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IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IBRD-78420, TF-12937, TF-A1998)

ON A

LOAN

IN THE AMOUNT OF EUR 23.6 MILLION
(US\$35 MILLION EQUIVALENT)

AND

EC IPA GRANTS

IN THE AMOUNT OF EUR 10 MILLION
(US\$11.7 MILLION)

TO BOSNIA AND HERZEGOVINA

FOR THE

SARAJEVO WASTE WATER PROJECT (P090675)

November 30, 2017

Water Global Practice
Europe and Central Asia Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective May 31, 2017)

Currency Unit =	Bosnian Convertible Marka (BAM)
BAM 1.7138 =	US\$1
US\$0.708254 =	SDR 1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

BiH	Bosnia and Herzegovina
BOD ₅	Five-day Biochemical Oxygen Demand
CAS	Country Assistance Strategy
CHP	Combined Heat-Power Unit
CPS	Country Partnership Strategy
EA	Environmental Assessment
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EIRR	Economic Internal Rate of Return
EMP	Environmental Management Plan
ERR	Economic Rate of Return
EU	European Union
FM	Financial Management
GHG	Greenhouse Gas
GIS	Geographic Information System
IFI	International Financing Institution
IFR	Interim Financial Report
IRR	Internal Rate of Return
IPA	Instrument for Pre-Accession Assistance
JICA	Japan International Cooperation Agency
M&E	Monitoring and Evaluation
MDP	Municipal Development Project
NPV	Net Present Value
NRW	Nonrevenue Water
O&M	Operation and maintenance
PAD	Project Appraisal Document
PDO	Project Development Objective
PHRD	Policy and Human Resources Development Fund
PIT	Project Implementing Team
PIU	Project Implementation Unit
PMT	Project Management Team
PMU	Project Management Unit

QER	Quality Enhancement Review
Sarajevo ViK	<i>Vodovod i Kanalizacija Sarajevo</i> , Sarajevo Water and Waste Water Company
SWWP	Sarajevo Waste Water Project
Sarajevo WWTP	Sarajevo Wastewater Treatment Plant
TA	Technical Assistance
TTL	Task Team Leader
UISDP	Urban Infrastructure and Service Delivery Project
WWTP	Wastewater Treatment Plant

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P090675	SARAJEVO WASTE WATER PROJECT (P090675)
Country	Financing Instrument
Bosnia and Herzegovina	Specific Investment Loan
Original EA Category	Revised EA Category
Partial Assessment (B)	

Organizations

Borrower	Implementing Agency
Ministry of Finance and Treasury	Sarajevo Water and Wastewater Company, Vodovod i Kanalizacija (Sarajevo VIK)

Project Development Objective (PDO)

Original PDO

Improve the living conditions of populations in the areas covered by the Sarajevo Water and Waste Water Company and in downstream riverside communities by: (a) reducing the population's exposure to, and reliance on highly polluted water from the Miljacka and Bosna Rivers; and (b) improving the efficiency of the waste water collection network in the Sarajevo Canton.



FINANCING			
	Original Amount (US\$)	Revised Amount (US\$)	Actual Disbursed (US\$)
World Bank Financing			
IBRD-78420	35,000,000	30,609,538	24,793,430
TF-12937	9,869,013	11,006,337	11,587,923
TF-A1998	1,322,350	2,705,480	2,560,445
Total	46,191,363	44,321,355	38,941,798
Non-World Bank Financing			
Borrower	2,000,000	0	2,000,000
Total	2,000,000	0	2,000,000
Total Project Cost	48,191,363	44,321,355	40,941,798

KEY DATES				
Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
22-Dec-2009	15-Jul-2010	26-Oct-2014	30-Nov-2015	31-May-2017

RESTRUCTURING AND/OR ADDITIONAL FINANCING		
Date(s)	Amount Disbursed (US\$M)	Key Revisions
04-Nov-2015	14.91	Change in Loan Closing Date(s) Reallocation between Disbursement Categories

KEY RATINGS		
Outcome	Bank Performance	M&E Quality
Moderately Satisfactory	Moderately Satisfactory	Substantial

