of registered unemployed increased by 3.3 percent year-on-year in October

¹ World Bank Spring Survey, May 2020.

² Ministry of Civil Affairs of BiH: <http://mcp.gov.ba/?lang=bs> (as of October 27, 2021)

³ World Bank, Regular Economic Report No. 20: <https://documents1.worldbank.org/curated/en/900381634670558017/pdf/Greening-the-Recovery.pdf>

⁴ 2019 Labor Force Survey.



2020 (approximately 13,000 people).

4. **Lower employment and labor income in affected sectors will negatively affect poverty rates and household welfare.** Based on the latest poverty data using the national poverty line, the poverty rate in BiH was 16 percent in 2015, very close to the 15 percent poverty rate estimated for 2011.⁵ Poverty was higher in rural areas (19 percent) compared to urban areas (12 percent). Across entities, poverty increased slightly in FBiH between 2011 and 2015, from 15 percent to 17 percent, while it remained stable at about 14 percent in RS over the same period. In the absence of more up-to-date poverty data, a simulation analysis to forecast the impact of the pandemic on poverty⁶ shows that more than 85,000 individuals will likely be pushed into poverty due to the COVID-19 shock without government responses in BiH. These predictions also show that many of those who could fall into poverty were not covered by social protection programs before the COVID-19 crisis. The pandemic compounded long-standing structural challenges undermining BiH's development potential, including a large and inefficient public sector, a private sector stifled by a difficult business environment, limited export competitiveness, rapid loss of human capital to emigration, and deficiencies in health and education.

5. **Authorities in BiH have responded to COVID-19 with an array of measures to protect citizens, affected economic sectors, and households, and to strengthen health sector resilience.** Both entity governments have established economic stabilization and guarantee funds to support firms and individuals. In addition, the FBiH government adopted a law on the mitigation of negative economic consequences as a result of COVID-19 while RS introduced one-off support to health workers and police. By June 2020, the entity governments allocated about KM 100 million or approximately US\$60 million (0.28 percent of GDP) to pandemic-related health spending. Additional measures included: BiH joining the Central European Free Trade Agreement's green line which facilitated access to priority goods in fighting the pandemic; the BiH Presidency endorsing the EU April 9, 2020 agreement on joint procurement of medical equipment; and the entities extending tax application deadlines to April 30, 2020 (May 31 for entrepreneurs in FBiH). Both entities also subsidized minimum wages and social security contributions in companies affected by the COVID-19 crisis, which may have somewhat alleviated the impacts of the COVID-19 shock on poverty rates.

6. **Climate-change-related risks in BiH—mainly droughts, flash floods, landslides, and increasing temperatures—are significant and will amplify development challenges across multiple sectors, including the water sector.** Mean monthly temperature in BiH ranges between 0°C (January) and 19.5°C (July and August). In the past years, however, BiH has been experiencing temperature increases of 1.2°C in the summer months and 0.8°C in the winter. Mean annual precipitation is 1,070 millimeters (mm); however, the 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.⁷ Changes in historical precipitation patterns have resulted in increased aridity in agricultural areas, arable lands, low river flow, and overstressed water sources. In fact, the catastrophic floods and landslides in May 2014 affected more than 1 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.⁸ Climate change is expected to produce increases of up to

⁵ BiH HBS 2015. More recent data are not available.

⁶ The Economic and Social Impact of COVID-19: Poverty and Household Welfare (English). Western Balkans Regular Economic Report no. 17 Washington, D.C.: World Bank Group.

Simulations assumed that the COVID-19 pandemic lasted two quarters; an update of the simulations is forthcoming.

⁷ <https://climateknowledgeportal.worldbank.org/country/bosnia-and-herzegovina/climate-data-historical>.

⁸ The estimated cost of the floods in terms of lost output and damages was equivalent to 15 percent of GDP (World Bank, *Country Partnership Framework for Bosnia and Herzegovina for the period FY16-FY20*, Washington, DC: World Bank Group, 2015).



2.4°C in monthly maximum temperatures by midcentury. The number of hot days in BiH will also increase by 6.3 days, and annual precipitation is projected to fall by 4.2 mm by 2040–2059 while annual maximum five-day rainfall will rise by 8.66 mm.⁹ Hence, the country will experience increasingly variable precipitation patterns, as well as increased frequency, variability, and intensity of extreme events, which will challenge the resilience of water and sanitation systems and the ability to deliver sustainable services.

B. Sectoral and Institutional Context

Overview of Institutional Context

7. **BiH is characterized by a complex governance structure.** The general government sector consists of four authority levels: the BiH Council of Ministers, Government of the FBiH, Government of RS, and Government of Brcko District. The FBiH is further decentralized into 10 cantons, each with its own government. At the local level, both the FBiH and the RS exercise their authority through 79 and 64 municipalities, respectively. In this complex governance structure, many public services, including water and sanitation, are delivered at the local level.¹⁰ BiH's complex political structure and weak mechanisms for intergovernmental cooperation often present challenges to the delivery of effective public services. Vertical coordination is limited between the BiH-level organizations and the entity governments, as well as between entity and municipal levels in the RS, and the entity, cantonal, and municipal levels in the FBiH.

8. **Recognizing the shortcomings in their structure, the FBiH and RS entity governments have made the modernization of the public large state-owned enterprise (SOE) sector, including improvements in the governance of SOEs, a clear policy priority.** The Joint 2019–2022 Socio-Economic Reform Program, adopted by the BiH Council of Ministers in early 2020, commits the two governments on the Entity level to SOE sector reform as one of their top four immediate policy priorities. The document underscores the urgency of tackling the sector's performance and footprint, and emphasizes the critical need to invest in the sector's governance. This commitment builds on the momentum and key initiatives under the 2015–2018 Reform Agenda, including initial cataloguing of public companies in FBiH and the restructuring of the large railway company in RS with the World Bank support. Modernization of the SOE sector features very prominently in BiH's latest Economic Reform Program (2019–2021), and is in line with BiH's international commitments. One of the priorities of the Economic Reform Program is the reform of public companies owned by local governments (LGs) - municipalities and cities - and public water utility companies (WUs) represent the majority of those LGs SOEs. The modernization of the WUs is also outlined in the *Joint Vision for the Water Services Sector Reform*, which is further described in paragraph 2430.

9. **In the context of BiH's aspirations to EU accession, water and wastewater management is a core part of the State's Environmental Approximation Strategy for meeting the EU Environmental Acquis, which was adopted by BiH in 2017.** Its accompanying entity-level documents provide guidelines regarding approximation to the EU Drinking Water Directive and Urban Wastewater Treatment Directive. Hence, most of the attention is directed to urban wastewater collection and treatment and to improving drinking water quality. The main gaps identified in the water sector for approximation with the EU Water Acquis are: (i) the level of coordination and harmonization of activities between different levels of authorities is not satisfactory in the context of the EU acquis transposition; and (ii) the existing human and financial resources do not provide the necessary basis for

⁹ <https://climateknowledgeportal.worldbank.org/country/bosnia-and-herzegovina/climate-data-projections>.

¹⁰ In RS, this is at the municipal level; in FBiH this can be either at the cantonal or municipal level.



long-term sustainability and the implementation of EU legislation and other international obligations, and the existing institutional infrastructure needs to be improved.

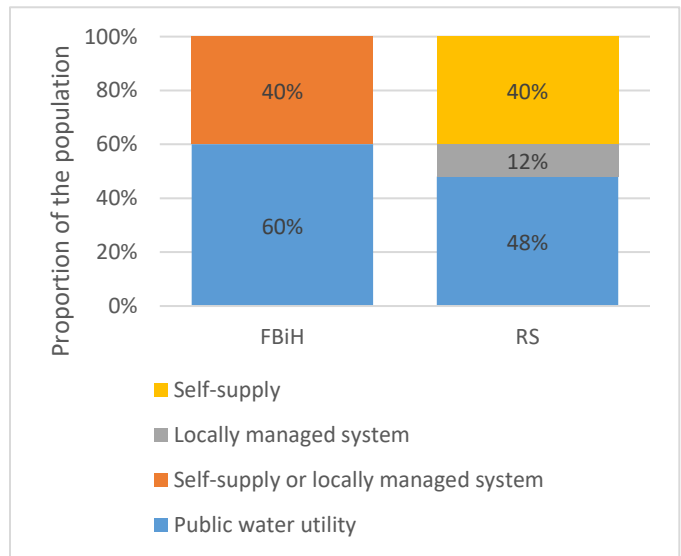
Overview of the Water and Wastewater Sector

10. **With 9,781 cubic meters (m³)/capita/year, BiH has abundant water resources, but they are unevenly distributed throughout the BiH.** The areas where water is scarce are those where it is most needed, such as the subbasin of the Bosna River, which is densely populated and contains a large concentration of industries. The water scarcity period is June to September, when water is most needed by the population and for irrigation purposes. Most of the drinking water comes from groundwater sources, which provide 81 percent of total drinking water consumption. With regard to the Water Framework Directive objective of good status, 6 groundwater bodies of the 22 in the country are considered to be “at risk” due to human intervention, 4 are at risk in terms of both quantity (due to overextraction) and quality, and the rest are threatened with quality risk only.¹¹ Although climate change is expected to have a negative effect on both water availability and water demand, no specific strategies have been implemented.

11. **Public water and sanitation service providers lack the necessary autonomy and accountability.** With 120 WUs serving an average population of about 16,000 people, the water services sector in BiH is atomized and dominated by 6 large WUs in the cities of Sarajevo, Banja Luka, Tuzla, Prijedor, Bijeljina, and Mostar. Public WUs are in general established as private corporations under direct ownership of the LGs, which include municipalities and cities. Apart from water supply the WUs are responsible for sewerage and in some cases for solid waste. The municipally owned WUs have institutional autonomy, as they are independent companies, but rely on supervision boards appointed by the LG. Most WUs do not have financial autonomy, as tariffs do not always cover the real costs of providing the services. Other service provision models also exist, especially in rural areas. These include systems managed by citizen groups and associations, private companies, and the local community.

12. **Access to public water and sanitation services in BiH is low by regional standards, and a significant part of the population still relies on informal operators, or self-supply.** While on average 83 percent of the population in the Danube region are connected to public water supply, this is the case for only 60 percent and 48 percent of the population in FBiH and RS, respectively (Figure 1: WSS Service Delivery Structure in BiH Figure 1). In terms of sanitation, in the Danube region, 63 percent of the population are using safely managed sanitation services, while in BiH this service is secured for only 22 percent of the population (Figure 2), and only 15 percent of collected wastewater is being treated. In rural areas the gap is larger with only 20 percent of the rural population

Figure 1: WSS Service Delivery Structure in BiH



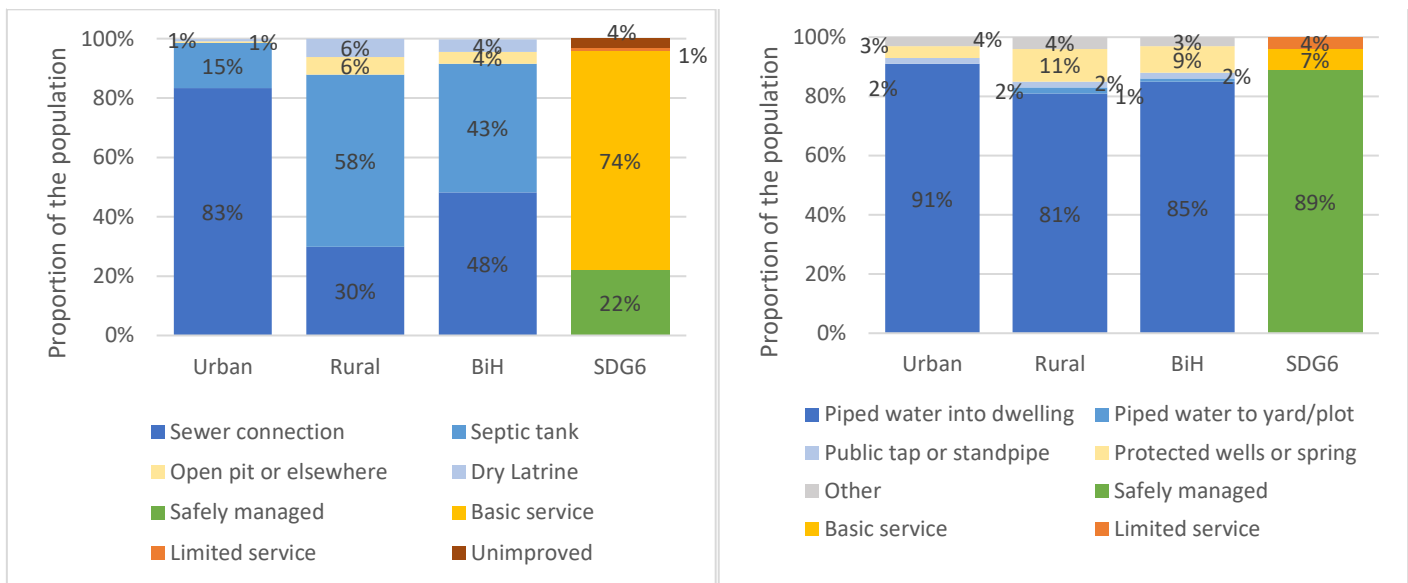
Source: Water Management Strategies for FBiH (2015) and RS (2018).

¹¹ ICPDR (International Commission for the Protection of the Danube River), “Danube Facts and Figures: Bosnia and Herzegovina,” 2007, <https://www.icpdr.org/main/sites/default/files/BA%20Facts%20Figures.pdf>.



being covered by systems managed by public WUs. Hence, the rural population relies on services provided by local (informal) operators (16 percent), on piped self-supply system (56 percent), or non-piped self-supply (i.e. water well in backyard) (12 percent).¹² The high reliance on piped self-supply reflects BiH’s high reported numbers for the population’s access to safely managed water (89 percent) as defined by the sustainable development goals (Figure 2), which is just below the regional average of 91 percent.¹³ This high reliance on self-supply (e.g., private wells or springs) could increasingly put local water resources under pressure, especially if water withdrawals are not monitored or regulated or end users neglect taking responsibility to protect the resources and the rights of others.¹⁴ Climate-change-related risks in BiH will exacerbate water stress.

Figure 2: Access to Water and Sanitation and SDG6 Classification in BiH



Source: Joint Monitoring Program 2019.

13. A review of the water sector governance, institutional, legal, and regulatory framework in BiH shows a highly fragmented sector and a lack of clarity with regard to roles and responsibilities, resulting in poor oversight over water utility performance.¹⁵ According to existing legislation the key competences for water services in BiH are distributed among the four different gouvernantes levels: (i) BiH level; (ii) entity level; (iii) cantonal level (only in the FBiH); and (iv) municipal level. The legislative authority in the area of water services

¹² World Bank, *Beyond Utility Reach? How to Close the Urban Rural Access Gap: A Review of Water Supply and Sanitation Services in Seven Countries of the Danube Region* (Washington, DC: World Bank, 2018).

¹³ See <http://www.washdata.org>. “Piped water in the home” is a standard classified as “safely managed” by the Joint Monitoring Programme, although no treatment is provided by self-supplying households (usually piped water in the home is provided through household connections of a networked system). A World Bank review of rural water and sanitation services showed that interviewed self-supplying households in BiH are extremely satisfied with the reliability and quality of their piped self-supply. Only 15 percent practice any form of household-level treatment and 78 percent report to have carried out water quality testing in the past year. World Bank, *Beyond Utility Reach? How to Close the Urban Rural Access Gap: A Review of Water Supply and Sanitation Services in Seven Countries of the Danube Region* (Washington, DC: World Bank, 2018).

¹⁴ For instance, higher ambient temperatures and drought periods will inevitably lead to increased groundwater demand, and potential growth in well abstraction could accelerate the rate of depletion of aquifer reserves.

¹⁵ World Bank Water Sector Institutional Framework Review in BiH, September 2017.



rests at the entity and cantonal level. The main water supply and sanitation (WSS) legislation are the Entity Laws on Water and the Entity Laws on Communal Affairs. In addition to the entity laws, the 10 cantons in the FBiH have their own Cantonal Laws on Water and Cantonal Laws on Communal Affairs. The existing legal framework fails to clearly define the responsibilities for provision and development of water services. The laws governing WSS are not mutually harmonized nor are they harmonized with the Entity Laws on Local Self-Governance, which should also regulate service provision by the LGs. Another piece of legislation relevant to water utilities are the Entity Laws on Public Enterprises/Utility Services. These laws have multiple overlaps and do not consider the specific case of the water services sector, nor adequately define the roles of the different levels of government, nor the position, structure, and relationship (including clear rights and obligations) between the municipalities (as owners of the assets) and the utilities (as service providers). None of these laws are harmonized with the EU Water Acquis. Additionally, existing regulations do not have provisions regulating relations (rights and obligations, roles, and responsibilities) between the LGs and the public WUs.

14. Tariffs are not set following sound cost-recovery principles; they are low in regional comparison and much below the affordability threshold, which puts at risk the sustainability of the services and hinders investments and expansion efforts. Average WSS tariffs in BiH are €0.43/m³ in comparison to the Danube region's €1.20/m³. In both entities, municipalities are responsible for approving or setting tariffs without direct consideration of actual costs of providing services. Decisions on tariffs are the responsibility of Municipal Councils, which often do not set them at a financially appropriate level due to social and political reasons. Tariffs are actually very affordable in BiH, as the share of WSS expenditures over average income in the country is 0.8 percent, which is low compared to other countries in the region (Slovenia 1.5 percent, Croatia 1.4 percent, Montenegro 1.5 percent, and North Macedonia 1.1 percent) and the Danube region (1.2 percent) and much below the generally accepted limit of 5 percent. At the same time, overall sector financing in the country suffers from underinvesting. In 2017, financing of the sector was €29/capita/year, which amounts to a total financing of the sector (capital expenditure [CAPEX] and operating expenditure [OPEX]) of around €100 million per year and is low compared with other countries in the region (Slovenia €210/capita/year, Montenegro €98/capita/year, Croatia €106/capita/year, North Macedonia €64/capita/year, and Danube region €81/capita/year). Improving financing to the sector through setting and adopting a methodology for tariff setting and putting in place appropriate subsidy schemes for the poorest, is therefore a priority. This requires political will and the establishment of proper regulatory mechanisms.

15. Low tariffs and high inefficiencies have caused many WUs to suffer from insufficient revenues to be self-sustainable and made them dependent on transfers, thus losing their autonomy and ability to meet citizens' expectations and EU requirements. About 37 percent of WUs, out of a sample of 40, have operational cost-recovery ratios below 100 percent. Revenues from tariffs cover only about 63 percent of the total costs of utilities, requiring transfers and subsidies from local budgets. In fact, transfers and taxes amount to 37 percent, or around €37 million per year, of overall available sector funding, which has increased over the last few years (in 2013 the ratio was 29 percent).¹⁶ The heavy reliance on transfers subjects the WUs to political interference, removing appropriate managerial autonomy and creating perverse performance incentives. As a result, the quality of WSS services is below standards, and the provision of services is endangered in many municipalities in BiH; some of the water utilities are already facing bankruptcy/insolvency. In terms of capital expenditures, the current financial resources that are available for the water services sector represent only 20 percent of funds required to reach the EU standards. According to the Water Sector Strategy documents and forecast, €3.5 billion in investments will be needed over the next 20 years to achieve compliance with the EU Environmental Acquis,

¹⁶ World Bank, *A State of the Sector 2018 Update* (Washington, DC: World Bank, 2019).



with 38 percent going to water projects and 62 percent to wastewater management.

16. Lack of institutional capacity at the WU level, including suboptimal cost-recovery arrangements and weak operation and maintenance (O&M) practices, coupled with nonexistent incentive mechanisms directly affects the quality of service delivery to BiH's citizens. The scope of existing problems has been increasing continuously as no systemic actions have been taken to address them. Inadequate water service tariffs and low collection rates (average of 84 percent in BiH compared to 89 percent in the Danube region) led to the irrational consumption of water, increased overall operating costs, and increased vulnerabilities to the effects of water shortages and climate-change-induced weather events such as droughts and extreme temperatures. In addition, regular network maintenance, repair, and reconstruction are being postponed, which continues to deteriorate service quality and leads to an increased percentage of dissatisfied customers (in 2013, 76 percent of customers were satisfied by service; in 2018 the share decreased to 71 percent).¹⁷ Current water losses in public systems are high at around 49 percent on average, and range between 15 percent and 80 percent comparing with the average in the Danube region of 42 percent. Finally, there are no clear incentive mechanisms in place for WUs to improve their performance, and ultimately the service provided to customers. Support from the entity level continues to be provided in an ad hoc manner, and LGs and WUs are not held accountable for service improvements associated with the financial support received.

17. To increase the operational efficiency and sustainability of water utilities in the BiH, a more skilled and strategic workforce and better and more inclusive human resources (HR) practices are needed for effective and efficient management of the services. Aging and migration of young talent present a challenge to attract and retain qualified staff for operation and management of utilities. In addition, water services management staff are often appointed by municipal representatives without specific qualifications or experience requirements.¹⁸ This results in significant turnover according to political cycles, and appointment of management personnel who lack appropriate skills and competencies. Water utilities have limited staff training programs except in the framework of cooperation projects funded by donors. Development of human resources led by trained experts is not considered a high priority, and the current financial situation in water utilities excludes the possibility of implementing staff training and capacity-building policies. Water utilities suffer from a lack of skilled staff for both management and technical positions.

18. At the same time, women professionals seem to be an untapped talent pool in the water sector. According to utility reported data to IB-Net for BiH, only 26 percent of the total utility staff are female. Similarly, a gender assessment conducted for this Project finds gender gaps at all levels of employment in select utilities: women comprise 22.6 percent of all utility staff, and 38 percent and 37 percent of utility engineers and managers (with no women in top management positions). The World Bank (2015) Assessment of Gender Disparities in BiH estimates that BiH foregoes 16 percent of its gross national income due to gender disparities in labor force participation. It notes that laws prohibiting gender discrimination are not enforced due to inconsistencies in the system and traditional patriarchal social norms. Women with higher education have a longer waiting period to find work than men with equivalent education. The gender assessment finds barriers to women's employment along several dimensions, including attraction of women to the sector, recruitment from the utility side, and career advancement. Creating an environment with equal opportunities for men and women at all levels of responsibility and an inclusive work culture should thus be an integral part of every utility's

¹⁷ Since 2014, due to weak management of water utilities, high losses in systems, and overall inefficiencies, Sarajevo is experiencing regular cutoffs in water supply on a daily basis. This has led to increased dissatisfaction among clients and even protests back in 2015.