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US\$M)
01	10-May-2010	Satisfactory	Satisfactory	0
02	06-Nov-2010	Satisfactory	Satisfactory	1.19
03	17-Dec-2011	Satisfactory	Moderately Satisfactory	1.47
04	19-Jun-2012	Satisfactory	Moderately Satisfactory	3.39
05	27-Dec-2012	Satisfactory	Moderately Satisfactory	5.36
06	08-Dec-2013	Satisfactory	Moderately Satisfactory	6.95
07	24-Jun-2014	Satisfactory	Moderately Satisfactory	10.36
08	22-Dec-2014	Moderately Satisfactory	Moderately Satisfactory	11.40
09	16-Jun-2015	Moderately Satisfactory	Moderately Satisfactory	13.50
10	24-Dec-2015	Moderately Satisfactory	Moderately Satisfactory	16.15
11	03-Jun-2016	Satisfactory	Moderately Satisfactory	20.20
12	21-Nov-2016	Satisfactory	Moderately Satisfactory	24.77
13	30-May-2017	Moderately Satisfactory	Moderately Satisfactory	26.01

SECTORS AND THEMES

Sectors

Major Sector/Sector (%)

Water, Sanitation and Waste Management 100

Sanitation 97

Public Administration - Water, Sanitation and Waste Management 3

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3) (%)



Public Sector Management	6
Public Administration	6
Administrative and Civil Service Reform	2
Municipal Institution Building	4
Urban and Rural Development	65
Urban Development	65
Urban Infrastructure and Service Delivery	33
Services and Housing for the Poor	32
Environment and Natural Resource Management	30
Water Resource Management	30
Water Institutions, Policies and Reform	30

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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

1. The Sarajevo Waste Water Project (SWWP) was identified and agreed upon in the Country Partnership Strategy (CPS) 2008–2011 (Report No. 41330 - BA, November 12, 2007). It aimed to support the second pillar of the CPS, "...improving the quality of Government spending and the delivery of public services for the vulnerable through enhancement of the delivery of municipal services and strengthening municipal finance." The SWWP was fully aligned with the country's interests, objectives, and sector needs as the CPS called for "Particular attention needs to be paid to improving: water and waste water services".
2. Additionally, the Sarajevo Canton Government, the main authority of the Sarajevo urban agglomeration, the largest in Bosnia and Herzegovina (BiH), has repeatedly requested the World Bank to provide financing for rehabilitation of the Sarajevo Wastewater Treatment Plant (Sarajevo WWTP) in Butila.
3. At the identification stage, it was expected that the BiH Municipal Development Project (MDP) would be implemented in up to five municipalities (in addition to Sarajevo, there were Banja Luka, Ilidža, Konjic, and Vogošća) and would cover wider institutional and sectoral development. The latter included strengthening local self-governance and improving public service delivery performance at the municipal level. The project scope, however, was subsequently reduced to wastewater management in the Sarajevo municipality only, because of unclear prospects of the project preparation in other municipalities, and with the understanding that many sector reform elements were both planned and implemented by other donors at the time of the project approval.
4. The final shape of the project was agreed and cleared by the World Bank management at its Quality Enhancement Review (QER) in November 2009. The World Bank QER decision to adjust the SWWP scope to wastewater operations was based on an informal agreement with the European Bank for Reconstruction and Development (EBRD), which was supposed to prepare and implement the project that would have addressed rehabilitation and expansion of the water supply system in Sarajevo and finance actions that support critically needed financial management (FM) reforms in the Sarajevo Water and Waste Water Company (*Vodovod i Kanalizacija Sarajevo*, ViK). This EUR 25 million project was significantly delayed and eventually signed on May 11, 2017 to "finance investments to reduce water losses in the network and improve the quality of services provided by the water utility company".
5. Given the World Bank's experience in the sector and its previous involvement in the construction of the Sarajevo WWTP, it was well suited to provide both support and funding, thus helping address the priority infrastructure rehabilitation. The SWWP was prepared on the experience of previous World Bank projects in BiH such as the Urban Infrastructure and Service Delivery Project (UISDP, P083353, Credit No.3954-BA) and the First and Second Solid Waste Management Project (P057950; Credit Nos. 3672-BA and 3672-1-BA; Loan No. 7629-BA), while the analytical basis for the policy dialogue with the governments is provided by the 2009 sector study 'From Stability to Performance: Local Governance and Service Delivery in Bosnia and Herzegovina' (Report No.47320, January 1, 2009). In 1999, the Japan International Cooperation Agency (JICA) prepared 'The Feasibility Study for the Wastewater Treatment Plant in the



Sarajevo City' (JICA Report SSS RA 99-153) that specified an investment program in wastewater collection and management in Sarajevo, but no financing had become available until the SWWP. The project also benefited from knowledge obtained through the Policy and Human Resources Development Fund (PHRD) grant for the preparation of the SWWP (former MDP) and the Neretva and Trebišnjica River Basin Management Project (BiH/Croatia), P084608.

6. The SWWP was addressing key issues of the wastewater services in Sarajevo, specifically:

- (a) **Wastewater treatment.** The Sarajevo WWTP completely stopped operations in 1992. It was originally built for the 1984 Sarajevo Olympic Games and construction was partially financed by the World Bank loan P009171 (YU-Sarajevo Water Supply and Sewerage Project, 1976). During the 1992–1995 conflict in BiH, the Sarajevo WWTP was severely damaged by shelling and looting. By 2005, when the Sarajevo population reached prewar levels, it became clear to the Sarajevo Canton Government that the city could not operate without proper wastewater treatment because it was not only polluting the Miljacka and Bosna Rivers but also affecting living conditions of nearly 200,000 people who resided downstream of the Sarajevo WWTP alongside Miljacka and Bosna Rivers and consuming water polluted by untreated wastewater discharges from Sarajevo agglomeration.
- (b) **Wastewater collection:** By 2008, nearly 45,000 households, while living in the area of responsibility and in proximity to its wastewater mains, had no connections to the wastewater collection network. Instead, residents employed pit-latrines, cesspools, and other second-best wastewater solutions. In the absence of storm water canalization, these latrines were frequently flooded and, at least in one area, were located at the groundwater intake of the Sarajevo ViK, thus polluting its sources of potable water.

7. In 2009 and at the initial stages of the project implementation in 2010–2011, Sarajevo ViK revenues covered only 50 percent of its costs. Sarajevo ViK tariffs, which were set in 1997, did not increase until 2010, except for the introduction of value added tax in 2006. The tariff system is population occupancy and consumption norm based, with no metering-based charges and wastewater treatment fee. Thus, increased consumption of already registered customers to the wastewater network did not increase Sarajevo ViK revenues, unless a completely new customer was connected. In addition, the collection rate of issued bills was 80 percent in 2009. The financial deficit of the Sarajevo ViK operations was covered by the Sarajevo Canton Government budget at the rate of BAM 1–3 million per year.

8. After the beginning of the project implementation in 2010, the Sarajevo Canton Government requested the European Commission Instrument for Pre-Accession Assistance grant (EC IPA grant) or IPA 2010 and the EC IPA committed funds in the amount of EUR 10.5 million in cofinancing of the SWWTP investment program. These funds were provided through two windows, each requiring separate administrative arrangements. There were two tranches of EUR 8.0 million and EUR 2.5 million (TF-12937 and TF-A1998, respectively). Agreements had been reached between BiH authorities, the EC, and the World Bank on the overall financing and implementation framework, however, without formal SWWP restructuring. The SWWP procurement plan was revised accordingly by counterparts and cleared by the World Bank on September 24, 2011. The Administrative Agreement was finally signed and came into effect in December 2012.