¹⁸ World Bank, *State of the Sector Report—Bosnia and Herzegovina Country Note* (Washington, DC: World Bank, 2015).



modernization agenda. Having a more technically capable and diverse staff in the utilities is also needed to tackle key operational issues such as high nonrevenue water (NRW¹⁹) and to promote energy efficiency, which are essential to climate change mitigation and adaptation efforts.²⁰ Evidence shows that gender diversity in the workplace enables, among others, better financial performance, greater innovation, better governance and decision-making, improved service delivery and customer satisfaction, greater sustainability, and improved community relations.²¹

19. **Better water supply and wastewater services are key to avoid compounding the effects of the COVID-19 crisis in BiH.** The immediate effects of the pandemic on the water and sanitation sector in BiH are already felt in the absenteeism of skilled operational staff that require medical treatment and to be quarantined, on the abrupt disruption of the supply chain of chlorine and other indispensable chemicals, and on the incremental costs to guarantee an adequate supply of water for drinking and hygiene. At the same time, the revenue of local service providers has decreased dramatically in comparison to the same period in 2019 because a large percentage of customers are unemployed and do not pay their water bills, and households prioritize their expenditures for basic needs of food, transport, and health. All these factors are expected to intensify over the coming months and a return to the employment and financial situation prior to the pandemic may take years. Basic infrastructure service delivery is weak given its cost and the municipal sector is mostly unreformed resulting in poor quality of services and financially unsustainable operations.²² The outbreak of COVID-19 is projected to slow down investments in the water sector worldwide. It has also increased the importance of operational reliability due to the cost of disruption. These operational needs derive from shifts in demand patterns, supply disruptions, and various emergency measures employed by governments to cope with the pandemic.²³

Ongoing Sector Reform Efforts

20. **The Governments on Entity level and development partners have come to realize that past investments in infrastructure have not been accompanied by the sector modernization measures necessary to secure their sustainability, thus affecting the service providers' ability to meet citizens expectation, EU requirements, and COVID response needs.** In the past decade, the international community has provided extensive loan and grant financing to the WSS sector (Table 1). However, these investments were not always accompanied by adequate strengthening of the institutional, financing, and legal framework and capacities, which has threatened their sustainability. The authorities in BiH, the international community, and the development partners agree that focus in the sector should be geared toward creating an enabling environment that will secure the sustainability of investments.

21. **In this context, the World Bank has been a key partner in the development of the local public services sector in BiH for the last two decades.** Experience from the implementation of projects such as the Water

¹⁹ Non revenue water (NRW) is water that has been produced and is "lost" before it reaches the customer. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (for example through theft or metering inaccuracies)

²⁰ Efficiency gains, including NRW reduction and energy savings, are relevant to mitigation efforts (as they reduce energy consumption and fossil fuel usage and thus minimize GHG emissions). Addressing NRW losses is also relevant from an adaptation standpoint as it's expected to help utilities better withstand climate shocks to water supply, including water scarcity and drought.

²¹ World Bank, *Women in Water Utilities: Breaking Barriers* (Washington DC: World Bank, 2019)

²² World Bank, *Water and Wastewater Services in the Danube Region: A State of the Sector 2018 Update—Regional Report* (Washington DC: World Bank, 2019).

²³ IFC (International Finance Cooperation), "The Impact of COVID-19 on the Water and Sanitation Sector," IFC, Washington, DC, 2020.



Quality Protection Project (P085112), Sarajevo Wastewater Project (P090675), Urban Infrastructure and Service Delivery Project (P083353) and the First and Second Solid Waste Management Project (P057950) are informing the current engagement in the water sector. Recently, the World Bank provided significant technical assistance pinpointing to gaps to achieve the sector’s modernization. The *Water and Wastewater Services in the Danube Region: A State of the Sector Report – Country Report for BiH and BiH Water Sector Institutional Framework Review* identified main legal, institutional and financial challenges and constrains in water services provision and provided recommendations to improve the sector’s sustainability.

Table 1: Development Partner’s financing in WSS Projects 2005–2020

Development Partner	Sum of Total Project Value (€)
European Investment Bank (EIB)	218,508,000
Government of Germany (D)	116,509,444
European Bank for Reconstruction and Development (EBRD)	87,500,000
European Commission (EC)	79,475,515
The World Bank (WB) excluding IDA	78,083,429
Government of Sweden (S)	21,648,834
Government of Switzerland (CH)	9,300,000
Government of the Czech Republic	6,511,218
Government of Slovenia	6,155,246
Government of Hungary	5,428,422
Government of Norway	4,181,734
United Nations Development Programme (UNDP)	3,009,179
Government of Spain (E)	1,279,795
Government of Italy (I)	812,200
Government of Japan (J)	602,669
Government of Croatia	212,072
Grand Total	639,217,757

Source: BiH Donor Mapping Database, <http://www.donormapping.ba>.

22. **The entity ministries of agriculture, water management, and forestry are currently establishing a unified framework for tariff setting and regulatory functions.** Both FBiH and RS have started the reform process of the modernization of the water services sector. Intersectoral Entity Working Groups have been established to coordinate the reform process with participation of relevant institutions including entity ministries, water utility representatives, and representatives of local governance. As a first step in the reform process of the FBiH, a legal act on the “Minimum Water Tariff in the Federation of Bosnia and Herzegovina” has been developed and is currently in the process of being adopted, while in the RS, preparation of this legal act has been initiated and is being coordinated by the established Intersectoral Entity Working Group. In addition to defining the water tariff setting methodology, the legal act is proposing the establishment of regulatory bodies at the entity (or cantonal) level.²⁴

²⁴ Introduction of accounting based on cost centers; enhanced and comprehensive business planning as a tool for performance-based management, including organizational and staff optimization; inventory evaluation and completion of fixed asset books that will enable full depreciation calculations; etc.



23. **Some of the functions envisaged for the established Entity Intersectoral Working Groups will include the coordination and preparation of a detailed Water Sector Modernization Concept for the institutional and regulatory framework, which should be agreed among the relevant institutions and ultimately adopted at entity level.** The Concept to be proposed should prioritize certain activities to be implemented in the short term (i.e., adoption of guidance on tariff methodology, establishing regulatory bodies guidance on development and adoption of the Public Service Agreement [PSA] model, setting utility performance indicator monitoring/benchmarking systems at the entity level and verification protocols, etc.).²⁵ Technical assistance (TA) in this matter would be provided by the United Nations Development Programme (UNDP) under the Phase II of the Municipal Environmental and Economic Governance Project (MEG II) and by this World Bank Project. Entity Intersectoral Working Groups will coordinate activities with the development partners and ensure that the planned TA will result in an improved institutional and regulatory framework (IPA²⁶ 2018, 2020; MEG II, etc.).²⁷

24. **Development partners are coordinating their financing and technical assistance to support the modernization of the sector led by the entity line ministries in BiH and building on innovative pilot experiences.** For the last five years, the Government of Switzerland has been supporting the MEG project, which sets a basis for performance-based financing (see box 1). Building on those early successes as well as the experience of the World Bank and other partners, institutions and key development partners discussed and adopted a *Joint Vision for the sector reform needed to advance the water supply and wastewater management services reform in BiH for the period of 2021–2028* in March 2020. The overarching goal of the Joint Vision is to ensure that sustainable and effective water supply and wastewater management services contribute to an enhanced quality of life for citizens in BiH, and includes three pillars: (i) modernization of the regulatory and institutional environment in the sector; (ii) enhanced operational frameworks for effective, efficient, and inclusive service delivery at the level of local governments and water utilities; and (iii) improved water supply and wastewater management infrastructure (investments). In parallel, the Swiss Development Cooperation, together with the European Union, is planning the MEG II, a new US\$13 million TA project to be executed by the UNDP. The TA will be directed toward preparation and endorsement of the Water Sector Modernization Concept for countrywide harmonized reform of the legal, institutional, and regulatory framework for water supply and wastewater management services; subsequent drafting of the regulatory/policy acts; and design and institutionalization of a countrywide harmonized benchmarking system for water utilities (see box 1 on the MEG phase I results).²⁸ This TA will also support strengthening capacities of local government units (LGUs) and WUs

²⁵ Topics to be covered in the Concept include: (i) countrywide harmonized reform of the legal and institutional framework for water supply and wastewater management services; (ii) water tariff methodology regulatory and institutional framework; (iii) countrywide harmonized benchmarking system for water utilities; (iv) equitable water supply and wastewater services subsidy system; (v) Public Service Agreements (PSAs) between local government councils, administration, and the utilities; (vi) detailed plan to strengthen the technical, financial, and institutional/organizational capacities of water utilities and their sustainable performance; (vii) development of a WSS sector financing mechanism which promotes performance-based financing; and (viii) plan for the inclusion of the gender perspective in the delivery of water services.

²⁶ EU's Instrument for Pre-accession Assistance.

²⁷ Basically, this means proceeding with the harmonization of existing legislation at the entity level and proposing a new legislative framework. Essentially, the new framework would include a request for signing a PSA with Key Performance Indicators (KPI), establishing a tariff methodology, establishing a benchmarking system, setting a regulatory/validation modality, and setting a sector financing model.

²⁸ To be created considering previous efforts in data collection and management by waterworks and municipality associations supported by the Danube Water Program (DWP). The DWP aims at strong utilities, smart policies and sustainable services in a sector serving 80 million customers in the Danube region. Managed by the International Association of Water Service Companies in the



in targeted municipalities (30) across BiH. It is expected that this TA will secure the foundation and generate policy and regulatory instruments to inform the reform process.

Box 1: Municipal Environmental and Economic Governance (MEG) Project

The MEG Project Phase 1, 2016–2020, was financed by the Government of Switzerland and implemented by the United Nations Development Programme in partnership with domestic institutions. The Project supported its partner local governments (18 municipal councils and administrations) to establish sound public policy and management systems through improved structures, regulatory frameworks, capacities, and attitudes by municipal employees and elected officials. The concept of local governance performance management implies local governments’ shift away from classical administrative and utility-related affairs toward a “whole-of-governance” (encompassing the municipal leaderships, administration, and utilities) and result-oriented approach to local development and service delivery. The MEG project has established a performance-based granting methodology for financial support to local governments, as a mechanism for awarding financial assistance (aimed at co-financing priority projects in the environmental or economic sector) to partner local governments based on their performance results. The performance is evaluated based on both governance and technical indicators. Thus, the performance-based granting is designed to condition partner local governments’ access to financial support with sound and tangible performance results, as well as to stimulate partners to strive toward more effective policy management and service delivery. The innovative feature behind this mechanism is that it creates linkages between a partner local government performance and grant funds that a local government will possibly receive, depending on their performance. In all cases, financial support to partner local governments under the performance-based grant methodology was exclusively used for realization of capital investment priorities originating from development strategies in the economic and environmental sectors.

25. **A development partner group will be established to enhance coordination and communications in support of the broader program.** This Advisory Board of development partners will provide a platform for high-level strategic guidance and will serve to enhance synergies and collaboration, to ensure effective communication, programming, and alignment of various activities and approaches. Semi-annual reports will be prepared by the Entity Intersectoral Working Groups and shared with all the development partners. Also, development partners will be invited to participate in project missions. The development partner group will include the World Bank, State Secretariat for Economic Affairs from the Swiss Federal Government (SECO), European Union, the Swiss Development Cooperation, the Swedish International Development Cooperation Agency, and other partners active in the sector, and coordination meetings will be inclusive of all active development partners.

C. Relevance to Higher-Level Objectives

26. **The proposed Project directly responds to the priorities identified in the World Bank Group’s Country Partnership Framework (CPF) for Bosnia and Herzegovina for FY16–20²⁹ agreed upon between the World Bank and the BiH authorities and discussed by the Board on December 15, 2015, and the 2019 Performance and Learning Review,³⁰ which reaffirmed the priority areas of the CPF.** The priority areas remain the efficiency of the public sector, private sector growth, and resilience to natural shocks, with a cross-cutting focus on inclusion. One of the CPF’s main pillars is improving public service delivery (Objective 1C), which is identified as inefficient

Danube River Catchment Area (IAWD) in cooperation with the World Bank and with funding from the Austrian Ministry of Finance, the DWP supports a wide range of activities to promote an informed policy dialogue and strengthen the technical and managerial capacity of the sector’s utilities and institutions.

²⁹ Report No. 99616-BA.

³⁰ Report No. 130043-BA, discussed by the Board on January 30, 2019.



and often financially unsustainable. In addition, the CPF highlights the need to address water sector gaps in the context of alignment with the EU legislation, specifically the EU Drinking Water Directive and Urban Wastewater Treatment Directive. Specific indicators under the CPF look at improving water and wastewater services, as well as the legal and regulatory framework and institutional capacity. The Project will also support the CPF's objective to improve management and efficiency of public finances (Objective 1A) by supporting several actions necessary for a public utility company's management transformation (i.e., better commercial and financial management, payment of arrears, rationalization of staff, among others). The proposed Project will also indirectly support Focus Area 3 of the CPF: Building resilience to natural shocks by improving the efficiency of water service provision. The Project is also aligned with the CPF's cross-cutting theme of social inclusion. The Performance and Learning Review underscored that social inclusion remains relevant and fully aligned with the BiH 2019–2021 Economic Reform Program.

27. The Project is also well aligned with the 2013 “Climate Change Adaptation and Low-Emission Development Strategy for BiH.” The 2013 strategy seeks to increase resilience to climate variability while ensuring development gains as well as lowering greenhouse emissions, particularly through energy efficiency measures. The water sector is identified as a priority sector due to its interlinkages to different areas. The Project has significant potential to support mitigation and adaptation to climate change and its co-benefits, as energy efficiency and other performance improvements link directly with climate-smart activities and contribute to BiH's Intended Nationally Determined Contributions. In addition, by increasing access to sustainable and safely managed water, increasing efficiency in service delivery, and developing effective governance provisions and management measures, there will be greater control of water abstraction from surface water and groundwater. Increasing access to appropriate wastewater collection and treatment will reduce pollution of water bodies and public health risks such as increased exposure to water-borne diseases. These actions will help protect environmental flows, increase water availability, and enhance the resilience of the water sector and local beneficiaries against climate-change-intensified shocks such as droughts, increased temperatures, and floods.

28. The Project will contribute to a more resilient, inclusive, and sustainable recovery in BiH as outlined in the World Bank Group COVID-19 Response Approach Paper. The activities foreseen fall under the Resilient Recovery Stage, as outlined in the approach paper, and will contribute particularly to Pillar 3 (Ensuring Sustainable Business Growth and Job Creation) as well as Pillar 4 (Strengthening Policies, Institutions and Investments for Rebuilding Better). The proposed activities under Components 1 and 2 intend to strengthen the policies and institutions to enable an appropriate service framework on the entity and local levels, while Component 3 comprises upgrading and rehabilitation works as well as new construction including investments in underground infrastructure, which are labor-intensive works, contributing to the generation of employment and much-needed income for the local population and, thus, recovery of the local economy.

29. The Project will also support the Water Management Strategies of both the RS and the FBiH of 2015 and 2018, respectively, which underline the necessity of increasing coverage and improving effectiveness of water and wastewater services, which is currently threatened by weak institutional, financial, and legal frameworks. Furthermore, they outline the entity government program and investment needs in the amount of US\$1.46 billion between 2010 and 2024 to expand service coverage and improve quality and efficiency of the WSS sector, as well as general water resource management measures. The RS has also advanced in the development of a proposal for an improved institutional framework for WSS service provision in the context of the ongoing economic reform program.



30. **Finally, the Project is also aligned with the Mobilizing Finance for Development (MFD) approach (see Box 2),** as it will support sector reforms that include regulatory, pricing, and institutional mechanisms to improve the creditworthiness of the WUs, facilitating their access to commercial financing in the future, as well as setting the foundations for an improved enabling environment to attract private sector capital and blended finance opportunities. At the WU level, strengthening their institutional capacity and efficiency is the first step towards creditworthiness in order to attract private capital, though the main focus of the operation at this level is to build the foundation of (financially) sustainable utilities.

II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement

31. **The Project development objective is to support Bosnia and Herzegovina to (i) strengthen the institutional capacity at the Republika Srpska (RS), Federation of Bosnia and Herzegovina (FBiH), and local level for improved WSS service delivery, (ii) improve access to safely managed WSS services, and (iii) improve the efficiency of WSS service providers in participating local governments.**

PDO Level Indicators

32. The achievement of the PDO will be assessed against the following indicators:

PDO 1: Strengthen the institutional capacity at entity and local level for improved WSS service delivery

- Sector financing frameworks/policies drafted and submitted for approval (unit Y/N)
- Number of WUs utilizing the newly established WSS benchmarking system (unit Number)

PDO 2: Improve access to safely managed WSS services

- People provided with access to safely managed water services (number/gender disaggregated)
- People provided with access to safely managed sanitation services (number/gender disaggregated)

PDO 3: Improve the efficiency of WSS service providers in participating local governments

- Percentage of participating utilities achieving the agreed threshold score for key efficiency performance indicators as agreed in their utility operations manual (percentage)



B. Project Components

33. The overarching approach of the Project is to build the sector's institutional capacity for better services at BiH/Entity (Component 1) and local (Component 2) levels, while creating an incentive framework encouraging the gradual improvement of the WSS service providers in BiH toward operational and financial sustainability, good practices, and eventually, creditworthiness (Component 3). The institutional capacity-building will be largely based on existing instruments already piloted in the country, while the incentive framework will be implemented through a demand-driven, performance-based approach. The Project will be financed by a US\$60.9 million IBRD loan complemented by a US\$7 million SECO grant administered by the World Bank. The source of funding for each specific activity will be defined in the procurement plan.

34. **The Project will follow a demand-driven, performance-based approach.** The Project will allow all LGs/WUs to apply for participation and benefit from Project support including institutional strengthening activities and, if eligible, infrastructure investments, conditioned to their willingness and commitment to abide with the Project's rules. Entity line ministries for water management have promoted the Project and some LGs/WUs have expressed their interest in joining the program. Participating utilities will benefit from TA under Component 2, which will enable them to be eligible, based on performance improvement, for participating in Component 3.

35. **Component 1: Improving the institutional capacity for sector modernization (US\$5.2 million, to be co-financed by the IBRD loan and SECO grant).** This component will finance activities at the entity level to strengthen policy and regulatory frameworks and institutional capacity to advance sector reform and promote sustainable service delivery. This is particularly related to support on preparation and thereafter implementation of the Entity Government's Water Sector Modernization Concept that should include a clear action plan for the government to proceed with needed actions in order to strengthen institutional capacity for improved service delivery. It complements and is aligned with planned or ongoing activities supported by other development partners, particularly with the UNDP MEG II project. Better institutional capacity for the WSS sector governance will improve operational efficiency and sustainability, as well as resilience of the WSS sector to climate change effects.³¹ The component is structured around two subcomponents:

- **Subcomponent 1.1: Supporting water supply and sewerage sector reforms at entity level (US\$0.7 million, to be financed by the SECO grant)** will finance key activities of the reform process in coordination and in alignment with activities supported by other development partners. This subcomponent will finance technical assistance for, *inter alia*, the: (i) development of a WSS sector financing strategy 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 WUs in targeted municipalities; (iii) development of a rural WSS database mapping service provider models, status of service

³¹ Improved institutional capacity for WSS sector governance fostering improvements in operational efficiency and sustainability, thereby enhancing the provision (in terms of water quality, service reliability, and coverage) of WSS services. This will in turn reduce the risk of water shortages/droughts, improve the quality of water, and contribute to an increase in the volumes of wastewater being treated before being discharged into water bodies. The latter will reduce the impact of floods. Activities under this component will therefore make the WSS sector and the project area residents more resilient to climate-change-exacerbated droughts and floods.



provision and challenges in rural areas;³² (iv) launch of a national capacity building program for the professionalization of the sector;³³ (v) a sludge management strategy; and (vi) communication activities on the reform process and for citizen engagement.

- **Subcomponent 1.2: Project management and coordination of the sector reforms (US\$4.5 million, to be financed by the IBRD loan)** will finance: (i) the Project Implementation Units (PIUs) to perform project-management-related activities, including monitoring and evaluation and project audits; (ii) 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, and activities to improve gender-specific gaps; (iv) coordination and technical backstopping of the reform process in the medium term providing financial and technical support to line ministries and established Intersectoral Entity Working Groups; (v) technical advice for the formulation of regulatory and policy frameworks, policy facilitation, and public consultations in cooperation with the UNDP MEG II project; and (vi) technical support to the PIUs for overall project implementation including, among others, carrying out performance assessments of participating WUs, definition of strategic measures to be taken, and the preparation and review of technical documents for subprojects to be supported under Components 2 and 3.

36. **Component 2: Supporting improved governance and capacity of the water services sector at the local level (US\$2.7 million, to be financed by the SECO grant).** This component targets the strengthening of the local WSS service delivery framework and its alignments with the institutional and regulatory framework that will be set at entity level to maximize the impact of the reform process. It will finance *inter-alia*: (i) the preparation of water utility business plans (BPs) targeting improvements in organizational, financial, and operational areas of water utilities for the modernization of WSS services (including gender specific gaps);³⁴ (ii) the development and signing of PSAs between the municipality and the water utilities; (iii) preparation of tariff proposals, based on legislation set on entity level; (iv) support for organizational restructuring; and (v) capacity building on technical, commercial, and financial topics, as well as in environment and social risk management, including gender-specific areas of skill development. All these activities will improve the capacity of WUs to better deal with the effects of climate-change-exacerbated drought or flood risks.³⁵

³² BiH currently has limited information on the status of rural water services, especially from communities served by local or informal operators. Component 1 will finance an in-depth review of rural WSS services in the country, and create a database which maps service provider models, status of service provision and challenges in rural areas. Such database would be a first step for later tailored support to rural areas, especially since local and informal operators would not be part of the benchmarking system. This will be an important platform to develop better understanding and engagement on a key development issue in BiH, before a potential follow-up operation can address the identified gaps.

³³ For both the capacity building and benchmarking activities, the Project will build upon existing initiatives developed under the Danube Water Program and under the Regional Capacity Development Network.

³⁴ The BP would include *inter alia*: (i) targets for the KPIs to be achieved by the utility and reported on (including NRW, energy efficiency, etc.); (ii) development of a subsidy scheme for low-income households; (iii) agreement on financing for OPEX and CAPEX; (iv) staffing policy; (v) tariff policy; (vi) a pipeline of WSS sector projects developed through preparation of solid investment programs to increase coverage in the entire municipal service area, targeting expansion to unserved rural areas; and (vii) assessment to address gender gaps of the utility.

³⁵ For instance, business plans are expected to include actions promoting NRW reduction, ensuring efficient use of water, adopting a tariff scheme, developing a subsidy scheme for low-income households, etc., which will allow the WSS sector and the targeted communities to better withstand climate shocks such as droughts and extreme high temperatures to the water supply (as they reduce



37. The activities under this component complement the activities foreseen under the UNDP MEG II project, which will provide support to 30 water utilities and local governments.³⁶ This component will finance activities to strengthen the local WSS service delivery framework in an additional 10 to 15 LGs/WUs not being covered under MEGII using best practices from the country (e.g., MEG project) and from the World Bank Utility of the Future Framework.³⁷ The TA approach will be flexible and allow for emerging needs of utilities to be considered and supported throughout the lifetime of the Project. It will build upon the results and priority measures from developed business plans and/or PSAs and help utilities meet minimum requirements to participate at Component 3 and gradually improve their performance level.

38. Once the utility³⁸ is selected for participation in the Project, an assessment of the service, performance, and maturity will be undertaken to identify areas that need to be strengthened under the technical, commercial, financial, organizational, and human resource dimensions (including measures to reduce gender-specific gaps).³⁹ Upon having the assessment completed, the Project will support the WU in the prioritization of actions to be supported by the Project (i.e., action plan). Specific activities for each WU will be confirmed upon the completion of the assessments carried out through the Project. Furthermore, capacity-building activities will tap into ongoing regional capacity development platforms such as the Danube Learning Partnership (D-LeaP) and the Regional Capacity Development Network (RCDN).⁴⁰

39. **Component 3: Improving access to safely managed WSS services and the efficiency of WSS service providers (US\$60.0 million, to be co-financed by the IBRD loan and SECO grant).** This component 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: **(a)** performance and efficiency improvements including, but not limited to, the implementation of nonrevenue water reduction, energy efficiency programs, and improvements in metering and commercial systems (which

water losses or increase the available volume for each customer). In addition, training and capacity building to improve technical and operational efficiency of WSS services will help to prevent overflows, maintain backup systems, and thus enhance the infrastructure's resilience to more frequent and intense flood events.

³⁶ Partner local governments in MEG II will be selected from among the pool of current MEG partners and those cities and municipalities that are investing in new major infrastructure using different financial mechanisms currently available in BiH (WatSan, EBRD, World Bank). The selection of partner local governments in MEG II should be ideally confirmed in the first half of 2021 in close coordination with different ongoing initiatives.

³⁷ As a part of the Water Utility Turnaround Framework (UTF), the World Bank's Water Global Practice created a diagnostic tool and action-planning methodology to help utilities become the "Utility of the Future" (UoF). The UoF concept provides tools to quickly (self-assess) a utility's service, performance, and maturity and to develop an immediate 100-day action plan, targeting quick wins and, in parallel, develop longer-term plans that are more future focused.

³⁸ In cooperation with line ministries, some of the LGs and WUs are preidentified for support during the first year of project implementation and were classified according to their performance level on a number of indicators. Infrastructure and TA activities were defined for those preidentified LGs and WUs, as shown in Table 4: **Details of preidentified utilities that could be supported.**

³⁹ Please see paragraph 87 for details on specific activities to address gender gaps (in employment and other areas) through the Project. The activities include internship and mentorship programs for women, trainings in technical and leadership skills for female employees, awareness-raising to reduce gender biases, and outreach activities to encourage women's entry into water sector jobs.

⁴⁰ The D-LeaP is a regional, integrated, and sustainable capacity building initiative of national water utility associations and provides a comprehensive curriculum to the staff of water and wastewater utilities in the Danube region. The RCDN is a regional network that offers unique capacity development products for water and sanitation services targeting the top and middle management in local government units and water utilities



should accrue to reductions in greenhouse gas [GHG] emissions);⁴¹ and (b) construct, upgrade, modernize and improve WSS services and infrastructure, including water treatment and distribution facilities and wastewater collection and treatment facilities as well as technical assistance needed to improve performance of selected WUs. All these activities will increase the reliability and quality of water supply, thereby making the targeted communities more resilient to climate-change-exacerbated drought or flood risks.

40. **Performance-based financing.** For the purpose of accessing investments under Component 3, a set of relevant minimum requirements and key performance indicators (KPIs) (Table 2) have been selected to qualify and classify interested water utilities according to their performance level. Those who are applying for participation under Component 3 should fulfill minimum requirements (e.g., implementation of Local Development Strategy, signing of PSAs, reporting to the benchmarking system, implementing tariff methodology, etc.) and based on the rest of performance indicators, might classify for a different set of the investments under Component 3. Composite performance indicators have been established as aggregated indices, comprising individual performance indicators, which have different weights assigned to them. The weights were chosen on the basis of the estimated relevance of each individual KPI in the overall performance of the LG/WU. LGs/WUs that have met these minimum requirements will be scored and classified in performance categories (e.g., low performing, average performing, good performing, high performing), based on the composite performance indicator.

Table 2: Minimum Requirements and Performance Indicators for LGs/WUs

MR	Governance management – Minimum requirements ⁴²
MR1	Implementation of LG strategies: Adoption and implementation of the Local Development Strategy (%)
MR2	WSS sector responsibilities: Adoption of PSA to define responsibilities in the WSS sector between LG and WU and implementation of the PSA provisions (%)
MR3	Reporting data on water services to the benchmarking system (yes/no)
MR4	Preparation and adoption of the tariff structure based on the legal act on Tariff Methodology on Entity level (yes/no)
No.	Performance Indicator (PI)
PI(A)	Water efficiency and management PIs
PI(A.1)	Employees per connection: Number of full-time equivalent employees (water supply) at WU per 1,000 water service connections (No./1,000 connections)
PI(A.2)	Water losses per connection: Total (apparent and real) losses, expressed in terms of annual volume lost per service connection (m ³ /connection/year when the system is pressurized)
PI(A.3)	Standardized energy consumption: Average pumping energy consumption in the water system per 1 m ³ at 100 m of head (kWh/m ³ /100 m)
PI(A.4)	Active leakage control and management: Number of leaks detected and repaired due to active leakage control per unit of mains length (No./100 km/year)
PI(B)	Wastewater efficiency and management PIs

⁴¹ For example, one of the preidentified water investments in the Citluk municipality is expected to present a reduction of 20 percent in energy consumption.

⁴² For the first year MR 3 and MR 4 would be waived until benchmarking system and legal act is in place. Details to be elaborated in the POM.



PI(B.1)	Employees per connection: Number of full-time equivalent employees (wastewater) at WU per 1,000 wastewater service connections (No./1,000 connections)
PI(B.2)	Total sewer breaks and chokes: Total number of breaks and chokes per unit of sewer length (No./100 km sewers/year)
PI(D)	Financial, commercial, and asset management PIs
PI(C.1)	Total cost coverage ratio: Ratio between the total revenues and the total costs water and wastewater services (-)
PI(C.2)	Days sales outstanding (DSO): Average number of days that receivables remain outstanding before they are collected (accounts receivable ÷ annual revenue × 365; days)
PI(C.3)	Average age of water service assets: Depreciated historical value of water service assets/historical (purchase) value of water service assets × 100 (%)

Note: km = kilometer; kWh = kilowatt-hour; LG = local government; m = meter; m³ = cubic meter; PSA = Public Service Agreement; WSS = water supply and sanitation; WU = water utility company.

41. **Only utilities meeting the minimum requirements (Table 2) will be allowed to benefit from different types of investments under Component 3, depending on their performance.**⁴³ Depending on their initial performance level and progress toward meeting agreed targets in their KPIs, WUs will be eligible for the financing of different investment measures under Component 3. As WUs improve from low- to high-performing utilities, they would be enabled to apply to more advanced investments. Furthermore, the Project has allocated US\$3.5 million grants from SECO for priority investments in those LGs/WUs meeting their agreed performance targets to create further incentives. Details will be settled in the Operating Manual.

- For **low performing (LP)**—basic water efficiency investment measures (NRW reduction, energy efficiency measures, metering, and commercial systems).
- For **average performing (AP)**—In addition to investment measures available to LP LGs/WUs, water assets renewal and extension investment measures (related to drinking water, extension and rehabilitation of the water supply network, drinking water treatment plants, introducing SCADA, GIS, etc.)
- For **good performing (GP)**—In addition to investment measures available to AP LGs/WUs, wastewater assets renewal and extension investment measures (extension and rehabilitation of wastewater network, improvements of existing WWTPs).
- For **high performing (HP)**—In addition to investment measures available to GP LGs/WUs investment in new WWTPs.⁴⁴

Table 3: Performance Indicators and Financing Framework

Investment measures	Investment window				
	Non-qualifying LGs/Utilities	Low-Performing LGs/Utilities	Average-Performing LGs/Utilities	Good-Performing LGs/Utilities	High-Performing LGs/Utilities

⁴³ Utilities that do not meet the minimum requirements will receive TA under Component 2 to improve their governance and enable them to participate under Component 3.

⁴⁴ The World Bank project would not consider financing the construction of the new WWTPs unless there was clear evidence that the LG/WU had the capacity (both financial and technical) to run (operate and maintain) such complex facilities.



	(1) MR=0	(1) MR>0, and (2) PI(A)=0,01- 3,50	(1) MR>0, and (2) PI(A)=3,51- 7,00 (3) PI(B)≥1,56	(1) MR>0, and (2) PI(A)=7,01- 9,00 (3) PI(C)=1,36- 1,50	(1) MR>0, and (2) PI(A)=9,01- 10,00
Component 2					
Technical Assistance	Eligible	Eligible	Eligible	Eligible	Eligible
Component 3					
Water efficiency investments					
- NRW reduction (leak repair, pressure control, etc.)	No access to investments	Access to investments ⁴⁵	Access to investments	Access to investments	Access to investments
- Energy efficiency measures					
- Metering and commercial systems					
Water assets renewal and extension, other water components					
- Water system rehabilitation and extension	No access to investments	No access to investments	Access to investments	Access to investments	Access to investments
- WTP rehabilitation and construction					
- SCADA, GIS, other measures					
Wastewater assets renewal and extension					
- Sewer network rehabilitation and extension	No access to investments	No access to investments	Access to investments	Access to investments	Access to investments
- Improvements to existing WWTPs					
WWTP construction					
- New WWTPs	No access to investments	No access to investments	No access to investments	Access to investments	Access to investments

Note: GIS = geographic information system; LG = local government; NRW = nonrevenue water; PI = performance indicator; SCADA = Supervisory Control and Data Acquisition; WTP = water treatment plant; WWTP = wastewater treatment plant.

C. Project Beneficiaries

42. The main Project beneficiaries are estimated to be at around 200,000 people (50 percent of them women) residing in the participating local governments. These include around 165,000 people who will benefit from better access to safely managed water services⁴⁶ and 35,000 people benefitting from better access to safely managed sanitation services.⁴⁷ Service providers directly, and consumers indirectly, will benefit from

⁴⁶ Access to safely managed water services is defined as access to improved source located on premises, available when needed, and free from microbiological and priority chemical contamination, as per the WHO/UNICEF Joint Monitoring Programme for Water and Sanitation. Final target will be determined during the first year of implementation. It includes the population benefitting from new or rehabilitated water connections, including improvements in water quality and reliability of water supply.

⁴⁷ Safely managed sanitation services are defined as having access to a private improved facility where fecal wastes are safely disposed on site or transported and treated off-site; plus, a handwashing facility with soap and water, as defined by the Joint Monitoring Programme. Final target will be determined during the first year of implementation. It includes the population benefitting from new sewer systems connected to an existing WWTP or newly constructed WWTP under the Project.



operational and efficiency improvements, whereas local governments and communities will gain from enhanced services, better quality of drinking water, and cleaner aquatic environments. BiH as a whole will benefit from a strengthened enabling environment for WSS service provision. The Stakeholder Engagement Plan will serve as the framework to reach out to the beneficiaries as well as the Project-affected parties and other interested parties.

D. Results Chain

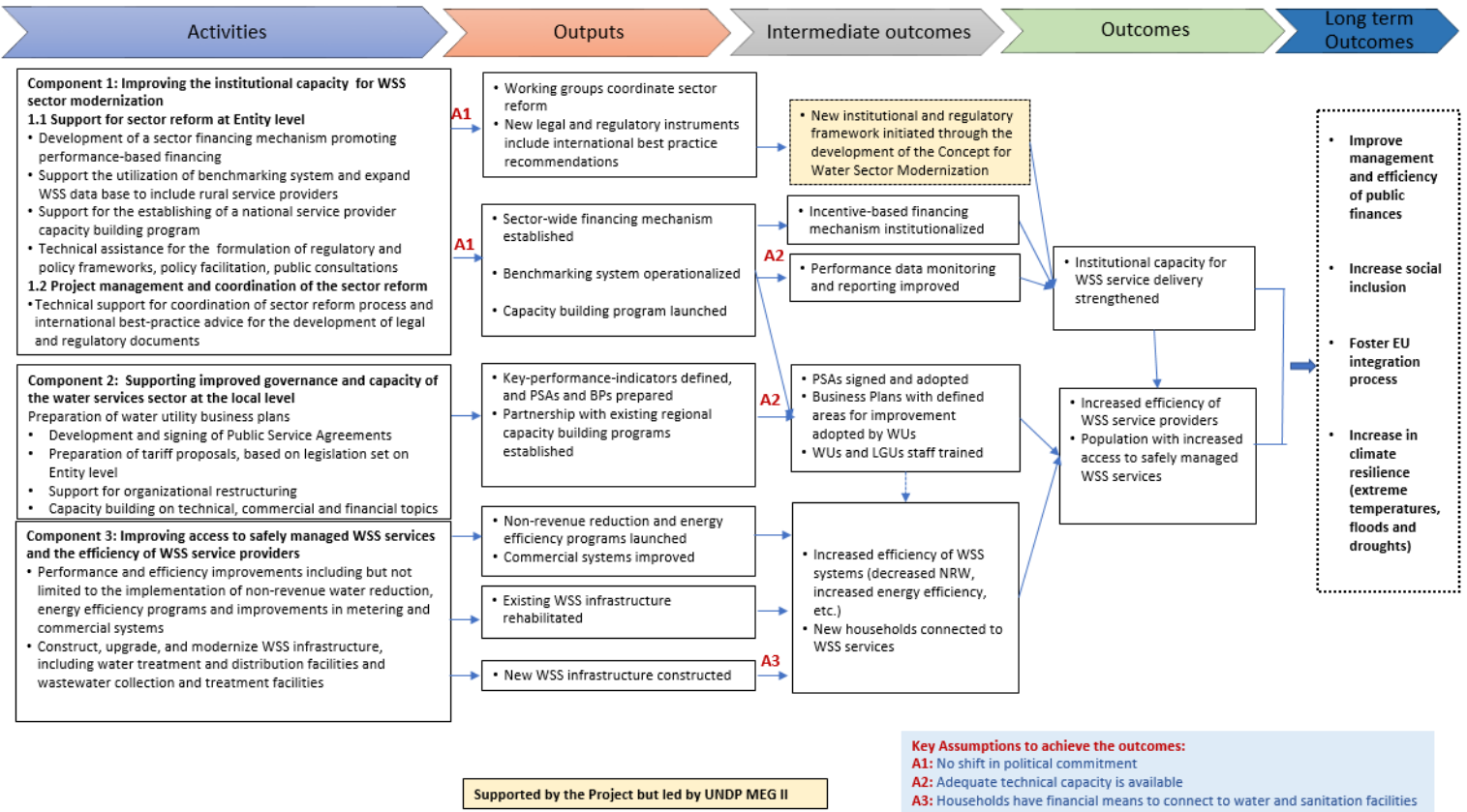
43. **The proposed Project will support BiH's *Joint Vision for sector reform* through the strengthening of the institutional capacity for WSS service delivery, improved access to safely managed WSS services, and increased efficiency of WSS service providers** (as shown in Figure 3). The Project aims to address the key challenges of the WSS sector by implementing actions both at the entity and local levels:

- At the entity level, it aims to support the sector reform by institutionalizing an incentive-based financing mechanism and establishing a benchmarking system for better public utility data monitoring. In addition, it will provide technical support to the sector reform process led by the entity governments in coordination with the MEG II project, which are further supporting a new institutional and regulatory framework for WSS service delivery in BiH. Entity governments will prepare their respective Water Sector Modernization Concept, where key activities required to strengthen the overall sector will be depicted with the corresponding plan and resources to implement them.⁴⁸ Within 6 months of effectiveness of the loan, each Entity Government shall present the concept with an action plan in a manner acceptable to the Bank. Within 12 months after effectiveness, and after that, once a year until the end of the project, the Borrower and the Bank will review progress of the action plan.
- At the local level, the Project will strengthen institutional capacity and the efficiency of WSS service providers by supporting the preparation of PSAs and BPs defining areas of improvement and setting performance targets based on KPIs. It will also support the preparation of tariff proposals and capacity building on technical, commercial, and financial topics. The Project will also finance investments toward improvements in the efficiency of service providers through activities geared toward performance and efficiency improvements at the utility level. Finally, it will improve access to safely managed WSS services through investments to modernize WSS infrastructure.

⁴⁸ Topics to be covered in the Water Sector Modernization Concept include: (i) countrywide harmonized reform of the legal and institutional framework for water supply and wastewater management services; (ii) water tariff methodology regulatory and institutional framework; (iii) countrywide harmonized benchmarking system for water utilities; (iv) equitable water supply and wastewater services subsidy system; (v) Public Service Agreements (PSAs) between local government councils, administration, and the utilities; (vi) detailed plan to strengthen the technical, financial, and institutional/organizational capacities of water utilities and their sustainable performance; (vii) development of a WSS sector financing mechanism which promotes performance-based financing; and (viii) plan for the inclusion of the gender perspective in the delivery of water services.



Figure 3: Theory of Change of the BiH WSS Modernization Project



E. Rationale for Bank Involvement and Role of Partners

44. **The Bank has a long-standing partnership with BiH through previous lending operations in several areas, including wastewater management, which have yielded important lessons for the design of this project.** Implementation Completion Reports for two recently closed projects financed by the Bank, the Water Quality Protection Project (P085112) and Sarajevo Waste Water Project (P090675), highlighted the need to secure sustainability of investments and commitment of the authorities at all governmental levels to ensure an enabling environment for modernization of the sector by improving the institutional, financial, and regulatory framework in any new project. The Bank has also supported advisory services and analytics activities targeting municipal government reforms and strengthening local governance for service delivery (2009). More recently, in 2017 the Bank carried out a water sector institutional framework review with specific recommendations for improving the overall framework for water services delivery in BiH. In the same year, the Bank, through the Danube Water Program (DWP), also supported, among other analytical work, the development of a review of rural service delivery in BiH and six other countries. The recommendations surfacing from this advisory work and lessons learned from the implementation of lending operations are key elements for the design of the proposed program. The DWP has also been a vehicle for engaging in sector issues over the last five years, not only in BiH but also in other countries of the region. Through it, several sector wide instruments for systematic



capacity building and utility benchmarking for performance improvement have been developed (see also paragraph 47).

45. **Furthermore, the World Bank is well placed to build on its strong regional and global expertise and its leadership in the BiH water sector to support the government’s agenda for the modernization of the WSS sector.** Since the Bank has wide international experience in supporting national programs to modernize water utilities and the overarching framework for WSS service provision, the experience and lessons learned from other countries will be brought to BiH. Furthermore, the Bank can leverage resources from multiple donors to create a set of incentives and enforcement mechanisms, ensuring that the investments contribute directly and sustainably to better services, in the context of EU accession and harmonization with the EU legislation. Taking into consideration political complexities of the governance system in the BiH, policy process will demand a reality-grounded and flexible approach that is capable to address and accommodate the real needs in the sector, which the Bank—as an important and long-standing sector financier—is well placed to co-lead.

Box 2: World Bank Support on Reform and Finance for the Water Supply and Sanitation Sector

In 2015, the World Bank looked to its own operational experiences to develop a new, comprehensive global framework for improving the water supply and sanitation sector performance. This led to an expansion of the purview of the sector reform agenda, moving from the traditional focus on infrastructure economics to also encompass a deeper understanding of the behavior of and between sector institutions and of the people within those institutions. Based on this, the World Bank dedicated resources to develop a global strategy for urban water reform. A deep-dive analysis was required to meet the objectives. Three unique global initiatives were thus created:

1. **Policy, institutional, and regulatory (PIR)** Incentives, which look at the broader sector enabling environment, or the “art” of reform.
2. The **Water Utility Turnaround Framework (UTF)**, which looks at utility-level reforms, also called the “science” of delivery.
3. **Maximizing Finance for Development (MFD)** for the water sector, which looks at shifting the financing paradigm to reach the Sustainable Development Goals.

The frameworks discuss reform cases from around the world to show how different countries have approached—some successfully and others less successfully—their sector challenges. Each of the three global frameworks concludes that there is no one-size-fits-all solution and puts forth a set of guidelines and tools for developing a reform program tailored to a specific local context.

46. **The Project builds upon and scales up the successful implementation experience of the MEG project.** As mentioned earlier, the MEG project supports local governments, as well as Entity government level in improving their regulatory frameworks, with the specific focus on the economic and environmental sectors and related public services. Through an incentive structure, the MEG project is supporting the piloting of implementation of financial and operational improvement program for public water utilities. The proposed Project will build upon the instruments already developed under the MEG project and using SECO funds target an additional 10 to 15 LGs/WUs to strengthen capacities, as described under Component 2. The World Bank will also engage its expertise and convening power alongside the MEG II project partners, which will provide key sector reform TA to the Joint Vision for Sector Reform. Specifically, the Bank will be consulted and involved in the work being led under the MEG II project, including through the review and development of policies and strategies, joint scoping of assignments, and discussing terms of references and deliverables.

47. **The Danube Water Program has also financed the development and piloting of tools to support the sector modernization efforts envisioned under the Project.** The DWP is a regional technical assistance and



capacity building program funded by the Austrian Government since 2012 and implemented in partnership by the World Bank and the International Association of Water Utilities from the Danube region (IAWD). Its objective is to develop policy and regulatory instruments as well as capacity building of water services sector professionals and policy makers. The DWP has developed and piloted specific tools ready to support the BiH's sector modernization efforts. On one hand, the DWP developed instruments for WSS Utility Performance Monitoring and Benchmarking, such the Danubis Data Collection Management System and the Danibus.org Water Platform (<https://www.danubis.org/>). These tools would be used to establish the utility performance information system for the WUs and local government associations at the entity level, accompanied by training to service providers on the collection and management of standardized performance data. The Danube Learning Partnership (D-LeaP—<https://www.d-leap.org/>), a capacity building initiative developed also under the DWP would provide the vehicle to strengthen water service utilities capacities on a number of topics, for which specific curricula has been developed. These include targeted courses in NRW management, asset management, and energy efficiency. Additional programs that might be established in the future in BiH are related to access to financing and water safety planning.