9. The EC IPA cofinancing was supporting restoring the secondary wastewater treatment process at the SWWTP, enabling enhanced wastewater treatment and nutrient removal, adding a digestion wastewater sludge process to generate biogas, and utilizing this biogas to substitute part of the heat and electricity demand of the wastewater treatment processes. The grant was financing the engineering part and turnkey contract for the wastewater treatment plant (WWTP) restoration. As mentioned earlier, there was no project restructuring and changing of the SWWP Project Development Objectives (PDOs). The EC IPA did not request either incremental cost analysis of the investment and financial assessment of post-construction operation or maintenance costs of the investments financed by the grant. While this grant was part of the overall support for the implementation of the European Union (EU) Wastewater Directive in BiH (*acquis communautaire*), there was no direct obligation on BiH to have tertiary treatment processes at its Sarajevo WWTP: BiH's obligation to implement the secondary/tertiary wastewater treatment processes at its municipal agglomerations will be required only after expiration of its compliance period, typically more than 10 years after the EU accession.

Theory of Change (Results Chain)

10. It was expected that the financial resources provided by the World Bank and the EC IPA and cofinancing by the Sarajevo Canton Government will (a) improve wastewater collection in the Sarajevo municipality, connecting about 300,000 Sarajevo residents to the wastewater network, (b) restore operations of the Sarajevo WWTP to the EU standard, and (c) improve living conditions of the additional 200,000 people living downstream of the Sarajevo WWTP who were using Miljacka River water that was polluted by then untreated wastewater collected by the Sarajevo ViK.

11. **Inputs.** World Bank-financed resources in the amount of US\$35 million were supported by the client contribution of US\$2 million and the EC IPA grants in the amount of EUR 10 (US\$11.5 million) million.

12. **Key activities.** The project planned to connect 32,000 properties to the Sarajevo ViK wastewater mains, rehabilitate and reconstruct the SWWTP, and provide limited institutional and technical activities targeting costs and eventual achievement of the Sarajevo ViK cost recovery of core operations. The additional EC IPA grant provided financing for achieving the EU wastewater treatment standard, thus enabling the Sarajevo WWTP with enhanced wastewater treatment, implementing a sludge digestion process and utilizing biogas.

13. **Key outputs.** The project connected 48,000 properties (150 percent of the originally planned) corresponding to 300,000 beneficiaries that previously had pit latrines. It constructed nearly 26.5 km of wastewater mains. It restored operation of the Sarajevo WWTP with enhanced biological treatment, combined heat and electricity generation, with the Sarajevo ViK cost reduction actions resulting in replacement of energy required for generation of steam and wastewater operations. The Sarajevo ViK also increased revenue by 17 percent to the 2009 level.

14. The outcome chain consists of three elements.

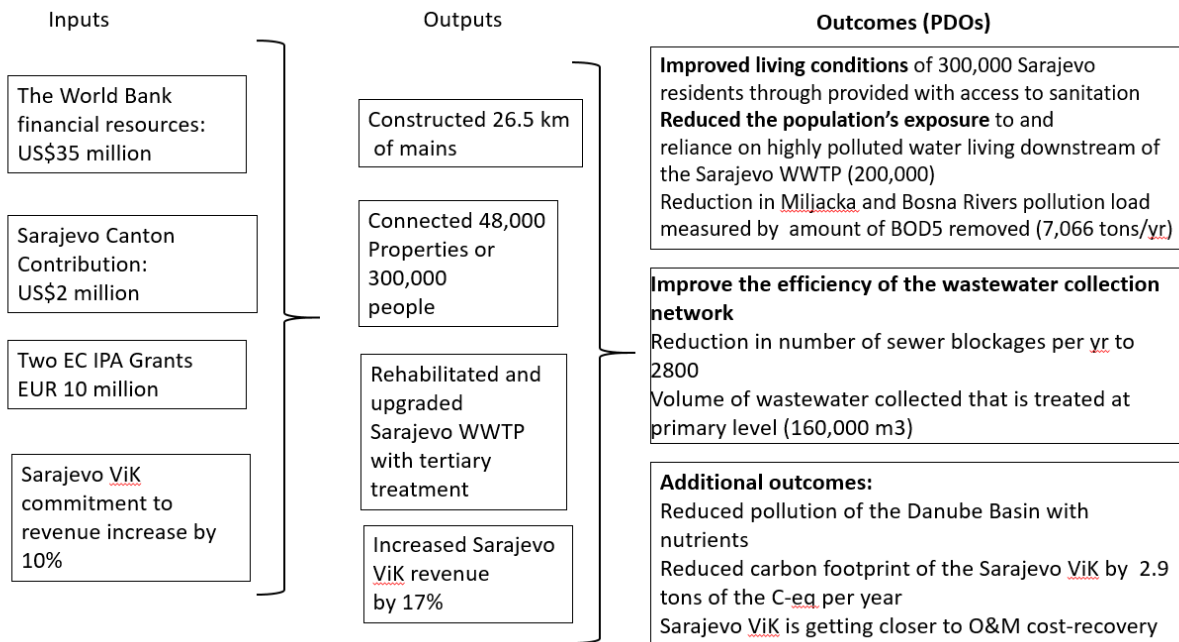
- (a) Direct increase of living standards and health status of nearly 300,000 Sarajevo residents now with in-door plumbing connected to the wastewater system of the Sarajevo ViK. This indirectly reduced pollution of underground water intakes of the Sarajevo ViK located near some of the residences now connected to the Sarajevo ViK wastewater network.



- (b) Advanced wastewater treatment process at the Sarajevo WWTP with establishment of an exemplary wastewater collection and treatment chain fully compatible with the EU wastewater directives providing global benefits with reduced pollution.
- (c) Local benefits with pollution reduction for 200,000 people living downstream of the Sarajevo WWTP, further reducing danger of pollution of Miljacka River water intakes located below the Sarajevo WWTP.

15. **Longer-term outcomes.** The longer term outcomes envisaged included sustainable operations of wastewater connection system and wastewater treatment process, thereby ensuring higher living standards and improved health and environmental status of the population of the Sarajevo Canton.

Figure 1. SWWP Results Chain



Project Development Objectives (PDOs)

16. The PDO of the SWWP was to improve the living conditions of populations in the areas covered by the Sarajevo Water and Wastewater Company and in downstream riverside communities by: (a) reducing the populations' exposure to, and reliance on highly polluted water from the Miljacka and Bosna Rivers; and (b) improving the efficiency of the wastewater collection network in the Sarajevo Canton. The project aimed to achieve this objective through financing investments in the rehabilitation of the Sarajevo WWTP and extend the sewerage network in the Sarajevo Canton to the unserved communities.

Key Expected Outcomes and Outcome Indicators

17. To monitor implementation progress, the SWWP team had established outcome indicators corresponding to the project PDO.



- (a) Reduction in river pollution measured by amount of BOD₅ removed at the WWTP
 - (b) Volume of wastewater collected treated at primary level
 - (c) Number of sewer connections benefiting from rehabilitation works
 - (d) Number of sewer blockages per year
18. These indicators were supported by intermediate outcome indicators.
- (a) Physical progress
 - (i) Cumulative length of sewage collectors repaired and/or rehabilitated
 - (ii) Percentage of WWTP rehabilitation works completed
 - (b) Cost recovery of new operation
 - (i) Increased revenues (in %)

Components

19. **Component A - High Priority Infrastructure Rehabilitation (US\$36.0 million equivalent, of which World Bank financing US\$34.0 million equivalent and the Sarajevo Canton Government US\$2 million).** This component financed priority investments in the rehabilitation of wastewater infrastructure in the Sarajevo Canton. The component included two subcomponents.

- (a) Repair and replacement of primary and secondary sewers in Sarajevo (estimated cost US\$11.0 million equivalent)
 - (b) Rehabilitation of the Sarajevo WWTP in four work phases (estimated cost US\$25.0 million equivalent) including the following:
 - (i) Rehabilitation of pumping station for raw wastewater, screening station, aerated grit chamber, substation, and air blower room
 - (ii) Rehabilitation of primary sedimentation, primary sludge pumping station, sludge thickener, and sludge pumping station
 - (iii) Rehabilitation of sludge digester, holding tank, pumping station, and dehydration facility
 - (iv) Rehabilitation of sand grit removal facilities
20. This component benefited from the EC grants from the EC IPA trust fund of EUR 10 million that financed the wastewater treatment infrastructure enhancement.
- (a) Construction of preliminary gravitation settlement tank with associated electromechanical equipment