F. Lessons Learned and Reflected in the Project Design

48. **Previous projects in the WSS sector suffered from a disconnect between investment in infrastructure and investment in the efficiency of service provision, leading to an increased risk of substandard and unsustainable service provision** (e.g., Mostar Wastewater Treatment Plant under Water Quality Protection Project (P085112), Sarajevo Wastewater Project (P090675). Previous IFIs support to the water and sanitation sector emphasized infrastructure investments. This operation, therefore, will condition investments in infrastructure upon the satisfactory efficiency and performance of utilities and provides support in a form that depends on each utility's performance level to incentivize performance improvement.

49. **Strengthening the enabling environment and creating a performance-based culture for service delivery is a core pillar for turning around and enhancing utilities' performance and ultimately improving water and sanitation services.** The Bank's global experience in WSS and its involvement in the water sector in BiH since 1997 has provided several useful lessons that are reflected in the design of the proposed project. As experience has shown in BiH, in the absence of a sector wide enabling environment, utilities can become trapped within vicious cycles, where inefficient and unsustainable practices became a norm. Recently, the World Bank dedicated significant resources to develop a global strategy for water sector reform and provided client countries with a set of guidelines and tools for developing a reform program tailored to a specific local context. The World Bank's Utility of the Future Framework emphasizes the role of the governance framework and enabling environment as a core pillar for turning around and enhancing utilities' performance. The Project's design carefully combines a set of performance incentives and TA activities aiming at improving the enabling environment as well as the performance of participating WUs. In addition, the measures supported by the Project (directly or through collaboration with other financiers) will work towards breaking the sector vicious cycles by putting a strong focus on institutions, policies, and regulations at the entity level which will create and foster an environment where the water utilities can effectively improve their services to existing customers and expand their operation to other service areas.



50. **Enactment of a sound policy framework for cost-recovery is key to ensure quality and sustainability of water and sanitation services.** The current service delivery framework in BiH lacks a sound approach toward O&M cost recovery, without clear incentives and accountability measures. As a result, WUs are in general underfinanced, the quality and efficiency of water and sanitation services are below the standards, and coverage expansion is compromised by WUs' limited capacity to invest. The Project seeks to address this issue by supporting the preparation of utility BPs and PSAs at the local level, as well as an improved tariff methodology at the entity and cantonal levels, complemented with the establishment of a performance-based sector financing mechanism, which will provide the incentives for LGs and WUs to pursue cost recovery.

51. **Stakeholder commitment at all levels is necessary to amplify project impact and sustained outcomes.** Commitment at the higher level of governments down to the citizens is essential for successful project outcomes. The governments of FBiH and RS have shown commitment through coordination between different authorities and service providers, as well as with the World Bank, throughout the project preparation process. Therefore, the Project would support the coordination with other international partners to secure appropriate communication to citizens in the reform process.

52. **Performance-based pilot projects have shown successful results under the MEG project, which will be scaled up through this Project.** The lessons from the implementation of the first phase of the MEG project are directly applicable to this project. The MEG project demonstrated that there are legally undefined, or poorly defined responsibilities, when it comes to the provision of water services at the local level. However, these were successfully bridged with the establishment of PSAs, signed between the local governments and their water utility companies. The PSAs, signed in 16 MEG Project LGs over the past two years, represent concrete and actionable pledges, with clearly stipulated roles and responsibilities for all parties involved. Implementation of PSAs enabled the WUs to start partnering with their LGs, and effectively tackle individual responsibilities and obligations therein. Good results on the ground confirm that the PSAs could and should be institutionalized, scaled up, and replicated throughout the BiH, and thus provide a platform for improving public water services provision.

53. **Sector and institutional reform, and improvement in the sustainability of WSS service provision are long-term processes that require sustained commitment and support.** Adoption and internalization of sector and utility reforms cannot be expected to be achieved in short time; these challenging objectives require substantive and sustained commitment from decision makers, utility managers, and development partners. More important, expectations related to project deliverables should be managed realistically, while understanding that in most cases follow-up support will be needed. In that regard, the proposed Project has been developed with a long-term engagement in mind, following the *BiH's Joint Vision for sector reform*. A potential additional financing or a follow-up operation is being envisaged, always conditioned on the satisfactory performance of the project.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements



54. **Implementation of the Project will be undertaken by project implementation units within the line ministries of each entity.** In FBiH, the existing PIU for implementation of the water and sanitation projects within the Ministry of Agriculture, Water Management and Forestry will be responsible for implementation of the activities in FBiH. Water agencies for the Sava and Adriatic basins will provide technical support. Based on the assessments done, the PIU will be strengthened with additional experts (procurement specialist, financial specialist, monitoring and evaluation specialist, environmental and social specialist, engineer/technical support). In RS, the existing PIU (Agriculture Project Coordination Unit, APCU) within the Ministry of Agriculture, Forestry and Water Management will implement the project, and technical support will be provided from the public institution, Vode Republike Srpske. Based on an assessment of the APCU, they have the capacity to implement the Project but further strengthening is proposed (particularly on environmental and social safeguards, monitoring and evaluation, and engineering/technical support). A TA consulting firm will be hired by both PIUs to provide ad hoc support as needed for overall project implementation, as well as technical support both in RS and FBiH.

55. Each PIU 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, statements of expenditure (SOEs), documentation of the eligible expenditures, and Project reporting and monitoring.

56. **In each participating municipality, a Project Implementation Team (PIT) will be established which should consist of representatives from the LGs and WUs.** The PIT will prepare documentation needed for tendering procedures and submit it to the PIU/APCU. It will also carry out daily coordination of the activities and regularly report to the PIU/APCU. The PIU/APCU will organize the needed training for PIT staff in order to strengthen capacities at the local level (including trainings on procurement, financial management and disbursement, financial reporting, monitoring and evaluation, environmental and social safeguards). Details on relations among the PIU/APCU and PIT will be defined in the Project Operational Manual (POM). The goods, works, consulting services required for each sub-project under Part A.3 and B.3 of the Project will be procured centrally by each entity's PIU for the participating municipality. The Sub-project agreement(s) to be entered into by the entity and the participating municipality will provide, *inter alia*, obligations requiring that the procured goods, services will be transferred/performed for the participating municipality for the purposes of the Sub-projects, as well as any terms for reimbursement by the respective municipality for said goods, works and services to the Borrower/Project Implementing Entity.

57. **The FBiH PIU and the RS APCU will have a clear mandate to coordinate with Entity Intersectoral Working Groups for transfer of know-how to the institution upon the end of the Project.** Coordination and consultation between the different levels of government and the WUs, as well as outreach and consultation with citizens will be important for the success of the reform.⁴⁹ The PIU/APCU will serve as an interim operational secretariat to Entity Intersectoral Working Groups.

⁴⁹ Those working groups are in the process of being established on the entity level and will consist of the representatives of relevant entity ministries, professional associations (WUs and LGs), and water agencies. Each of the two entities would establish its own working group with individually assigned features and participation of the relevant institutions in each entity.



B. Results Monitoring and Evaluation Arrangements

58. **The M&E of outcomes and results during implementation would follow standard World Bank practice.** Reporting of progress toward achieving the PDO and results indicators will be the responsibility of the PIUs in FBiH and RS. APCU has experience in the implementation of other World Bank projects while PIU implemented projects financed by other IFIs (e.g., European Investment Bank). Quarterly reports will be prepared by the WUs, in a format agreed with the World Bank. The PIUs will consolidate the data at the Project level and produce semiannual reports.

59. **A detailed review of the implementation progress will be conducted at the project's Mid-Term Review to assess the potential of an Additional Financing.** Subject to a satisfactory implementation of Project activities and those included in the Water Sector Modernization Concept, the World Bank would consider further support to the water sector in BiH, for example, through a potential Additional Financing to the Project or a follow-up engagement. The approach will help consolidate capacity building, reform actions, and investment in the targeted local governments and utilities, while allowing for scale-up of project activities in other LGs and WUs across BiH.

60. **The development of a functional utility benchmarking system** for the WSS sector is integrated in Subcomponent 1.1 of the Project design. The Project includes the collection and assessment of utility performance as a tool for selection of the optimal form of assistance to each utility under the Project.

C. Sustainability

61. **Technical and operational sustainability.** The sustainability of water supply and wastewater infrastructure investments to be financed through the Project will be ensured through: (i) the utility selection process, and (ii) implementation of the targeted performance improvement activities, which will include all elements of utility performance (commercial, technical, financial, human resources, and organization and strategy). The sustainability of investments financed is one of the focuses of the Project. To achieve this, the Project will deploy a utility selection process to ensure that average- to well-performing utilities are given access to funds for infrastructure financing. In parallel, under-performing and low-performing utilities will be required to prepare and implement adequate BPs. As noted earlier, the BPs will aim at addressing factors affecting the operational and financial performance of utilities, such as improved energy efficiency, better assets management, system optimization through computer modelling, and reduction of water losses and O&M costs. The technical and operational sustainability of the participating WUs will help strengthen the local populations' resilience against climate-change-intensified weather risks such as drought and floods. Finally, through the institutional strengthening efforts supported by the Project, capacities will be built at the utility level which will equip staff with the basic skills and methods to maintain the investments made.

62. **Environmental and social sustainability.** The rehabilitation of existing water systems is expected to reduce water losses by 10–15 percent while generating energy savings, thus providing a more sustainable use of water resources to meet the demands of the population. The construction of new water infrastructure is expected to benefit people who are currently relying on unregulated self-supply or connected to systems managed by local communities that do not have proper capacity to operate the systems. Hence, the Project



will provide an opportunity for better control of water resources withdrawals and for improving services by formalizing the service provision. The rehabilitation and construction of sewerage networks and wastewater treatment facilities will have a long-lasting positive impact on the health of the served communities by reducing the risk of water-borne diseases. It will also improve the quality of surrounding water bodies and the overall health of the basin, as environmental protection through pollution elimination is the main reason for the construction of these facilities. Citizen engagement activities and regular communication with Project stakeholders will ensure the social sustainability of the investments. All investments proposed for financing under the project will undergo environmental and social screening before approval and will be conditioned by adequate supervision during construction.

63. **Financial sustainability.** The Project concept is designed to support the improvement of the operational and financial performance of participating utilities, which by itself will positively impact financial sustainability and support the principle of maximizing finance for development (MFD; see box 2) as it seeks to support improvements in the enabling environment for high-performing utilities to enhance their creditworthiness and gradually advance toward the level of maturity that could attract commercial financing. Addressing the financial sustainability of WUs will also enable them to more effectively respond to climate-induced disasters. This will enable more funds being channeled to infrastructure maintenance and, thus, a smaller chance of the water and wastewater assets or pumping stations in question becoming overwhelmed or damaged during disasters, such as floods.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic, and Financial Analysis

Technical

64. The Project has been technically designed to address the most pressing challenges in the water sector in BiH, namely, the need for strengthening the institutional capacities for improved service delivery, including a culture of performance and accountability between various actors, and the need to keep on modernizing, improving, and expanding the current infrastructure

65. On the institutional capacities side, the Project will support both entities to strengthen their sectoral policy and regulatory frameworks. This support would be provided through a series of technical assistance activities, which will propose key inputs for the priority areas identified (e.g., sector financing mechanism, performance assessment, etc.). This Project has been designed to follow the approach defined by the Joint Vision and Entity governments sector development strategy and reform road map. It will complement activities supported by development partners, particularly with the UNDP MEG II project.

66. The Project has been designed to also tackle institutional challenges at the municipal level. Activities planned under the Project will incentivize and enable WUs and LGUs to align with the institutional and regulatory frameworks established at the entity level. At the same time interventions in WUs will support their



reform and modernization efforts to improve the sustainable provision of WS services at the municipal level. The activities supported by the Project on each selected WU will be tailored to the specific needs identified through a sound methodology and will be implemented in a manner that builds and leave capacities in the benefitted utility.

67. The Project will introduce an innovative approach for the BiH context, which is based on relevant international standards. Through the performance- and incentive-based financing mechanisms, to be introduced through the Project, the entity government will be able to allocate resources in a manner that not only provides financing to the WUs with the capacity to operate services in a sustainable manner, but also incentivizes them to sustain the performance improvement efforts as a mean to secure additional resources. Through this approach the Project will mobilize substantive resources to support municipal governments with infrastructure investments for improving access, quality, and efficiency of WSS service delivery.

68. In line with the criteria established in Table 2 and Table 3, a group of “no-regret” LGs / WUs, which meet all the minimum requirements in terms of performance, have been preidentified (average- and good-performing utilities) and specific activities with advanced feasibility assessments have been defined. Readiness in terms of progress on the preparation of bidding documents and site-specific safeguards compliance was assessed and it was concluded that procurement of the preselected activities can reasonably be expected to be initiated during the first year of Project implementation. In addition, following the principle of supporting the institutional strengthening efforts of participating WUs, all infrastructure activities have been coupled with TA under Component 2 aiming at increasing the efficiency of the utility and ultimately improving the service provided. Additional LGs and WUs to be included in the Project will be identified during the first year of project implementation and will also include those with lower performance, for which financial support will be first focused on TA activities to improve their performance level. Table 4 presents the detail of activities to be supported on preselected municipalities as well as the performance rating, which makes the LG/WU eligible for the type of activity to be financed.

Table 4: Details of preidentified utilities that could be supported

Entity	Municipality/ LG	Performance level	Activity	Amount € million
FBiH	Tesanj	Good performing	Construction of new WWTP (35,000 PE).	7.6
			Consulting services for the assessment and strengthening of the technical, financial, and commercial activities as proposed in the PSA and business plan.	0.2
FBiH	Citluk	Average performing	Rehabilitation of the existing water tank and main water supply pipe to fix leakages and reduce NRW and energy consumption.	1.3
			Consulting services for the development of the PSA and business plan including the development of a NRW reduction strategy.	0.2
FBiH	Gracanica	Good performing	Rehabilitation of existing transmission mains for NRW reduction and construction of a new water distribution system.	0.9
			Consulting services for the assessment and strengthening of the technical, financial, and commercial activities as proposed in the existing	0.2



			business plan and PSA.	
FBiH	Siroki brijeg	Average performing	Extension of the water supply system in the municipality (construction of a water tank and main water supply pipe).	1.6
			Consulting services for the development of the PSA with focus on staffing and a business plan focusing on active leakage control.	0.2
RS	Doboj	Good performing	Construction of the new water intake, reconstruction of water supply network, construction of the separate rain collector.	9.84
			Consulting services for the assessment and strengthening of the technical, financial, and commercial activities as proposed in the existing business plan and PSA with a focus on staffing and an energy reduction plan.	0.2
RS	Istocno Sarajevo	Average performing	Reconstruction of the water tank Tilava.	2.25
			Consulting services for the development of the PSA with a focus on staffing and a business plan to focus on reduction of the NRW and an energy-saving plan.	0.2
RS	Laktasi	Average performing	Construction/Extension of the water supply in municipality.	2.05
			Consulting services for the development of the PSA and business plan with a focus on reduction of NRW, an energy saving plan, and active leakage control.	0.2
RS	Prnjavor	Average performing	Construction of water supply and sewerage network.	1.53
			Consulting services for the assessment and strengthening of the technical, financial, and commercial activities as proposed in existing PSAs with a focus on a staffing and business plan with a focus on leakage control.	0.2
RS	Zvornik	Average performing ⁵⁰	Construction of sewerage network and WWTP.	5.62
			Consulting services for the development of the PSA with a focus on staffing and a business plan to improve efficiency of service with a focus on leakage control.	0.2
RS	Trebinje	Average performing	Construction/reconstruction of the water supply and sewerage network.	2.55
			Consulting services for the development of the PSA and business plan.	0.2
TOTAL				37.24

Note: FBiH = Federation of Bosnia and Herzegovina; LG = local government; NRW = nonrevenue water; PE = population equivalent; PSA = Public Service Agreement; RS = Republika Srpska; WWTP = wastewater treatment plant.

⁵⁰ The assessment carried out to Zvornik showed that although the current performance is rated as *average*, with the implementation of some measures it will be upgraded to *good*. It has been clarified to the municipality that the achievement of such an improvement will be a condition for funding eligibility.



Economic Analysis

69. An economic analysis was carried out in a sample of three subprojects in the municipalities of Tesanj, Citluk, and Dobo.

70. *Cost-effectiveness analysis.* To ensure cost-effectiveness of the investments being implemented, a least-cost methodology was applied to solution designs.

- i. *Tesanj WWTP subproject.* The subproject was examined from several aspects to identify the most cost-effective solution for the WWTP construction, including centralized versus local treatment; location of treatment plant(s); and treatment process design.
- ii. *Citluk Water Supply and Energy Efficiency subproject.* The subproject analysis consisted of the most optimal option concerning energy cost reduction versus capital expenditures.
- iii. *Dobo Water Supply and NRW subproject.* The replacement of three existing wells was examined from water source availability close to the town. The installation of a stormwater collector/interceptor was analyzed for its installation technique to avoiding disturbance to traffic and daily life. And the NRW project location was selected based on the current level of repair work.

71. *Cost-benefit analysis.* The investments selected will provide economic benefits to the participating municipalities. In Tesanj, and downstream of the municipality, the WWTP will provide environment benefits from avoided eutrophication of inland waters and health benefits to the local population, and will protect fresh water sources. The residents in Citluk will see reduced energy consumption costs from reduced pumping of water. In Dobo, the residents will see an incremental supply with a lower cost of service. Apart from the local economic benefits, the investments in Tesanj and Citluk will produce global environment benefits from the reduction of GHG and other pollutants.

72. For the WWTP in Tesanj, a quantitative cost-benefit analysis was avoided, as direct benefits are difficult to establish in a reasonable and reliable manner. The justification for the investment relies as such on economic cost-effectiveness, and the alternative of not implementing treatment is deselected for necessity reasons. BiH is in process toward becoming an EU member that will implement EU directives, which requires towns of more than 2,000 inhabitants to have wastewater treatment. According to a government study of wastewater treatment in Slovakia focused on the shadow pricing of pollutants’ removal, an economic return of more than 30 percent can be achieved from the investment in Tesanj. Both Slovakia and BiH are located in the Danube Basin and as such contribute to the eutrophication of the same inland waters. **Error! Not a valid bookmark self-reference.** shows the result of the cost-benefit and GHG emissions analysis.

Table 5: Results of the Economic Analysis in Selected Municipalities¹

Municipality Investment	EIRR¹	ENPV¹ US\$, thousands	GHG Emission tCO₂-eq, annually
Tesanj WWTP	n.a.	n.a.	+111
Citluk WS EE	14%	1,209	-1,090
Dobo WS NRW ³	9%	151	0

1. The projections for the return analysis included 20 years of costs and benefits in real terms. For NPV calculations, a social discount rate of 6 percent was introduced.

2. With global cobenefits of GHG emission reduction based on the IPCC base shadow price on CO₂.

3. Only the NRW part of US\$0.43 of the investment was analyzed for return of investment.

Note: EE = energy efficiency; EIRR = economic internal rate of return; ENPV = expected net present value;



GHG = greenhouse gas; NRW = nonrevenue water; tCO2-eq = tons of carbon dioxide equivalent; WS = water supply; WWTP = wastewater treatment plant.
n.a. Not applicable

Financial Analysis

73. *Financial IRR and NPV analysis of investment activities.* The three investment activities in Tesanj, Citluk, and Doboј were analyzed for their financial return on investment. The WWTP project in Tesanj is implemented for public good and is not assumed to provide financial returns. The EE project in Citluk is implemented for financial reasons to provide cost savings above the investments made. The NRW project in Doboј is for cost savings and leakage reduction—while the well relocation and stormwater interceptor are for public good. The results of the analysis are shown in Table 6.

Table 6: Results of the Financial Analysis in Select Municipalities

Municipality Investment	Total Investment US\$, thousand	FIRR	FPNV US\$, thousands	Utility Net Income US\$, thousands
Tesanj WW WWTP	8.90	n.a.	n.a.	0.11
Citluk WS EE	1.50	10%	0.76	0.02
Doboј WS NRW ²	2.00	7%	0.12	0.01

1. The projections for the return analysis included 20 years of costs and benefits in real terms. For NPV calculations, a rate of cost of capital at 5 percent was introduced.

2. Only the NRW part of US\$0.43 of the investment was analyzed for return of investment.

Note: EE = energy efficiency; FIRR = financial internal rate of return; FNPV = financial net present value; GHG = greenhouse gas; NRW = non-revenue water; tCO2-eq = tons of carbon dioxide equivalent; WS = water supply; WWTP = wastewater treatment plant.

n.a. Not applicable

B. Fiduciary

(i) Financial Management

74. **The existing FM arrangements of the FBiH PIU and the RS APCU responsible for Project implementation have been assessed to determine if these arrangements (budgeting, accounting, reporting, internal control, staffing, funds flow, and audit) are acceptable.** Subject to implementation of the agreed action plan laid out below, the FM arrangements are considered to meet the minimum requirements of the World Bank Operational policies.

75. **An action plan has been agreed on to strengthen the FM arrangements.** These actions include: (i) hiring an FM manager in the FBiH PIU (condition of effectiveness); (ii) acquiring Project accounting software (condition of effectiveness), (iii) update of existing FM sections of the POM for APCU; (iv) preparing FM sections of the POM for the FBiH PIU; and (v) APCU to maintain the project accounting software license for the new Project.

76. **The PIU and APCU will prepare quarterly interim financial reports (IFRs), which include Sources and Uses of Funds, Uses of Funds by Project Activity, Statement of Financial Position, Designated Account (DA) Reconciliation Statement, and Statement of Expenditure (SOE) Withdrawal Schedule.** The PIU and APCU shall prepare and furnish to the Bank not later than forty-five (45) days after the end of each calendar quarter, IFRs for the Project covering the quarter, in form and substance satisfactory to the Bank. Thus far, the unaudited quarterly IFRs have been submitted by both PIU and APCU regularly to the Bank and were found acceptable.



77. **The PIU and APCU will be responsible for the timely compilation of annual Project financial statements for the independent external audit.** Project financial statements (including SOE and DA activities) will be audited by an independent auditor acceptable to the World Bank and contracted by the Ministry of Finance and Treasury of BiH. Each audit of financial statements will cover one fiscal year of the borrower, commencing with the fiscal year in which the first withdrawal is made under the loan. In addition, the auditors are expected to deliver management recommendation letters in relation to the Project, identifying any internal control deficiencies and accounting issues. The audit reports, audited financial statements, and management recommendation letters will be delivered to the World Bank within six months after the end of each fiscal year. The audited Project financial statements will be made publicly available in a timely fashion, and in a manner acceptable to the World Bank.