- (b) Reconstruction of raw water pump station
- (c) Reconstruction of coarse and fine grid with associated equipment
- (d) Reconstruction of aerated grit chamber with grease trap and associated equipment
- (e) Reconstruction of primary settling facilities
- (f) Reconstruction of primary sludge pump station
- (g) Reconstruction of primary sludge thickeners
- (h) Reconstruction of primary thickened sludge pump station facilities
- (i) Reconstruction of electrical substation facilities
- (j) Reconstruction of blowing station facilities
- (k) Refurbishing and equipping main laboratory

21. **Component B - Institutional Development Support (US\$0.5 million equivalent, of which World Bank financing US\$0.5 million equivalent).** This component was to finance technical assistance (TA) to the Sarajevo ViK for capacity building and institutional strengthening. Activities under this component will include the following:

- (a) Institutional strengthening for improving FM capacity and operational efficiency to enhance long-term financial viability;
- (b) Supporting the preparation of feasibility studies, technical designs, and other technical studies for follow-up investments in water and waste rehabilitation.

22. **Component C - Project Management (US\$0.5 million equivalent, of which World Bank financing US\$0.5 million equivalent).** This component supported project implementation by the Project Management Team (PMT) and Project Implementing Team (PIT). Activities financed under this component included training of staff on FM and procurement, project monitoring and evaluation (M&E), operating costs, office equipment, financial audits, and other SWWP incremental costs.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION (IF APPLICABLE)

Revised PDOs and Outcome Targets

23. No targets were changed and/or modified. In 2012, the project added a new target—number of people provided with improved sanitation. The target was set at 300,000.



Revised PDO Indicators

24. Simultaneously, the project added a new indicator with new target set: number of people connected to wastewater network with the target of 300,000 residents to be connected to the Sarajevo ViK sewer.

Revised Components

25. While no components were formally revised, in Component B some original elements were replaced with procurement of instruments needed for the proper and efficient operations of the water network and other instruments. This change was agreed to by the World Bank to prevent duplication of activities in expectation of the imminent EBRD loan that aimed at addressing financial and institutional development of the Sarajevo ViK (Aide Memoire, September 19–24, 2011). Thus, using the Component B funds, the Sarajevo ViK and the World Bank team agreed to procure the following that helped the utility to operate more efficiently.

- Equipping laboratory for control of water quality
 - Spectrophotometer
 - Atomic absorption spectrometer with graphite furnace
 - Gas chromatographer with nitrogen-phosphorus detector and flame ionization detector
- Reconstruction of information technology infrastructure in the Sarajevo ViK
 - Wide area network
 - Development of an Integrated Information System and Internet Application Server with Oracle license
 - Consulting for development of the Information System on the Oracle platform
- Maintenance and development of geographic information system (GIS)
 - GIS Information Technology equipment
 - Global positioning system receiver for GIS and office software and training
 - ArcGIS 10.2 desktop license
 - AutoCAD Map 3D 2013 single license
- Leak detection instruments
 - Electroacoustic equipment for leak detection



26. Two small studies related to the sludge utilization remained in the project scope and were successfully completed.

Other Changes

27. On November 4, 2015, the SWWP was extended for 18 months following formal restructuring (Report RES 20385) to complete the main contract for Sarajevo WWTP rehabilitation, extending the closing date of November 30, 2015 to May 31, 2017, following the formal request by the BiH Ministry of Finance and Treasury dated August 21, 2015. There were no changes in the PDOs at restructuring. However, EUR 650,000 were reallocated within the Component A from Category 1 (Goods and Works) to Category 2 (Consultants' Services) to cover increased cost of supervision of construction.

Rationale for Changes and Their Implication on the Original Theory of Change

28. The extension of the loan and its restructuring allowed completion of the Sarajevo WWTP construction, its testing, and commissioning to the client.

29. The modification to Component B was agreed to between the World Bank and the Sarajevo ViK to avoid duplication with the EBRD loan, now signed on