78. The Project will be financed by a US\$60.9 million IBRD loan complemented by a US\$7 million SECO grant administered by the World Bank. The co-financing will be channeled on a parallel basis whereby each contract will be assigned to one source of funding in the procurement plan.

79. **Four separate DAs will be opened by the Ministry of Finance and Treasury of BiH: two DAs for the RS APCU (IBRD and TF), and two DAs for the FBiH PIU in a commercial bank acceptable to the World Bank.** The DAs linked to the IBRD loan will be denominated in the currency of the loan as selected by the borrower (EUR) and the DAs for SECO Grant will be denominated in USD. The disbursement methods made available are direct payment, reimbursements, and advances. Further disbursement details will be included in the Disbursement and Financial Information Letter.

(ii) Procurement

80. Procurement under the Project will be carried out in accordance with the World Bank Procurement Regulations for IPF Borrowers, “Procurement in Investment Project Financing for goods, works, non-consulting services and Consulting Services” (July 2016, revised November 2017 and August 2018). The Project will also be subject to the World Bank’s Anti-Corruption Guidelines, dated July 1, 2016, and will be governed further by the provisions stipulated in the Project Agreements (PAs) with respective entities. The PIUs in each entity will use the Systematic Tracking of Exchanges in Procurement (STEP) system. STEP is a planning and tracking system that would provide data on procurement activities, establish benchmarks, monitor delays, and measure procurement performance.

81. The Project will be implemented by the line ministries at entity-level agencies responsible for water management. In FBiH, an assessment of the capacity of the existing PIU within the FBiH Ministry of Agriculture, Water Management and Forestry (FBiH PIU) was conducted, and the assessment concluded that the PIU has little experience in implementing IFI-funded projects. The PIU implemented the EIB-funded WatSan project; however, implementation was also heavily decentralized to participating municipalities. The PIU currently does not have a procurement specialist, and will, therefore, need to hire one as per the terms of reference acceptable to the Bank. In RS, the existing PIU (APCU) within the RS Ministry of Agriculture, Forestry and Water Management will implement the project. The APCU was established a decade ago for the purpose of implementing multiple World Bank-funded projects. The APCU is staffed with three full-time procurement specialists (consultants) who possess experience in implementing the Bank’s procurement procedures (seven projects to date). Both PIUs will be responsible for the fiduciary arrangements, including procurement and will be supported by teams established at the municipal level (PIT). The PITs will prepare the documentation needed



for tendering procedures and submit it to the PIU/APCU. Based on the assessment of the capacity of the FBiH PIU and APCU to carry out and manage procurement, the Bank determined that the overall risk for procurement is “moderate” regarding the RS APCU and “high” regarding the FBiH PIU, bringing the overall procurement risk to “Substantial.” An action plan to build FBiH PIU’s capacity has been drafted. It is recommended that the procurement thresholds for procurement of goods, works, and consultancy contracts are set in accordance with the latest ECA regional thresholds. In addition to the prior review supervision to be carried out by the Bank, it is recommended that one supervision mission per year including a field visit takes place to carry out a post review of procurement actions.

82. Project Procurement Strategies for Development (PPSDs) have been prepared by each PIU, to outline the selection methods to be followed by the Borrowers during Project implementation in the procurement of goods, works, and non-consulting and consulting services financed by the Bank. The entity-specific procurement plans will be updated at least annually or as required to reflect the actual Project implementation needs and improvements in institutional capacity. The identified risks and the mitigation measures are detailed in the PPSDs; Annex 1 of the PAD includes a summary of PPSDs and details on the procurement arrangements and assessments, for each entity. The source of funding (loan or grant) for each specific contract will be defined in the procurement plan.

C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Areas OP 7.60	No

83. As works are envisioned under Component 3 and BiH is within an international river basin, the policy on international waterways is triggered. The following countries were notified on December 14, 2020: Croatia, Serbia, and Montenegro, while information about the notification was also sent to the International Sava River Basin Commission. As of January 14, 2021, which was the deadline set out in the notification letter sent to the riparian countries to respond on the Project, only Croatia has responded expressing no-objection based on the Project’s expected positive impact in its own territory. Other notified countries and the ISRBC have not responded. On January 25, 2021, the Europe and Central Asia Regional Vice President gave clearance to advance with the Project preparation.

D. Environmental and Social

84. **Social assessments.** At this stage specific subprojects have not been identified, hence the Project has developed framework mitigation instruments. The Stakeholder Engagement Plan (SEP) for the Project has identified, as stakeholders, the relevant government and regulatory agencies, potential project beneficiaries, and other interested parties. It has also identified potential vulnerable groups such as the poor who may be impacted by changes in tariff policy and the Roma who may need specific outreach strategies due to their unregulated



status. The SEP also identifies how the different stakeholders will be targeted and when in the project cycle. It considers modified measures during COVID-19 restrictions. The Project has also developed a Resettlement Policy Framework (RPF) in the event that land needs to be acquired and Resettlement Action Plans will be developed prior to any commencement of related civil works. The Project also has Labor Management Procedures for the direct and contracted workers which cover the PIU and its main consultants. If there are community-level works then community workers are also covered. The Environment and Social Framework will serve as a screening tool for all subprojects. From a social perspective, the Environmental and Social Management Framework (ESMF) will focus on screening for land acquisition, labor impacts, as well as specific vulnerable groups with an emphasis on gender. The Project has conducted a gender assessment to identify specific gaps both with regard to service provider organizations (women employees) and also to better target women beneficiaries. The findings will be incorporated in the design of subprojects for all components (infrastructure as well as organization and policy environment). Citizen engagement requirements have also been integrated including a monitorable indicator.

85. **Environmental assessment.** The environmental impacts assessed may include construction-specific impacts such as dust and noise; occupational health and safety (OHS); land use; waste management; potential finds of hazardous materials such as asbestos-cement pipes; chance finds for pipe networks; 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. The construction-related impacts can be readily mitigated through application of site-specific Environmental and Social Management Plans (ESMPs) which shall be developed for each specific site once design documentation is prepared at a stage to allow for meaningful environmental due diligence during project implementation. The ESMPs will be prepared in line with the ESMF prepared for the Project and disclosed on February 11, 2021, both in-country and at the Bank's website, following COVID-19 disclosure and consultation guidelines. The ESMF shall screen out high-risk project activities as ineligible for financing under this Project. The requirement for the development of the site-specific ESMPs along with adequate staffing of the PIUs with respect to environmental and social management is reflected in the Environmental and Social Commitment Plan (ESCP) prepared for the Project and integrated into the Loan Agreement. 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). The Project will tackle a strategic approach to management of sludge (e.g. the Wastewater Sludge Management Strategy) and work with participating local governments on finding solutions for sound sludge management on WWTPs.

86. **Citizen engagement.** Improved citizen engagement (CE) in water sector management through raising and promotion of the water service sector at all levels in BiH will be key for the Project's success. A CE analysis was carried out in five utilities and included interviews and focus group discussions with a heterogenous group of stakeholders.⁵¹ Based on the analysis, the Project will support two key activities to enhance citizen engagement: (i) hold regular consultative meetings; and (ii) enable participatory monitoring through community scorecards. Both are important elements to enable citizens to voice their concerns and to provide feedback to the

⁵¹ A total of 52 people (27 men and 26 women) participated in the discussions, and participants included local government officials, school teachers, health insurance employees, agricultural producers, public company managers and employees, entrepreneurs, elected municipal councillors, public institution managers, social workers, private sector employees, unemployed persons, Roma community representatives, women's organization representatives, and a representative of persons with disability organization.



performance of the services. Since these efforts toward citizen engagement are rooted in the already existent, and evidently well-functioning local communities (MZ), such meetings and community scorecards are likely to be important platforms for citizens to be involved in decision-making and in problem solving efforts. Additionally, and to strengthen institutional-level processes to ensure that the feedback provided by citizens is translated into action, the Project will support the utilization of a customer's orientation index tool that be used to diagnose the WU's capacity to respond to customers and monitor progress over time. Finally, the analysis notes that citizens prefer anonymous forms of registering complaints and that many of the population lack access to the internet; hence, the Project will further promote and advertise the use of mail-in boxes (which exists in some WUs) as an anonymous alternative to register complaints. The following CE indicator has been incorporated as part of the Project's RF: Improved customer satisfaction with WSS service delivery (percentage).

87. **Gender.** Although women have educational parity with men and more women complete tertiary education than men in BiH (59 percent, 2018),⁵² female labor force participation (36 percent, 2018)⁵³ lags far behind male participation rates (59 percent, 2018)⁵⁴ and is not at par with the country's development. Women face unequal opportunities due to social norms concerning the type of work and level of managerial responsibility considered suitable for women. Rapid gender assessments were performed in eight utilities as part of the Project preparation. These included HR questionnaires, desk reviews, in-depth interviews, and focal group discussions with 50 employees (24 men and 26 female) to identify and qualify potential gender gaps in the WSS sector.

88. The results show that women are overall underrepresented in the BiH water sector: of the 676 persons employed in the sample utilities, 153 are female (22.6 percent). The picture is slightly better when looking at the proportion of female licensed engineers and managers, but there are gender gaps in these positions as well: of the 52 licensed engineers, 20 are women (38 percent) and of the 76 managers (including WSS directors), 28 are women (37 percent). Gender occupational segregation is present in the types of the jobs in the utilities, since women are not found among skilled or semi-skilled technical operators in any of the utility. In addition, the top leading positions are occupied by men, and the executive directors of all eight sampled WSS utilities are men.⁵⁵

89. There are also persistent perceptions representing barriers to female attraction to and recruitment in technical sectors. Women are less likely than men to study technical subjects. For example, while more women complete tertiary education than men (59 percent, 2018),⁵⁶ women account for 44.5 percent of graduates in the science, technology, engineering, and mathematics (STEM) fields⁵⁷ and only 38.2 percent of graduates in engineering, manufacturing, and construction.⁵⁸ Water and sanitation utilities have been historically dominated by men and constructed as a predominately masculine domain. Such norms create a widespread perception that

⁵² BiH Statistical Agency, "Women and Men in Bosnia and Herzegovina," 2019, http://bhas.gov.ba/data/Publikacije/Bilteni/2020/FAM_00_2019_TB_0_BS.pdf.

⁵³ UN Women, "Country Gender Equality Profile of Bosnia and Herzegovina," UN Women, 2020.

⁵⁴ Ibid.

⁵⁵ This is similar to what is observed in the rest of the country. In the Association of Water Utilities of Republika Srpska, of 37 water utilities that are members of the Association, 33 have male directors, 1 director is woman, and 3 directors are not named. As for the FBiH Association of Employers of Utilities, this information is not available on their website, but it lists members of the supervisory and managing boards, of whom only one is woman.

⁵⁶ BiH Statistical Agency, "Women and Men."

⁵⁷ World Bank Education Statistics (Edstats) 2018: <https://datatopics.worldbank.org/education/>

⁵⁸ BiH Statistical Agency, "Women and Men."



work in the water sector is more appropriate for men as water and sewer network maintenance requires physical strength. Field-level technical positions are seen as unattractive to women and those girls and women who may consider these occupations often internalize the stereotype and conform to it. Lack of information on employment and career opportunities for women in the water sector prevents women from actively seeking jobs there. The gender assessment shows that women were only 30.7 percent of newly recruited staff in the past 12 months. In terms of career advancement, promotion policy is not part of the internal regulations. Trainings and programs in leadership and communication are not offered. It is not rare that women in the water sector internalize the social norms that assign leadership roles to men, and they often decline opportunities for promotion as they do not feel confident in coordinating men.

90. The Project seeks to inform actions and indicators that are suitable to close and monitor the gender gap in the sector. The proposed Project requires all utilities to develop a Business Plan, which is required to have a gender diagnostic, and include a proposal for HR management and development indicating specific HR measures to enhance gender equality in the workplace, including in technical and management positions, raise awareness and change stereotypes about women's and men's work, including women's technical skills and leadership capacity. The following additional measures are proposed: (i) outreach activities/campaigns to motivate girls and young women to choose technical professions and pursue a career in the water sector, targeting schools and using gender inclusive language and messages and/or be labelled as specifically targeting girls and women; (ii) development of internship programs specifying gender equality among the goals/purposes of the program⁵⁹ and including a mentorship component where senior female employees in managerial positions mentor these interns and other early career female colleagues; (iii) equal participation opportunities for the national training program to ensure that female staff are offered upskilling to advance their careers, with a particular focus on supporting female employees in technical positions and their upward mobility to management roles and including trainings on technical, leadership, negotiation, management, and communication skills;⁶⁰ (iv) provision of training to recruitment committees on implicit gender bias/indirect discrimination and promoting implementation of the legal requirement on gender balanced recruitment committees; (v) sensitization campaigns targeting utility staff and managers to address gender biases or indirect discrimination, and (vi) as part of their BP preparation, WUs establish an employment plan and transparency goals with regards to staff promotion processes and promotion criteria, including promotion to management positions. The proposed indicator to measure progress in gender action is: Share of newly recruited engineers that are female (percentage).

91. **GHG emissions estimates were prepared for three representative investments under Component 3, with an overall net emission estimate of -24,460 tCO₂eq.** The estimation of subcomponents GHG impact was prepared in tCO₂eq by applying with/without project methodology and using the World Bank's Water GP's Greenhouse Gas Accounting Tool for Water Sector Lending (see annex 3 for more details). The GHG emissions were derived from the treatment of the wastewater, which alternatively is being discharged untreated to the Usora River (Tesanj municipality). The net GHG emission reductions from reduced pumping as a result of NRW reduction and lower pumping head loss in the expanded main distribution line (Citluk municipality) are associated

⁵⁹ The program will ensure the usage of gender inclusive language as this is important for raising awareness and setting goals: in BiH languages, gender-sensitive titles and professions are required by law,, but rarely used, which sends a message that women do not occupy such positions. This issue needs to be addressed in coordination with utility associations and educational institutes.

⁶⁰ The trainings will be provided with an eye for ensuring that they are equally accessible to men and women. For example, the trainings will be provided at times and locations conducive to women's participation given that women often juggle work with household responsibilities and have higher time and mobility constraints than men.



with an expected level of 20 percent annual energy savings. GHG emission reductions in the third assessed investment (Doboj municipality) are limited since reductions in NRW will be utilized to fulfill unmet water demands (no net change in electricity consumption). Table 7 summarizes the GHG impact results.

Table 7: GHG Emission Estimates in Representative Municipalities

Municipality	Description	Timeline	Net Emissions Estimate (tCO ₂ -eq)
Tešanj	Wastewater Treatment Project	25 years	+2,778
Čitluk	Water Supply EE and NRW Project	25 years	-27,238
Doboj	Water Supply Capacity and NRW Project	25 years	0
Total			-24,460

Note: EE = energy efficiency; GHG = greenhouse gas; NRW = non-revenue water; tCO₂-eq = tons of carbon dioxide equivalent.

92. **The presented GHG results are from three sample sites that are part of the Project’s larger investment framework, thus higher GHG emission reductions are expected over the Project’s lifetime.** The Project has preidentified at least three other water investments (around €7 million from IBRD) which include efficiency measures (rehabilitation of networks) and that would result in energy savings and net GHG emission reductions that are not presented in table 7. Further efficiency investments will be identified during the first year of Project implementation, representing even greater energy savings and net GHG reductions.

V. GRIEVANCE REDRESS SERVICES

93. Communities and individuals who believe that they are adversely affected by a World Bank–supported project may submit complaints to existing project-level grievance redress mechanisms or the World Bank’s Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project-affected communities and individuals may submit their complaint to the World Bank’s independent Inspection Panel which determines whether harm occurred, or could occur, as a result of World Bank noncompliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank’s attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank’s corporate GRS, please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.



VI. KEY RISKS

94. **Political and governance risks are substantial.** A high-level political commitment to addressing SOE sector reforms and strengthening the sector governance is evidenced by the reform agenda and other strategic documents adopted by relevant authorities in BiH, as well as statements provided by prime ministers. Nevertheless, these commitments are often not translated into actions. BiH complex political structure and political instability reflected in frequent rotations of governments and senior officials in key ministries may threaten effective project implementation. Weak interests of many political elites to bring about change remains an overarching constraint which can derail or block reforms. The Bank will mitigate these risks by using its convening power and working closely with other development partners to ensure political support and facilitate engagement with counterparts. Governance risks stem from the country's decentralized and highly fragmented governance structure. These risks are reflected in poor horizontal and vertical coordination, unclear institutional roles and responsibilities (for example, between municipal administrations and water utilities), as well as poor institutional capacities. These risks tend to be further amplified by restrictions caused by the COVID-19 crisis. The Bank will mitigate these by supporting actions to clarify institutional roles and responsibilities and by working closely with the PIUs to monitor progress and advice on implementation, including through transfer of know-how and best practices.

95. **Fiduciary risk is rated substantial.** The following risks have been identified: (i) there is a complex governance structure for the Project involving various levels of the government and numerous utilities which could participate in the project; and (ii) it is not clear who will be in charge of the financial management arrangements (staffing, budgeting, reporting, etc.). The overall FM risk rating was assessed as substantial before the application of the mitigation measures. After the application of the FM risk mitigation measures, the risk had been assessed as moderate. Some of the mitigation measures will include use of experienced staffing arrangements, acceptable internal controls system, adequate planning and budgeting, as well as reporting and auditing arrangements, updating of the FM sections for the POM, etc., whereby some actions are expected to be met after project negotiations but before Project effectiveness. Procurement risk is rated substantial, as discussed in Section IV B. To mitigate the risks identified earlier, the PIU/APCU may be supported by individual consultants, as necessary, who will provide technical and fiduciary (procurement and FM) support. Trainings will be organized for PIU and APCU staff regarding World Bank Regulations, contract management, and the use of STEP. APCU shall ensure to retain current procurement specialists, while FBIH PIU will need to hire an experienced full-time procurement specialist. The World Bank Procurement Specialist will perform a yearly post-review, and will also provide ad hoc informal reviews upon PIU's request. After the application of the risk mitigation measures, procurement risk remains substantial.

96. **Environment and social risk are rated substantial.** This is due to the potential nature of the subprojects, including potential needs for resettlement, and the stakeholder complexity and significant impact on the policy and institutional environment. Investments may include construction and reconstruction of water supply and wastewater collection and treatment networks. The environmental impacts assessed may include construction-specific impacts such as dust and noise, OHS, land use, waste management, potential finds of hazardous materials such as asbestos-cement pipes, chance finds for pipe networks, 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. The construction-related impacts can be readily mitigated through application of site-specific ESMPs which shall be developed for each specific site once design documentation is prepared at a stage to allow for meaningful environmental due diligence, during project implementation.

97. **Stakeholder risk is rated substantial.** A successful implementation of the WSS modernization will require a high level of consensus within the different levels of governances in BiH but also among other development partners. It will be important to agree on certain reforms, and a high level of agreements between the different line ministries on a number of commitments from all sides. Coordination mechanisms, such as the Donors' Roundtable for the Water Sector—a mechanism by which the main development partners in the sector meet and exchange regularly on their activities—will be used as much as possible. Furthermore, it is expected that some policies proposed would influence tariff increases which might be controversial with some segment of the population. Furthermore, possible restructuring of the public utilities (to reflect overstaffing and increasing efficiency of service delivery) might be controversial as well. In that regard, communication and public conversation will be set as a mitigation measure.



VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Bosnia and Herzegovina

BiH Water and Sanitation Services Modernization Project

Project Development Objectives(s)

The Project development objective is to support Bosnia and Herzegovina to (i) strengthen the institutional capacity at the Republika Srpska (RS), Federation of Bosnia and Herzegovina (FBiH), and local level for improved WSS service delivery, (ii) improve access to safely managed WSS services, and (iii) improve the efficiency of WSS service providers in participating local governments.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
Strengthen the institutional capacity at Entity and Local level for improved WSS service delivery								
Sector financing frameworks/policies drafted and submitted for approval (Yes/No)		No	No	No	Yes	Yes	Yes	Yes
Number of WUs utilizing the newly established WSS benchmarking system (Number)		0.00	0.00	5.00	10.00	25.00	35.00	40.00
Improving access to safely managed WSS services								
People provided with access to safely managed water services (Number)		0.00	0.00	30,000.00	60,000.00	90,000.00	120,000.00	165,000.00
Female beneficiaries		0.00	0.00	15,000.00	30,000.00	45,000.00	60,000.00	82,500.00



Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
with access to safely managed water services (Number)								
People provided with access to safely managed sanitation services (Number)		0.00	0.00	0.00	0.00	35,000.00	35,000.00	35,000.00
Female beneficiaries with access to safely managed sanitation services (Number)		0.00	0.00	0.00	0.00	17,500.00	17,500.00	17,500.00
Improve the efficiency of WSS service providers in participating local governments								
Percentage of participating utilities achieving the agreed threshold score for key efficiency performance indicators as agreed in their utility operational manual. (Percentage)		0.00	0.00	0.00	30.00	50.00	70.00	70.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
Comp. 1: Improving the institutional capacity for sector modernization								
Benchmarking system established (Yes/No)		No	No	Yes	Yes	Yes	Yes	Yes



Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
Capacity building program launched (Yes/No)		No	No	Yes	Yes	Yes	Yes	Yes
Comp. 2: Supporting improved governance and capacity of the water services at the local level								
Number of new service agreements between LGs and WUs developed and signed (Number)		0.00	0.00	3.00	6.00	12.00	15.00	15.00
Water utilities that have prepared new or have updated business plans (Number)		0.00	0.00	3.00	6.00	9.00	12.00	15.00
Number of water utility staff participating in capacity building programs (Number)		0.00	0.00	50.00	100.00	150.00	200.00	200.00
Number of female professionals participating in capacity building programs (Number)		0.00	0.00	10.00	30.00	50.00	70.00	70.00
Comp. 3: Improving access to safely managed WSS services and the efficiency of WSS service provid								
Percentage of utilities achieving the agreed threshold score for their operational key performance indicators as agreed in the utility operational plan (Percentage)		0.00	0.00	0.00	30.00	50.00	70.00	70.00
Improved customer satisfaction with WSS service delivery		0.00						5.00



Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
(Percentage)								
Share of newly recruited engineers that are female (Percentage)		0.00	45.00	45.00	45.00	45.00		45.00
Reduced energy consumption of the operated water supply system (as a result of rehabilitation) (Percentage)		0.00	0.00	0.00	5.00	10.00	15.00	15.00

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Sector financing frameworks/policies drafted and submitted for approval	This indicator is refers to the development of the sector financing framework. The indicator target is reached once the framework or policy is sent for approval.	Semi-annually	Progress reports	Evidence that the sector financing mechanism has been prepared and has been sent for approval.	APCU and PIU
Number of WUs utilizing the newly established WSS benchmarking system	This indicator refers to the institutionalization of the project supported benchmarking system as a tool for monitoring WUs performance in the Country.	Semi-annually	Progress reports	Benchmarking reports prepared by participating utilities	APCU and PIU



People provided with access to safely managed water services	Access to safely managed water services is defined as access to improved source located on premises, available when needed, and free from microbiological and priority chemical contamination, as defined by the Joint Monitoring Program. Final target may be adjusted during the first year of implementation based on the final selection of project investments responding to the demand-driven nature of the project. It includes the population benefitting from new or rehabilitated water connections, including improved quality and reliability of water supply.	Semi-annually	Progress reports	Aggregated number of beneficiaries of the financed water sub-projects in participating municipalities.	APCU and PIU in coordination with WUs
Female beneficiaries with access to safely managed water services	Number of beneficiaries that are female. Access to safely managed water services is defined as access to improved source located on premises, available when needed, and free from microbiological and priority chemical contamination, as defined by the Joint	Semi-annually	Progress reports	Based on census data - following gender disaggregation in the general population. Aggregated number of female beneficiaries of the financed water sub-projects in participating municipalities.	APCU and PIU in coordination with WUs



	<p>Monitoring Program. Final target may be adjusted during the first year of implementation based on the final selection of project investments responding to the demand-driven nature of the project. It includes the population benefitting from new or rehabilitated water connections, including improvements in water quality and reliability of water supply.</p>				
<p>People provided with access to safely managed sanitation services</p>	<p>Safely managed sanitation services are defined as having access to a private improved facility where faecal wastes are safely disposed on site or transported and treated off-site; plus a handwashing facility with soap and water, as defined by the Joint Monitoring Program. Final target may be adjusted during the first year of implementation based on the final selection of project investments responding to the demand-driven nature of the project. It includes</p>	<p>Semi-annually</p>	<p>Progress reports</p>	<p>Aggregated number of beneficiaries of the financed wastewater sub-projects in targeted municipalities.</p>	<p>APCU and PIU in coordination with WUs</p>



	the population benefitting from new sewer systems connected to an existing WWTP or newly constructed WWTP under the Project.				
Female beneficiaries with access to safely managed sanitation services	Number of beneficiaries that are female. Safely managed sanitation services are defined as having access to a private improved facility where faecal wastes are safely disposed on site or transported and treated off-site; plus a handwashing facility with soap and water, as defined by the Joint Monitoring Program. Final target may be adjusted during the first year of implementation based on the final selection of project investments responding to the demand-driven nature of the project. It includes the population benefitting from new sewer systems connected to an existing WWTP or newly constructed WWTP under the Project.	Semi-annually	Progress reports	Based on census data - following gender disaggregation in the general population. Aggregated number of female beneficiaries of the financed wastewater sub-projects in targeted municipalities.	APCU and PIU in coordination with WUs
Percentage of participating utilities achieving the agreed threshold score for key efficiency performance indicators as	When preparing their service agreements and business plans, each utility	Semi-annually	Progress reports	Key performance indicators reported by WUs	APCU and PIU in coordination with WUs and Intersectoral



agreed in their utility operational manual.	will chose a number of key efficiency indicators. The agreed threshold is what is agreed with each LG and WU in their operational manual.				Working Groups
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Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Benchmarking system established	Establishment of the benchmarking system and definition of indicators to be reported.	Semi-annually	Progress reports	Evidence of benchmarking system set-up	APCU and PIU
Capacity building program launched	Capacity building program on various operational, commercial and managerial courses established and launched.	Semi-annually	Progress reports	Evidence of capacity building launched.	APCU and PIU
Number of new service agreements between LGs and WUs developed and signed	Number of new service agreements between LGs and WUs developed and signed as supported by the project.	Semi-annually	Progress reports	Signed Public Service Agreements	APCU and PIU in coordination with LGs
Water utilities that have prepared new or have updated business plans	Water utilities that have prepared new or have updated business plans	Semi-annually	Progress reports	Evidence of new business plans prepared or updated	APCU and PIU in coordination with WUs
Number of water utility staff participating in capacity building programs	Number of water utility staff participating in capacity	Semi-annually	Progress reports	Participant lists	APCU and PIU



	building programs				
Number of female professionals participating in capacity building programs	Breakdown of professionals participating in capacity building programs by gender. Targets based on current proportion of female staff in the WUs.	Semi-annually	Progress reports	Participant lists	APCU and PIU
Percentage of utilities achieving the agreed threshold score for their operational key performance indicators as agreed in the utility operational plan	WUs based on reaching agreed targets for increased revenues, evidenced improvement is cost recovery, NRW, Energy efficiency, access, etc. This will be redefined in the first year of implementation	Semi-annually	Progress reports	Performance indicators reported by the water utilities.	APCU and PIU in coordination with WUs
Improved customer satisfaction with WSS service delivery	Based on survey performed during the first year of project implementation and on the last year of implementation. It measures the percentage change in satisfaction with WSS services in the participating municipalities.	Twice - first year of implementation and after project implementation	Progress reports	Customer satisfaction surveys	APCU and PIU
Share of newly recruited engineers that are female	Share of newly recruited engineers that are female in utilities supported by the project and implementing gender related actions to address gender related gaps. The final target may	Semi-annually	Progress reports	HR records	APCU and PIU



	be revised during the first year of implementation as more utilities are selected. Current target based on proportion of share of graduates in STEM fields that are female.				
Reduced energy consumption of the operated water supply system (as a result of rehabilitation)	Reduced energy consumption of the operated water supply system, as a result of rehabilitation and other energy efficiency measures supported under the project. The end target will be determined once all investments are selected in the first year of implementation.	Semi-annually	Progress reports	Energy consumption indicators as reported by the utilities.	APCU and PIU in coordination with the WUs.



ANNEX 1: Implementation Arrangements and Support Plan

COUNTRY: Bosnia and Herzegovina BiH Water and Sanitation Services Modernization Project

Implementation Arrangements

- 1. Implementation of the Project will be undertaken by project implementation units within line ministries of each entity.** In the Federation of Bosnia and Herzegovina (FBiH), the existing Project Implementation Unit (PIU) for implementation of the Water and Sanitation Projects within FBiH's Ministry of Agriculture, Water Management, and Forestry will be responsible for implementation of the activities in FBiH. Water agencies for Sava and the Adriatic basin will provide technical support. Based on the assessments done, the PIU will be strengthened with additional experts (procurement specialist, financial specialist, monitoring and evaluation specialist, environmental and social specialist, and engineer/technical support). In Republika Srpska (RS), the existing PIU (Agriculture Project Coordination Unit, APCU) within the Ministry of Agriculture, Forestry, and Water Management will implement the project, and technical support will be provided by the public institution, Vode Republike Srpske. Based on an assessment of the APCU, they have the capacity to implement the Project but further strengthening is proposed (particularly on environmental and social safeguards, monitoring and evaluation, and engineering/technical support). A technical assistance consulting firm will be hired by both PIUs to provide ad hoc support as needed for overall project implementation, as well as technical support both in RS and FBiH.
- 2.** Each PIU will be responsible for the implementation of the assigned entity project activities, carrying out procurement and supervision/monitoring of contracts, maintaining effective internal control procedures, accounting for expenditures in their existing budgetary accounting systems, receiving funds, making payments, and providing the documentation and information related to the use of the loan/grant proceeds, statement of expenditures (SOE) documentation of the eligible expenditures, and Project reporting and monitoring.
- 3. In each participating municipality, a project implementation team (PIT) will be established which should consist of representatives from the local government (LG) and water utility company (WU).** The PIT will prepare the documentation needed for tendering procedures and submit it to the PIU/APCU. Also, the PIT will carry out daily coordination of the activities and regularly report to the PIU/APCU. The PIU/APCU will organize the needed training for PIT staff in order to strengthen capacities at the local level (including trainings on procurement, financial management and disbursement, financial reporting, monitoring and evaluation, and environmental and social safeguards). Details on relations among the PIU/APCU and PIT will be defined in the Project Operational Manual (POM). The loan provided by the World Bank will be on-lent to the municipalities even though implementation for their benefit will be carried out by the PIU.
- 4. The FBiH PIU and the RS APCU will have a clear mandate to coordinate with the Entity Intersectoral Working Groups for transfer of know-how to the institution upon the end of the Project.** Coordination and consultation between the different levels of government and the public utility companies, as well as outreach and



consultation with citizens will be important for the success of the reform.⁶¹ . Figures A2.1 and A2.2 show the tentative structure of the RS Intersectoral Working Group and its relationship with the APCU, and of the FBiH Intersectoral Working Group and its relationship with the PIU.

5. **Some of the functions envisaged for the established Entity Intersectoral Working Groups will include the coordination and preparation of a detailed Water Sector Modernization Concept of the institutional and regulatory framework, which should be agreed among the relevant institutions and ultimately adopted at the entity level.** The concept to be proposed should prioritize certain activities to be implemented in the short term (i.e., adoption of guidance on tariff methodology, establishing regulatory bodies' guidance on development and adoption of the Public Service Agreement [PSA] model, setting utility performance indicator monitoring/benchmarking system at the entity level and verification protocols, etc.). Technical assistance in this matter would be provided by the United Nations Development Programme (UNDP) under Phase II of the Municipal Environmental and Economic Governance Project (MEG II) and by this World Bank Project. Entity Intersectoral Working Groups will coordinate activities with the development partners and ensure that the planned technical assistance will result in an improved institutional and regulatory framework (IPA⁶² 2018, 2020, MEG II, etc.).⁶³ The Project will provide financial support for operation of the PIU and technical backstopping for Entity Intersectoral Working Groups.

⁶¹ Those working groups are in the process of being established at the Entity level and will consist of the representatives of relevant entity ministries, professional associations (WUs and LGs), and water agencies. Each of the two entities would establish its own working group with individually assigned features and participation of the relevant institutions in each entity.

⁶² EU's Instrument for Pre-accession Assistance.

⁶³ Basically, this means to proceed with harmonization of existing legislation on the entity level and propose a new legislative framework. Essentially, the new framework would include requests for signing PSAs with key performance indicators (KPIs), establishing tariff methodology, establishing of benchmarking systems, setting regulatory/validation modalities, and setting sector financing models.



Figure A1.1: Implementing Arrangement in RS

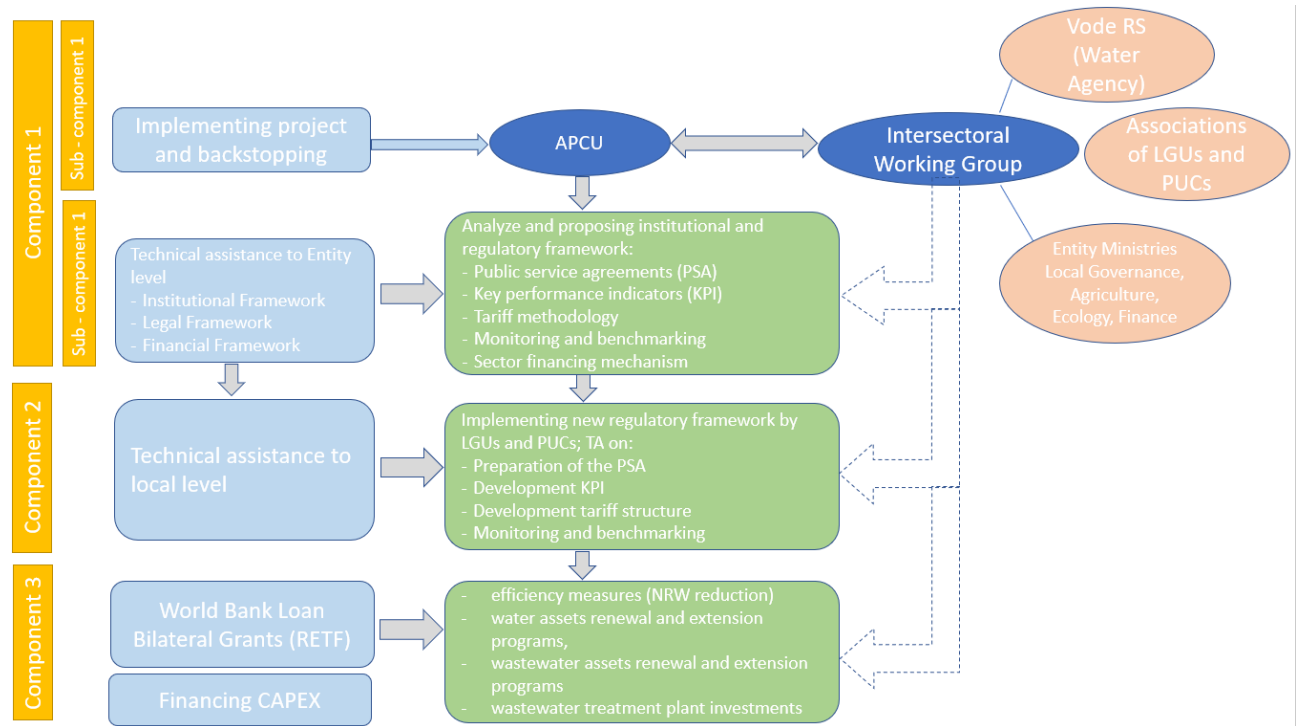
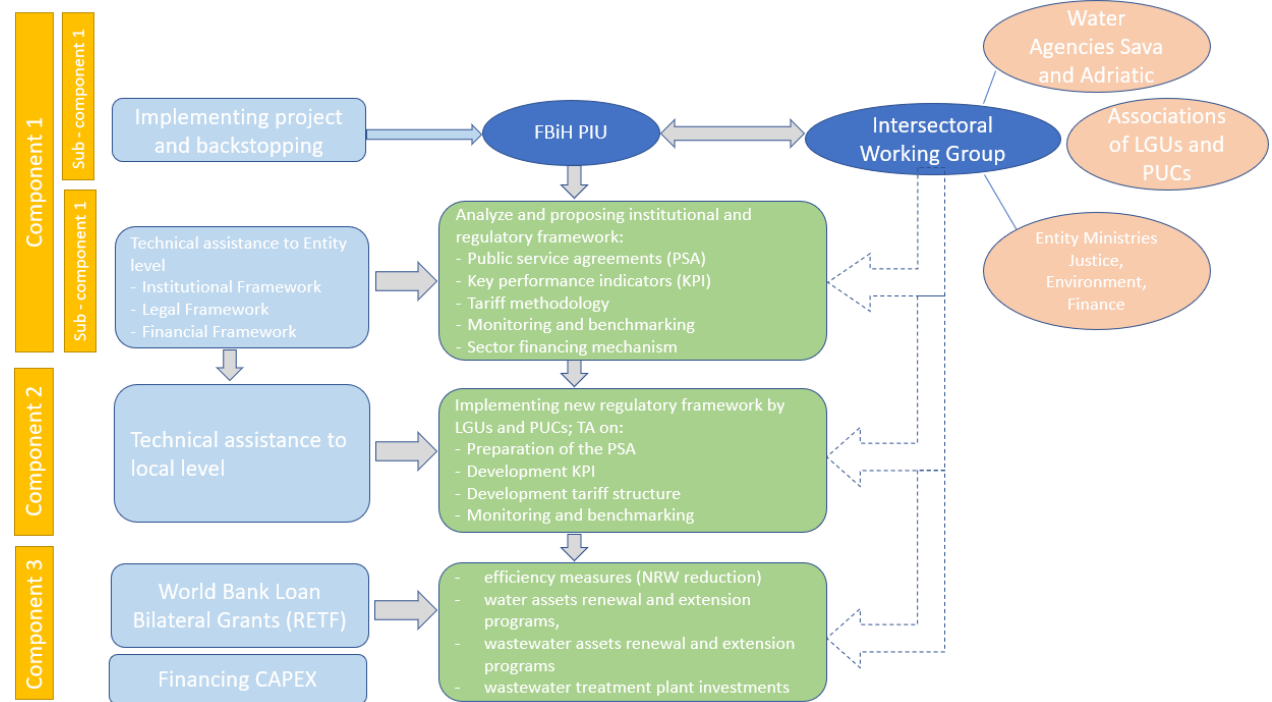


Figure A1.2: Implementing Arrangements in FBiH





Financial Management

Planning and Budgeting

6. In the PIU, there are adequate planning arrangements, and it is done for each project. Actual versus planned data are compared and any variances are explained.

7. The APCU prepares annual plans based on detailed procurement planning. Existing financial management (FM) staff in the APCU have adequate capacity for planning and budgeting in terms of human resources, availability of quality information, and information technology (IT) systems. The PIU and APCU prepare budgets for all Project components for each entity separately. The budgets are entered in the accounting software and actual versus planned information is analyzed and explained. Budgeting and accounting in both the PIU and APCU are appropriate.

8. **Accounting policies and procedures.** The APCU has an acceptable project accounting software for Project implementation arrangements. The software has the necessary features to produce the required reports and maintain a trail of transactions in a verifiable manner. The PIU has an obligation to acquire a project software in order to be able to maintain project accounting; this is set as an effectiveness condition. The PIU and APCU will maintain Project accounts and will ensure appropriate accounting of the funds provided.

9. Additional accounting policies applied to the Project adhere to the following principles: (i) cash accounting as the basis for recording transactions, (ii) reporting in the currency of the loan, and (iii) quarterly interim financial reports (IFRs) prepared.

10. **Staffing.** The APCU has a fully functional accounting and finance department. The APCU has experience in implementing several World Bank–funded projects such as the Irrigation Development Project (Project P115954) and the Drina Flood Protection Project (P143844). The PIU has one FM person but such a person has no capacity to cover an additional project. Therefore, the PIU will need to hire at least one person to cover the Project-related FM aspects. Such a hire by the PIU is considered an effectiveness condition. The PIU has no prior experience in implementing World Bank–funded projects but it has implemented projects funded through: the European Investment Bank; the Swedish International Development Cooperation Agency grant; a UNDP grant; IPA grants in 2008, 2009, and 2018; the Western Balkans Investment Framework (WBIF) grant, and other projects co-financed by municipalities, cantons, and the Environmental Protection Fund.

11. **Financial Management Manual.** The APCU has an acceptable financial management manual (FMM) for the World Bank–funded projects which need to be updated for the purpose of this project. The manuals contain details about the accounting procedures applicable, internal key controls performed (i.e., reconciliations, authorizing procedures), budgeting, fixed assets records, and details pertaining to the accounting software (i.e., backup procedures, restricted access, transaction recording). The FMMs are being updated regularly.

12. **Back up.** In the PIU, backup of project accounting data is done on a weekly basis. Data is saved on server and external memory. On a quarterly basis, data are also stored in the Federal Ministry of Finance (FMF) database called the PIMIS (Public Investment Management System). In the APCU the backup is done on the APCU server on a daily basis. In addition to the backup saved on the server, the RS APCU should make regular backups on compact discs (CDs) or Universal Serial Bus (USB) drives.



13. **Internal controls and internal audit.** The PIU and APCU will maintain adequate internal controls for the project, including regular reconciliation of bank accounts, adequate segregation of duties, proper accounting policies and procedures, and monthly reconciliation of disbursement summaries with accounting records. Designated accounts' (DA) reconciliation statements, client connection figures will be reconciled monthly with the accounting records. IFRs would be reconciled on a regular basis with the accounting data. The IFRs will be reconciled on a regular basis with the trial balance out of which they are prepared, including the relevant bank statements. Evidence of the reconciliation made will be kept in project records. The PIU and APCU will maintain, print, and store all backup documentation (trial balance, bank statements, journal entries, etc.) for the quarterly IFRs in a file. Further details on the internal controls will be contained in the FM manuals.
14. Internal audit departments are existent in both ministries; however, both are in an early stage of development and thus no reliance on their work would be placed.
15. **FM reporting and monitoring arrangements.** The PIU and APCU shall prepare and furnish to the Bank, not later than forty-five (45) days after the end of each calendar quarter, IFRs for the Project covering the quarter, in form and substance satisfactory to the Bank. The IFRs will include sources and uses of funds, uses of funds by project activity, a statement of financial position, and the DA reconciliation statement. The formats of the IFRs have been agreed and confirmed.
16. **External Audit.** The PIU and APCU will be responsible for the timely compilation of annual project financial statements for the independent external audit. Project financial statements (including SOE and DA activities) will be audited by an independent auditor acceptable to the World Bank and contracted by the Ministry of Finance and Treasury of BiH. Each audit of financial statements will cover one fiscal year of the borrower, commencing with the fiscal year in which the first withdrawal is made under the loan. In addition, the auditors are expected to deliver management recommendation letters in relation to the project, identifying any internal control deficiencies and accounting issues. The audit reports, audited financial statements, and management recommendation letters, will be delivered to the World Bank within six months after the end of each fiscal year. The Project's audited financial statements will be made publicly available in a timely fashion, and in a manner acceptable to the World Bank. There are no overdue reports for the World Bank-funded projects for the year ended December 31, 2019.
17. **Co-financing.** The Project will be financed by a US\$60.9 million IBRD loan complemented by a US\$7 million SECO grant administered by the World Bank. The co-financing will be channeled on a parallel basis whereby each contract will be assigned to one source of funding in the procurement plan (refer to Table A2.3). The PIU and APCU will ensure payments are made in line with the Procurement Plan. In no case shall a contract financed under IBRD be financed by SECO. Adequate internal controls will be set up to adequately ensure a financing source is consistently identified for each contract in the Procurement Plan and payments are made accordingly.
18. **Disbursements and flow of funds.** Four separate DAs will be opened by the Ministry of Finance and Treasury of BiH: two DAs for the Republika Srpska APCU (IBRD and SECO), and two DAs for the FBiH PIU (IBRD and SECO). The IBRD DAs will be denominated in the currency of the loan as selected by the borrower (euro) and the Das opened for the SECO grant will be in USD. The disbursement methods made available are direct payments, reimbursements, and advances. The ceiling and minimum amount for direct payments will be defined in detail in the Disbursement and Financial Information Letter. The expenses will be documented using SOE only, or invoices



in case of direct payments. Withdrawal applications for the replenishments of the DAs will be sent to the Bank on a quarterly basis.

19. Supporting documents for SOEs, including completion reports and certificates, will be retained by the PIU and APCU and made available to the Bank during project supervision. The funds will flow from the DAs directly to the PIT’s suppliers, or if direct payments are used, directly from the loan account to the PIT’s suppliers.

20. **Disbursement allocations.** The amount of €51.5 million will be allocated to the FBiH (€25 million) and RS (€26.5 million) as indicated in table A2.1. The table sets forth the eligible expenditures to be financed out of the proceeds of the loan, the allocation of the amounts of the loan to each category, and the percentage of eligible expenditure to be financed for each category.

Table A2.1: Disbursement Allocations

LOAN

Category	Amount of the Loan Allocated (expressed in EUR)	Percentage of Expenditures to be financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consulting services, Training and Operating Costs for the Project (except for Part A.1(b) of the Project).	23,626,500	100%
(2) Goods, works, non-consulting services, consulting services, Training and Operating Costs for Part A.1(b) of the Project).	1,311,000	100%
(3) Goods, non-consulting services, services, Training and Operating Costs for the Project under Part B.3	23,933,750	100%
(4) Goods, works, non-consulting services, consulting services, Training and Operating Costs for Part B.1 of the Project.	2,500,000	100%
[(5)] Front-end Fee	128,750	Amount payable pursuant to Section 2.03 of this Agreement in accordance with Section 2.07 (b) of the General Conditions
[(6)] Interest Rate Cap or Interest Rate Collar premium	0	Amount due pursuant to Section 4.05 (c) of the General Conditions
TOTAL AMOUNT	51,500,000	

GRANT

Category	Amount of the Grant Allocated (expressed in USD)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consulting services, Training and Operating Costs for the Project	1,150,000	100%



(except for Parts A.1(b) of the Project).		
(2) Goods, works, non-consulting services, consulting services, Training and Operating Costs Training and Operating Costs for the Project (except for Part B.1(b) of the Project	1,150,000	100%
TOTAL AMOUNT	2,300,000	

21. **Financial management action plan, conditions, and covenants.** The PIU and APCU will continue to maintain a project FM system acceptable to the Bank. The project financial statements will be audited by independent auditors acceptable to the Bank and on terms of reference acceptable to the Bank. The annual audited statements and audit report will be provided to the Bank within six months of the end of each fiscal year. Quarterly IFRs will be forwarded to the Bank no later than 45 days after the end of each quarter.

22. There is an action plan with dated actions and dated covenants as follows:

Table A2.2: Actions and covenants

Action	Deadline	Responsibility
(i) Hiring FM manager in the FBiH PIU	Effectiveness condition	PIU
(ii) PIU acquiring project accounting software	Dated action, not later than 3 months after effectiveness	PIU
(iii) Preparing FM sections of the POM	Dated action, not later than 3 months after effectiveness	PIU and APCU
(iv) APCU to maintain the project accounting software license for the new project	Project implementation	APCU

Note: APCU = Agriculture Project Coordination Unit; FBiH = Federation of Bosnia and Herzegovina; FM = financial management; PIU = Project Implementation Unit; POM = Project Operational Manual; RS = Republika Srpska.

23. **Use of BiH systems.** No specific country systems are available for this project. Sa far available BiH systems will be considered for application in this project.

24. **Contract management.** In the PIU and APCU there will be a technical and financial database established for all project contracts. The technical database is updated by procurement staff on a regular basis. Such database has all information on contracts, any annexes which were concluded as well as any payments made. The FM managers have an overview over the payments and can easily control and prevent any overpayments.

25. **Supervision plan.** As part of its project supervision, the Bank will conduct risk-based FM supervisions, at appropriate intervals, in the following ways: (i) review the project’s quarterly financial reports, the project’s annual audited financial statements, the auditor’s management letter, and remedial actions, if any; and (ii) during the



Bank's on-site supervision missions, review the following key areas (a) project accounting and internal control systems; (b) budgeting and financial planning arrangements; (c) disbursement management and financial flows, including counterpart funds, as applicable; and (d) any incidences of corrupt practices involving project resources.

Procurement

Project Procurement Strategy Document

26. Project Procurement Strategies for Development (PPSDs) have been prepared by each entity, to outline the selection methods to be followed during project implementation in the procurement of goods, works, and non-consulting and consulting services financed by the Bank. The underlying procurement plan for each entity will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. The identified risks and the mitigation measures are detailed in the PPSDs.

27. Procurement under the project will be subject to the World Bank's Procurement Framework. All procurement will be conducted through the procedures as specified in the World Bank's Procurement Regulations for Investment Project Financing (IPF) Borrowers: Procurement in Investment Project Financing Goods, Works, Non-Consulting, and Consulting Services, July 2016 (revised November 2017 and August 2018) (Procurement Regulations). The project will also be subject to the World Bank's Anticorruption Guidelines, dated July 1, 2016.

28. The PIUs in each entity will use the Systematic Tracking of Exchanges in Procurement (STEP) system. STEP is a planning and tracking system which would provide data on procurement activities, establish benchmarks, monitor delays, and measure procurement performance. Based on procurement capacity assessment conducted for the PIUs in charge of project implementation in respective entities, it was determined that the procurement risk is "Substantial."

29. The Project will be implemented by the ministries and/or Entity/implementing agencies responsible for water management. Where applicable, PIUs shall comprise of at least the following key staff: a PIU head, a FM specialist, and a procurement specialist and will be complemented by technical staff from the ministries.

30. Where applicable, the PIUs will also ensure coordination with relevant Entity ministries and/or agencies, municipalities, and other beneficiaries of the Project's support. The PIUs will also be responsible for ensuring coordination between all project stakeholders, development of training programs and workshops, regular communication with other donors (if any) ensuring that World Bank procedures are followed according to the World Bank policies and the Project Loan Agreement and Disbursement Letter, and day-to-day communication with the Bank related to fiduciary issues on the Project. The Project will finance hiring of consultants for the PIUs and will also cover incremental operating costs, including office supplies, reasonable commercial banking charges and fees, vehicle operation and maintenance (O&M), communication and insurance costs, O&M of office equipment, administration costs, utilities, travel, per diem, and remuneration of locally contracted employees (but excluding the salaries of the Borrower's civil service's officials), and other related expenditures as may be agreed upon by the World Bank, none of which would have been incurred in the absence of the Project.

31. Regarding implementation arrangements: (i) In FBiH, the existing PIU within the Ministry of Agriculture, Water Management and Forestry (FBiH PIU) will be in charge of fiduciary arrangements for part of the Project implemented in the FBiH, while for (ii) Republika Srpska, the existing PIU (APCU) established within the Ministry



of Agriculture, Forestry and Water Management will be in charge of fiduciary arrangements for part of the Project implemented in Republika Srpska. While the APCU possesses more than 10 years of experience in implementing World Bank–financed projects and is sufficiently staffed with procurement professionals, the FBiH PIU lacks experience in World Bank–financed projects and will need to receive extensive training on the Bank’s Procurement Regulations. In addition, the FBiH PIU shall employ a full-time individual consultant to serve as procurement specialist, with a suitable educational background and experience in international procurement, familiar with the World Bank procurement procedures (Regulations) as a condition for effectiveness of the loan, following terms of reference acceptable to the Bank.

Procurement Arrangements

Procurement of Works

32. Works eligible under the Project will be procured under open procedure, both national and international, using procedures and methods (request for bids) specified in more detail in the procurement plan, depending on their estimated cost value. The threshold for prior review and procurement methods are set forth in the PPSDs.

Procurement of Consulting Services

33. Consulting services under the project are of varying size and complexity. Selection of consulting firms will be done using the World Bank standard procurement documents, such as request for proposals. The employment of an individual expert will be conducted through the selection of independent consultants in accordance with the Procurement Regulations. In case the service is required from a consultancy firm, the Quality- and Cost-Based Selection (QCBS) method will be applied and other methods such as Least-Cost Selection (LCS), Fixed Budget Selection (FBS), or Quality-Based Selection (QBS) may also be used following provisions of the Procurement Regulations. For contracts below US\$300,000 equivalent, the Selection Based on Consultants’ Qualification (CQS) method may be used.

Procurement of Goods and Non-consulting Services

34. Goods may be procured using procedures and methods (request for bids, request for quotations, and direct selection) specified in more detail in the Procurement Plan. For the procurement of those contracts for goods, and non-consulting services not financed in whole or in part by the World Bank loan but included in the project scope of the Loan Agreement, the borrowers may adopt other rules and procedures. In such cases, the World Bank shall be satisfied that the procedures to be used will fulfill the borrower’s obligations to cause the project to be carried out diligently and efficiently, and that the goods, works, and non-consulting services procured (i) are of satisfactory quality and are compatible with the balance of the project, (ii) will be delivered or completed on time, and (iii) are priced so as not to adversely affect the economic and financial viability of the Project.

General Procurement Notice



35. The General Procurement Notice will be prepared and submitted to the World Bank before effectiveness. The World Bank will arrange for its publication in United Nations Development Business online and on the World Bank’s external website. The General Procurement Notice will contain information concerning the borrowers; amount and purpose of the loan; scope of procurement reflecting the Procurement Plan; the name, telephone (or fax) number, and address(es) of the borrower’s agencies responsible for procurement; and the address of a widely used electronic portal with free national and international access or website where the subsequent Specific Procurement Notices will be posted. The General Procurement Notice will be published tentatively in mid-2022 providing information on the scope of major procurements for the Project and soliciting expressions of interest from prospective bidders and/or consultants for this Project.

Procurement Plan

36. The entities have developed their respective initial Procurement Plans for the entire project consistent with the implementation plan, which provide information on the procurement of packages, potential selection processes with methods, and the World Bank review requirements. Since this will cover the entire project completion period, it will be tentative. The Procurement Plan(s) will be updated in agreement with the World Bank project team at least annually or as required to reflect the actual project implementation needs and improvements in the PIU’s institutional capacity. The recommended Procurement Plan(s) for the project is given in table A2.3.

Procurement Supervision

37. Routine procurement reviews and supervision will be conducted by the Accredited Procurement Specialist. In addition, one supervision visit is expected to take place per year when ex post reviews will be conducted. Procurement documents will be kept readily available for the World Bank’s ex post review during supervision missions or at any other point in time. A post-review report will be prepared annually and shared with the PIUs.

Table A2.3: Potential Procurement Packages

Item	Description	Type	Cost Estimate (\$ thousand)	Selection Method	Review	Planned Date (Tender Launch)	Implementing Agency	Source of Funding
Component 1: Improving the institutional capacity for sector modernization								
Subcomponent 1.1: Support for water supply and sewerage sector reforms on entity level								
1.1.1	Strengthen policy and regulatory frameworks	CS	700	CQS	Post	tbd	PIU and APCU	SECO
1.1.2	Institutional capacity to advance sector reform and promote sustainable service delivery	CS		CQS	Post	tbd	PIU and APCU	SECO
1.1.3	TA (i) development of a WSS sector financing mechanism; (ii) institutionalization of a utility benchmarking system; (iii) development of a rural WSS	CS		QCBS	Prior	tbd	PIU and APCU	SECO



Item	Description	Type	Cost Estimate (\$ thousand)	Selection Method	Review	Planned Date (Tender Launch)	Implementing Agency	Source of Funding
	data base; (iv) launch of a national capacity-building program for the professionalization of the sector							
Subcomponent 1.2: Project management and coordination of the sector reforms								
1.2.1	PIU and APCU staff	CS	4,500	IC	Post	tbd	PIU and APCU	IBRD
1.2.2	Audits	CS		LCS	Post	tbd	PIU and APCU	IBRD
1.2.3	Training	CS		n.a.	n.a.	tbd	PIU and APCU	IBRD
1.2.4	Project costs	CS		n.a.	n.a.	tbd	PIU and APCU	IBRD
1.2.5	Operating costs	OC		n.a.	n.a.	tbd	PIU and APCU	IBRD
Component 2: Supporting improved governance and capacity of the water services sector at the local level								
2.1	Strengthening the municipal WSS service delivery framework	CS	2,700		Post	tbd	PIU and APCU	SECO
2.2	Support institutional strengthening and capacity-building activities at the municipal level	CS			Post	tbd	PIU and APCU	SECO
2.3	Preparation of water utility business plans	CS			Post	tbd	PIU and APCU	SECO
2.4	Development and signing of Public Service Agreements between the municipality and the water utilities	CS			Post	tbd	PIU and APCU	SECO
2.5	Preparation of tariff proposals, based on legislation set on entity level	CS			Post	tbd	PIU and APCU	SECO
2.6	Support for organizational restructuring	CS			Post	tbd	PIU and APCU	SECO
2.7	Capacity building on technical, commercial, and financial topics, and environment and social risk management	CS			Post	tbd	PIU and APCU	SECO
Component 3: Improving access to safely managed WSS services and the efficiency of WSS service providers								
3.1	Implementation of nonrevenue water reduction, energy efficiency programs, and improvements in metering and commercial systems	W	60,000	RFB	Prior	Q3, 2021	PIU and APCU	SECO
3.2	Construct, upgrade, and modernize WSS infrastructure, including water treatment and distribution facilities and wastewater collection and	W		RFB	Post	Q2, 2021	PIU and APCU	IBRD



Item	Description	Type	Cost Estimate (\$ thousand)	Selection Method	Review	Planned Date (Tender Launch)	Implementing Agency	Source of Funding
	treatment facilities							
3.3	Supervision services	CS		QCBS	Prior	Q2, 2021	PIU and APCU	IBRD
3.4	Environmental and Social Analyses	CS		QCBS	Prior	Q2, 2021	PIU and APCU	IBRD

Note: APCU = ; CQS = Consultants’ Qualification; CS = Consultant Services; IC = Individual Consultant; LCS = Least-Cost Selection; OC = Operating Costs; PIU = Project Implementation Unit; QCBS = Quality- and Cost-Based Selection; RFB = request for bids; TA = technical assistance; tbd = to be determined; W = Works; WSS = water supply and sanitation.
n.a. = not applicable.



ANNEX 2: Economic and Financial Analysis

COUNTRY: Bosnia and Herzegovina BiH Water and Sanitation Services Modernization Project

1. Economic Analysis

1. An economic analysis was conducted to assess the economic viability of the project. The quantitative parts of the economic analysis on cost-effectiveness and cost-benefit analysis include selected investments under Component 3. The activities under Component 1 and Component 2 are vital for the sustainability of the infrastructure investments made under Component 3.

2. The economic analysis was carried out in a selection of three representative subprojects under the first batch of local governments (LGs) and water utility companies (WUs) that qualified for investments under Component 3. The selected investment include: (i) Tešanj Municipality: the construction of a new wastewater treatment plant (WWTP) serving 35,000 PE⁶⁴ and providing environmental benefits; (ii) Citluk Municipality: the reconstruction of a main transmission line and rehabilitation of a water tank which will increase energy efficiency in the system and generate cost savings; and (iii) Dobož Municipality: the rehabilitation of the water network to reduce nonrevenue water (NRW), expansion of water supply sources, and construction of a storm water interceptor for climate adaptation purposes.

1.1 Cost-Effectiveness Analysis

3. A cost-effectiveness analysis was conducted for sample subprojects by applying a least-cost methodology. This type of analysis is embedded in most design studies and is common for technical project analysis.

4. *Tesanj Wastewater Treatment Plant subproject.* The following aspects were considered to determine the most cost-effective solution: centralized versus local treatment; location of treatment plant(s); and treatment process design.

5. The construction of a centralized WWTP serving the two towns of Usora and Tesanj was selected over the construction of two local WWTP plants. The two towns are located close to each other on either side of the river. The additional piping needed to intercept the wastewater from one town to the other was found more cost-effective than the construction of two WWTPs. Usora is smaller than Tesanj and producing limited volumes of wastewater. The proposed location of the WWTP was analyzed from various perspectives, including the cost of construction pipes for connecting to the local sewerage collection system and outlet to the river, cost of construction of the associated pumping stations, and costs of land purchase. Other considerations like accessibility to the site were also added to the least-cost analysis. Based on this, the Krasevo location was selected as the least cost one.

6. For the treatment process design, three alternative options representing different technologies were considered: (i) Intermittent aeration + extended aeration; (ii) A2O process + extended aeration; and, (iii) AO process + anaerobic activated sludge. The technology alternatives were analyzed using the following criteria:

⁶⁴ Population equivalent; one population equivalent means the organic biodegradable load having a five-day biochemical oxygen demand (BOD5) of 60 g of oxygen per day.



reliability and flexibility of the technical process proposed, land needed, environmental concerns, and total costs. The least cost evaluation of the process design is presented in table A3.1 below.

Table A3.1: Wastewater Process Cost Comparison

<i>USD</i>	Alternative 1. Intermittent aeration + extended aeration	Alternative 2. A2O process + extended aeration (SELECTED)	Alternative 2 AO process + anaerobic activated sludge
Capital expenditures ¹	6,360,753	6,084,198	6,913,862
Cost of operation annually	561,749	552,846	497,677
Total cost—NPV ²	12,725,134	12,356,077	12,491,442

¹ Except land, taxes, and connections; ² Based on 20 years projection in real terms, and a discount rate at 5 percent. A discount rate of 5 percent was utilized for alignment with the global discount rate used by the World Bank on its GHG cobenefit analysis.

Note: NPV = net present value.

7. As seen in table A3.1, the total cost is at the same level for all alternatives. The A2O aerobic process of Alternative 2 that was selected as the Alternative 3 anaerobic process is sensitive, and with an added level of complexity for sustaining efficient and stable operations.

8. *Citluk water supply and energy efficiency subproject.* The subproject for reducing energy consumption at the water intake and reservoir was analyzed to identify the most optimal option concerning energy reduction versus capital expenditures. The proposed reservoir expansion costs were valued against flexibility needs to allow for water extraction and pumping at hours when electricity tariffs are low, for example, at night. The size of the water tank expansion was decided for 4,000 cubic meters (m³), tripling the total capacity of the reservoir. The existing water mains consist of 42-year-old 300 millimeter (mm) asbestos cement pipes which will be replaced with a 500 mm ductile iron pipe, eliminating water losses and reducing head loss in pumping significantly.

9. *Doboj water supply, NRW, and stormwater subproject.* The subproject will replace three existing wells that needed to be closed down due to the construction of a new hospital in that location. The least-cost analysis included the analysis of the subproject location and size of the new well, taking into account the current inability of the system to fulfill the population’s water demand, especially during the two dry summer months. The chosen design recommends replacing the three wells with one well at a secured water source along the river. The settlement selected for the NRW reduction subproject has an old network, which originally was independent but later connected to the town’s public network. The old network was not professionally designed and now suffers from maintenance issues, which requires increasing attention from the water utility company. The installation of the stormwater collector/interceptor was analyzed for its installation technique to avoid disturbances to traffic and daily life.

1.4 Cost-benefit analysis

10. A cost-benefit analysis was also conducted on the three selected subprojects of Component 3, in the Tesanj, Citluk, and Doboj Municipalities. For the water projects, the benefits were quantified and a return analysis was prepared. For the wastewater subproject, the benefits were difficult to quantify in a reliable manner, partly because they are environmental projects or serve public good. The without-project scenarios are deselected.



11. *Tesanj WWTP subproject.* This subproject will provide environmental benefits from reduced eutrophication of the Danube Basin and health benefits to the population living along the lower stream of the Usora River and at the Bosna River. The wastewater from the two towns of Tesanj and Usora are currently being discharged untreated into the Usora River, which are flowing from the Federation of Bosnia and Herzegovina (FBiH) into the Republika Srpska (RS). The wastewater discharge is polluting the fresh water sources to Dobož Municipality and towns further downstream of the Bosna River. BiH is aspiring to become an official candidate country to join the European Union (EU), and implementing EU directives requires wastewater treatment from towns of more than 2,000 inhabitants.

12. Direct environment and health benefits from wastewater treatment are difficult to estimate in a reliable manner, and cost-benefit analysis for this activity was not carried out. However, the Ministry of Environment of the Slovak Republic has prepared a study—“Estimating environmental benefits of wastewater treatment in Slovakia”—which analyzes shadow prices based on data from 57 WWTPs which can be utilized as a proxy for BiH. As Slovakia and BiH are located in the Danube Basin, they both contribute to the eutrophication of the Danube. Applying a benefit transfer approach using the shadow prices found on the WWTP in Tesanj, the investment in Tesanj will generate high economic returns of above 30 percent, even when aligning the shadow prices to the lower costs of treated water in Tesanj. The capacity of the WWTP in Tesanj lies within the capacity range of the WWTPs included in the study from Slovakia.

13. A without-project scenario is deselected, as this would continue the pollution and eutrophication of water bodies and add costs to water supply treatment while reducing the living conditions of downstream communities. The Project will bear the cost of capital expenditure for the WWTP and ongoing cost of operation and maintenance (O&M).

14. Apart from providing environmental benefits and health benefits to the population and protecting fresh water sources, the Project will provide global environment benefits from the reduction in emissions of greenhouse gases (GHGs) and other pollutants. Using the World Bank’s Water Global Practice’s (GP’s) Greenhouse Gas Accounting and with/without project methodology it is estimated that the net emissions from the treatment of wastewater will account to an annual average of 111 tons of carbon dioxide equivalent (tCO₂-eq).

15. *Citluk subproject.* The subproject will reduce the energy consumption of pumping water in the water supply system of the town of Citluk. Citluk’s water system is characterized by a high energy consumption of around 2.5 kilowatt-hours (KWh)/m³, in comparison to other towns’ significantly lower consumption. The reduction in energy consumption will be achieved by optimizing the size of the storage reservoir and replacing the two old pipelines from the water source to the reservoir. The increased storage capacity will increase the flexibility for taking advantage of pumping at hours with lower electricity tariffs. The replaced pipes will reduce NRW by 10 percent to -15 percent and reduce the pumping head loss by 7 to 8 percent. The total cost abatement will be up to 30 percent, at around US\$176,000.00 annually, with a reduction in electricity consumption of up to 20 percent, at 1.26 million KWh.

16. With the reduction of electricity consumption, the Project will provide global environmental benefits from related GHG and other pollutants emission reduction. Using the World Bank’s Water GP’s Greenhouse Gas Accounting Tool based on with/without project methodology, it is estimated that the net emission reduction from the energy efficiency project will account to an annual average of 1.090 tCO₂-eq.



17. The economic returns related to the Project are presented in table A3.2. The results show that the economic return is satisfactory and not vulnerable to limited changes in assumptions.

Table A3.2: EIRR and ENPV¹ for Citluk WS EE Project

US\$, thousand	Base return	CAPEX +10%	Benefits ² -10%	Combined
EIRR	10%	9%	9%	7%
ENPV	510	375	324	190
<i>With global cobenefits from GHG reduction³</i>				
EIRR	14%	13%	13%	12%
ENPV	1,134	1,000	949	814

1. The projections included 20 years of costs and benefits in real terms. For NPV calculations, a social discount rate of 6 percent was introduced.

2. Does not apply to cobenefits

3. The cobenefit was quantified in monetary terms using IPCC’s baseline shadow price on carbon.

Note: CAPEX = capital expenditure; EE = energy efficiency; EIRR = economic internal rate of return; ENPV = expected net present value; GHG = greenhouse gas; WS = water supply.

18. *Doboj subproject.* The replacement of the existing three wells with a new well will only bring minor benefits beyond the relocation. The installation of the stormwater interceptor, partly for climate adaptation, is assumed to create benefits of reduced erosion and less damages to houses and the local urban environment in general. The without-project scenario is deselected. The benefits are, however, difficult to quantify in a reliable manner and justification will rely on a cost-effectiveness analysis only.

19. The rehabilitation and expansion of the supply network in the settlement of Velike Bukovica will bring economic benefits of reducing water losses and adding a new connection to consumers in Doboj. The technical NRW will be reduced from more than 30 percent to around 10 percent, and the saved water will add incremental benefits of supplying not only the new water connections, but also part of the ongoing increase in water demand in Doboj.

20. The investments in Doboj are not assumed to change the current level of electricity consumption and carry cobenefits from GHG reduction. The investment will, however, carry a higher energy efficiency in terms of supply of water per energy consumption.

21. The economic returns related to the Project are presented in table A3.3. The results show that the economic return is satisfactory and not vulnerable to limited changes in assumptions.

Table A3.3: EIRR and ENPV¹ for the Doboj WS NRW Project in the settlement of Velike Bukovica

US\$, thousand	Base return	CAPEX +10%	Benefits -10%	Combined
EIRR	10%	9%	9%	8%
ENPV	140	105	91	56

With global cobenefits from GHG reduction are not applicable as the investment is assumed to be GHG neutral

1. The projections included 20 years of costs and benefits in real terms. For NPV calculations, a social discount rate of 6 percent was introduced.

Note: CAPEX = capital expenditure; EIRR = economic internal rate of return; ENPV = expected net present value; GHG = greenhouse gas; NRW = nonrevenue water; WS = water supply.



1.6 Project Beneficiaries and Poverty Impact

22. Based on the Project activities in the three municipalities, the benefits are in general distributed evenly among their urban residents—of those who are connected or will be connected to the piped supply of water services. The consumers will see a marginally more cost-effective service compared to without the project. Dependent on the impact on local wastewater tariffs, the benefit of wastewater treatment could be unevenly distributed if not carefully considered. Especially if the full cost of the wastewater treatment is implemented in the wastewater tariff, low-income households could see a relatively higher impact from these if not held below affordability levels.

2. Financial Analysis

2.1 Background and objective of the financial analysis.

23. A financial analysis was conducted to (i) identify the most appropriate project financing and debt allocation/repayment strategy, taking into account that cost recovery from tariffs is in the early stages; (ii) estimate potential impact on utility finance and utility tariffs from investments implemented; (iii) demonstrate that investments for reducing costs/increasing revenues are financially viable; and (iv) show that fiscal capacity is assessed for the municipalities to meet their financial obligation.

24. The Project will invest in water supply and sanitation (WSS) improvement initiatives in several BiH municipalities. The financial sustainability is analyzed for selected investments identified under Component 3. The same subprojects selected for the economic analysis will be assessed in the financial analysis.

2.2. Tariffs and cost recovery levels

25. Utilities propose and set the tariffs with the approval of governments or cantons (in the FBiH). There is no obligatory and uniform methodology for tariff setting in the WSS sector, although some municipalities and their utilities demonstrated systematic efforts in implementing a uniform methodology based on the cost-recovery principles through the involvement in the MEG project.

26. Average water tariff for the households in BiH is US\$0.72/m³, which is lower than the regional average, while the coverage of the operating costs (invoiced revenues/operating expenses) is 97 percent. The current tariff levels are considered low and within the affordability threshold, but the issue of raising the tariff is a sensitive political topic. Tariffs with full cost recovery level in municipalities representing the investments for financial and economic analysis, are listed in table A3.4.

Table A3.4: Selected municipalities - tariff levels and financial performance of utility company

Municipality	WS Tariff US\$/m ³			WW Tariff ⁴ US\$/m ³	Revenue US\$, million	Net Income US\$, million
	Residents	Other Consumers	Full Cost (Projected)	All	Utility Company 2019	
Tesanj	0.49 ¹	1.12 ¹	0.82	0.28	2.31	0.11
Citluk	0.79 (1.09) ²	0.79 (1.09) ²	Not analyzed	0.24	1.44	0.02
Doboj	0.75 ³	1.45 ³	0.75	0.45	2.59	0.01

1. Tesanj: Added fixed monthly fee for meter.

2. Step tariff below and above 25 m³ per month.

3. Doboj: Added fixed monthly fee for meter and fixed monthly maintenance fee.



4. None of the municipalities has wastewater treatment, and the tariff is at a basic level covering cost of wastewater collection.

Note: m³ = cubic meter; WS = water supply; WW = wastewater.

Affordability of user fees

27. Analysis of affordability of user fees for water and sanitation services generally conclude that these are affordable to the households. However, in the absence of local household income statistics, the local condition should be carefully investigated, before additional increases are introduced to residential consumers.

28. Activities under Component 3 will have different impact on user fees when the investments and their cost of operation are to be accounted for through revision of tariffs as presented below. The construction of the WWTP in *Tesanj* will increase the cost of operation significantly and add around US\$0.45/m³ to the wastewater tariff. When the full costs (O&M + depreciation) of the Project is applied, a total of around US\$0.67/m³ will be added to the wastewater tariff. This will bring user fees close to a level of 4 percent of an average-income household's disposable income,⁶⁵ making the tariff unaffordable to low-income households.

29. The energy efficiency project in *Citluk* will have a positive effect on user fees, as the project carries significant cost savings. The NRW project in *Doboj* will also have a positive effect on the user fees, as the water supply is becoming more cost-effective. It is assumed that costs of the replacement of well(s) and implementing the stormwater interceptor is held by the municipality.

2.4. Project based financial analysis

30. Financial impact from the investments on utility companies' cost recovery was analyzed including investment return analysis internal rate of return (IRR) and net present value (NPV) using with/without project methodology. The financial return on investment calculation was prepared for the water supply investments only assuming that such should balance investments with achieved additional fee collection and cost savings. Wastewater projects are environment projects serving the public good and not in general assumed to generate revenue streams covering investment costs.

31. *Tesanj subproject*. The investment will treat collected wastewater from *Tesanj* and *Usora*, for a total design capacity of 35,000 PE, and an investment of US\$8.9 million. The annual cost of O&M is expected at US\$612,000.00. The cost of investment is assumed to be carried by the municipality, while the O&M will be carried by the local utility company. Without support from the municipality, the local residents will see an increase in their tariff from currently US\$0.28/m³ to US\$0.73/m³. This is an increase of 77 percent to variable part of combined water and wastewater tariff in *Tesanj*. Apart from the variable part, the consumers pay a smaller fixed part for the water meter.

32. *Citluk Municipality subproject*. The municipality will improve the energy efficiency of its fresh water primary system of pipelines from the intake and the water reservoir. The water reservoir is located 230 m above the intake and distributes water to the town by gravity. The pumping to the reservoir requires electricity supply at a level of around 2.5 KWh/m³. The project will replace the two old existing asbestos cement pipes of 300 mm

⁶⁵ Using projections from the tariff study under the project of Municipal Environmental and Economic Management (MEG) for *Tesanj*.



each with a new ductile iron pipe of 500 mm, as well as expanding the reservoir to 6,000 m³ from currently 2,000 m³. The investment will eliminate the water leakage from the old pipes as well as reduce the pumping head loss, and allow for pumping at hours when electricity is supplied at a low tariff. In total, the investment will reduce cost of electricity consumption from around annually US\$590,000 to US\$410,000. Investment cost is estimated to be US\$1.5 million.

33. The result of the investment return analysis is shown in table A3.5. The results document that the investment will provide a positive return.

Table A3.5: FIRR and FNPV¹ from Citluk WS EE Project – with sensibility analysis

<i>US\$, thousand</i>	Base return	CAPEX +10%	Savings -10%	Combined
FIRR	10%	9%	9%	7%
FNPV	690	556	487	352

1. The projections included 20 years of costs and benefits in real terms. For NPV calculations, a cost of capital at 5 percent was introduced.

Note: CAPEX = capital expenditure; EE = energy efficiency; FIRR = financial internal rate of return; FNPV = financial net present value; WS = water supply.

34. *Doboj subproject.* The municipality will replace three wells at cost of US\$307,000, install a stormwater interceptor at cost of US\$808,000, and rehabilitate and expand the water supply network in the settlement of Velike Bukovica at cost of US\$311,000.

35. The project’s replacement of three closed water wells with a new well is not assumed to carry additional cost of O&M compared to the existing wells. The cost of installing the stormwater interceptor is assumed as being held by the municipality as benefits are for public goods.

36. The rehabilitation and expansion of the supply network in the settlement of Velike Bukovica will bring financial benefits of reducing water losses and adding new connections to consumers in Doboj. The technical NRW will be reduced from more than 30 percent to around 10 percent, and the saved water will add incremental revenue from supplying not only the added connection, but also part of the current incremental increase in water demand in Doboj. The investment will carry a higher energy efficiency in terms of supply of water per energy consumption.

37. The result of the investment return analysis is shown in table A3.6. The results document that the investment will provide a positive return.

Table A3.6: FIRR and FNPV¹ from Doboj WS NRW Project – with sensibility analysis

<i>US\$, thousand</i>	Base return	CAPEX +10%	Revenue -10%	Combined
FIRR	8%	7%	7%	6%
FNPV	111	77	66	31

1. The projections included 20 years of costs and benefits in real terms. For NPV calculations, a cost of capital at 5 percent was introduced.

Note: CAPEX = capital expenditure; FIRR = financial internal rate of return; FNPV = financial net present value; NRW = nonrevenue water; WS = water supply.

2.5. Fiscal Assessment

38. For municipalities in the Federation, there are strict controls in place concerning indebtedness of the individual municipality. Annual debt services are restricted to 10 percent of budgetary expenditures, with detailed



requirements concerning debt levels in place. For municipalities in RS, regulatory limitations are assumed to be in place. Obtaining lasting macroeconomic stability has been a key policy for obtaining growth in BiH.



ANNEX 3: GHG Emission Analysis

Emission Estimates

1. Greenhouse gas (GHG) emissions estimates were prepared for representative subprojects under Component 3. The estimation of subcomponents’ GHG impact was prepared in tons of carbon dioxide equivalent by applying with/without project methodology and using the World Bank’s Water Global Practice’s (GP’s) Greenhouse Gas Accounting Tool for Water Sector Lending. Table A4.1 summarizes the GHG Impact results.

Table A4.1: Results of the GHG Impact Analysis

Municipality	Description	Timeline	Net Emissions Estimate (tCO2-eq)
Tesanj	Wastewater treatment project	25 years	+2,778
Citluk	Water supply EE and NRW project	25 years	-27,238
Doboj	Water supply capacity and NRW project	25 years	0
Total			-24,460

Note: EE = energy efficiency; GHG = greenhouse gas; NRW = nonrevenue water; tCO2-eq = tons of carbon dioxide equivalent.

Representative Project Subcomponents

2. *Tesanj Municipality in the Federation of Bosnia Herzegovina:* The subproject will establish a wastewater treatment plant (WWTP) treating all collected wastewater in Tesanj and Usora with a total investment of US\$8.9 million. The GHG benefits will derive from the treatment of the wastewater, which alternatively was being discharged untreated to the Usora river.

3. *Citluk Municipality in the Federation of Bosnia Herzegovina:* The subproject will expand the water reservoir servicing the town as well as replace the old leaking main pumping from the water source to the reservoir. The total investment will be of US\$1.5 million. The GHG benefits will derive from reduced pumping as a result of NRW reduction and lower pumping head loss in the expanded main.

4. *Doboj Municipality in Republika Srpska:* The subproject will establish new water wells, primarily to replace the existing wells inside the town for environment reasons; reduce nonrevenue water (NRW) by targeted rehabilitation of the distribution system; and improve stormwater collection. The wells and the NRW reduction will add to the overall capacity of the water supply to Doboj. Total investment will be of US\$2.0 million. The investment will not see increased electricity consumption, as responding unfulfilled demand under the Project will be done by NRW reduction. As such, the added GHG emission is expected to be limited.

5. The three projects represent total investments of US\$12.5 million, or 20 percent of the total investments of around US\$60.9 million.



Project and Baseline Scenario, Gross Emissions and Net Emissions

6. *Gross emissions* are defined as the emissions that project activities cause over their economic lifetime through the *project scenario*. These are compared to the emissions associated with a baseline scenario. The difference between the gross emissions and the baseline emissions represents the project's *net emissions*.

Project Assumptions

7. Data were collected from the client by the task team for the individual subprojects of water and wastewater projects. Where specific data were not available, sufficient realistic assumptions were established for the estimations.

8. Following are the assumptions made for the analysis.

- A 25-year economic lifetime was assumed for the subcomponents of the water and wastewater projects.
- For all subprojects, the electricity consumption is from the national grid with the specific mix of energy sources to Bosnia Herzegovina.

9. *Specific assumptions for the Tesanj WWTP project:*

- The project establishes a new WWTP with the capacity of 35,000 PE.
- The treatment plant is the first WWTP in Tesanj and will treat all the collected sewerage in the town and provide capacity for trucks unloading sludge from septic tanks cleanup.
- The biochemical oxygen demand (BOD₅) level is assumed to be 60 grams (g) per PE per day.
- Average flow of wastewater (dry weather flow + infiltration) is at 6,404 cubic meters (m³)/day leaving the BOD₅ concentration at 328 milligrams (mg)/liter (l) and total BOD₅ to 2,100 kilograms (kg)/day.
- The treatment process will be aerobic reducing the methane emission. The process will reduce BOD₅ in effluent to 25 mg/l and nitrogen by a factor of 75 percent.
- Discharge will be to the flowing river downstream of Tesanj.
- Sludge from the treatment will be removed and reused—no GHG component is assumed from this.
- For the town's septic tank usage, no information is available. The treatment plant will however be designed with a station for emptying sludge from septic tank maintenance. The component has not been included in the GHG estimations.

10. *Specific assumptions for Citluk WS EE project:*

- The project will: replace the two old 300 mm pipelines from the water source with one 500 mm duct iron pipe; and expand the water reservoir servicing Citluk Town from 2,000 m³ to 6,000 m³.
- The pipe replacement will reduce NRW by up to 15 percent and reduce the pumping head loss by around 7 percent. Combined electricity savings will be close to 20 percent, being made available by increased flexibility in pumping from the significant expansion of the reservoir's capacity.
- The current volume of water pumped on an annual basis is at 2,950,000 m³ with average energy consumption high at approximately 2.2 KWh/m³.

11. *Specific assumptions for Dobož WS NRW project:*

- The project will: establish one new well to replace three existing wells; implement a new pipeline to drain and intercept stormwater; and rehabilitate and expand local network in a settlement.



- The existing three wells will solely for economic reasons be closed to give space for the new local hospital. The subproject will not result in energy savings.
- The stormwater interceptor will be constructed for economic reasons to avoid damaging the overflow of the current collector but will not use pumping and thus avoid adding energy consumption. The additional stormwater collected will be very diluted.
- The network in the settlement will be replaced for financial reasons to carve the way for NRW reduction, which is assumed to be around 20 percent as well as add 126 new network connections within the settlement. The current water supply to the settlement is assumed to be at 8 percent of the annual total supply of around 2,700,000 m³, aligned with the settlement's share of the town's population. The cost of electricity for pumping is assumed at 0.5 KWh/m³. The saved water from the NRW will be resold to the new established connections and to fulfill incremental demand increase in the water supply area and will as such not in the medium term run result in energy and GHG emission savings.

Baseline Scenario Calculations

12. The baseline and the project *scenario* calculations were made by using the Water GP's GHG Accounting tool.

Specifics on the baseline calculations for Tesanj WWTP project:

- Wastewater will be collected for a PE at 35,000 with a wastewater flow of 6,404 m³/day, BOD₅ collected at 60 g/PE/day, and mass of nitrogen at 11 g/PE/day.
- The collected wastewater will be intercepted and pumped at a standard of 0.74 KWh/m³.
- The collected wastewater will be discharged into the running river without treatment.

Specifics on the baseline calculations for Citluk WS EE project:

- Water will be extracted at 8,082 m³/day and conveyed with electricity consumption at 2.24 KWh/m³.

Specifics on the baseline calculations for Dobojski WS NRW project:

- Water will be extracted at 7,360 m³/day and distributed with electricity consumption at 0.50 KWh/m³.
- Stormwater runoff will not be collected and intercepted. The stormwater runoff is assumed to have no BOD₅ and nitrate content.

Project Scenario Calculations

13. The baseline and project scenario calculations were made by using the Water GP's GHG Accounting tool.

Specifics on the project calculations for Tesanj WWTP project:

- Wastewater will be collected for a PE at 35,000 with a wastewater flow of 6,404 m³/day, BOD₅ collected at 60 g/PE/day, and mass of Nitrogen at 11 g/PE/day.
- The collected wastewater will be intercepted and pumped at a standard 0.74 KWh/m³.



- Inlet works with methane (CH₄) emission based on influent content of COD at 4,200 kg/day—2-times BOD₅.
- Wastewater treatment: aerobic treatment process; will remove BOD₅ from 328 g/l to 25 g/l; with average load of 90 percent of design capacity; and nitrogen removal of 75 percent from 385 kg/day to 96 kg/day.
- Volume of discharged wastewater will flow at 6,404 m³/day.
- Energy for wastewater removal at 0.64 KWh/m³
- Nitrous oxide (N₂O) emission at 30 g/PE/year.
- The treated wastewater with BOD₅ at 160 kg/day will be discharged into the running river.
- The sludge produced at the WWTP will be dewatered and mixed with lime to fully stabilize the sludge storing under cover at the WWTP. The sludge has a low organic content of 60 percent due to extended aeration. Disposal of the sludge will either be: in farmland for soil improvement/replacing chemical fertilizer; or at a sanitary regional landfill site planned for at neighboring Doboј.

Specifics on the project calculations for Citluk WS EE project:

- Water will be extracted at 7,072 m³/day and conveyed with electricity consumption at 2.07 KWh/m³.
- With the lower extracted volume, due to NRW reduction, and the new main, the reduction in electricity consumption will overall be at a level of 20 percent.

Specifics on the project calculations for Doboј WS NRW project:

- Water will still be extracted at 7,360 m³/day and distributed still with electricity consumption at 0.50 KWh/m³.
- Stormwater runoff will be collected and intercepted by gravity. The stormwater collected is assumed with limited concentration of BOD₅ and nitrate content.

GHG Emission Calculation Results

Net emission calculations for Tesanj WWTP project:

- Both project and baseline scenario produce CO₂ emissions at the same level from wastewater collection and pumping.
- The baseline scenario will produce fugitive N₂O emissions from wastewater discharge and fugitive CH₄ emissions from open discharge of untreated wastewater into the running river.
- The project scenario will produce: CO₂ emissions from wastewater treatment; process N₂O emissions from wastewater treatment; fugitive N₂O emissions from wastewater discharge; and fugitive CH₄ emissions from inlet works and open discharge of the treated wastewater into the running river.
- Net GHG emissions is estimated at a total of +2,778 tCO₂-eq for 25 years.

Net emission calculations for Citluk WS EE project:

- The baseline scenario will produce CO₂ emissions from conveyance to the reservoir.



- The project scenario will similarly produce CO₂ emissions from conveyance to the reservoir.
- Net GHG emissions is estimated at totally -27,238 tCO₂-eq for 25 years.

Net emission calculations for Dobojski WS NRW project:

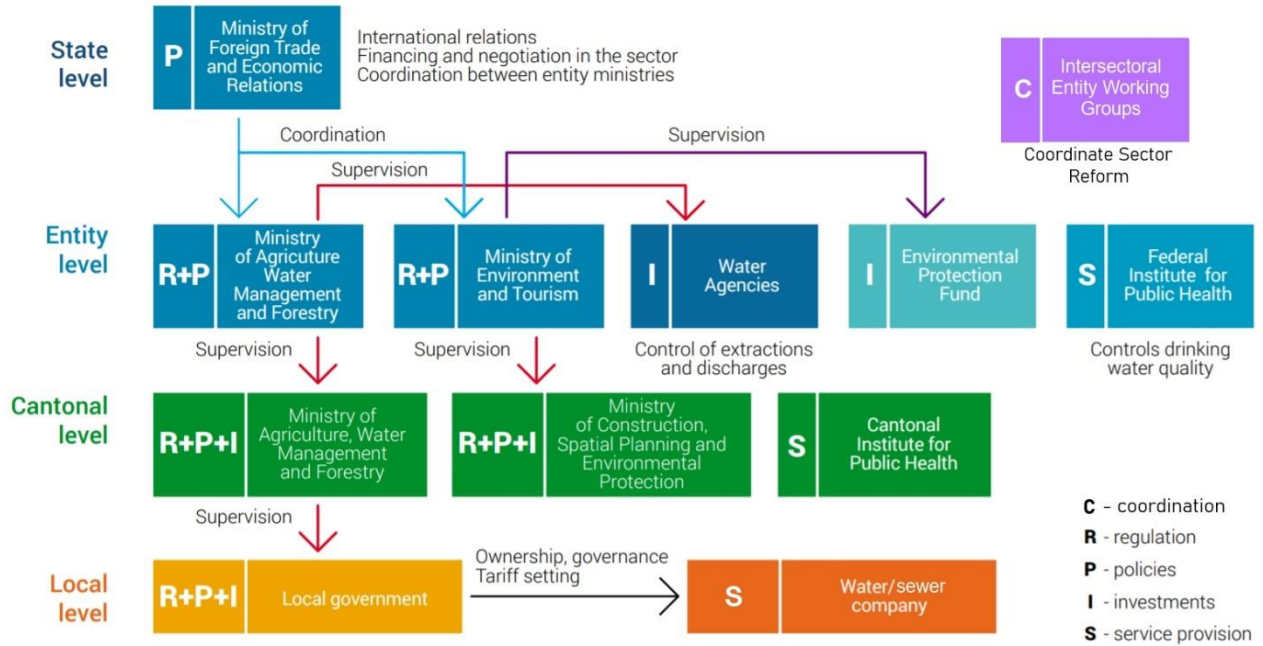
- The baseline scenario will produce CO₂ emissions from distribution of water from wells to the consumers.
- The project scenario will produce similar CO₂ emissions from distribution of water from wells to the consumers.
- The project will overall produce a neutral net emission during its lifetime.



ANNEX 4: Water Services Governance Structure

COUNTRY: Bosnia and Herzegovina
BiH Water and Sanitation Services Modernization Project

In the Federation of Bosnia and Herzegovina:



In Republika Srpska:

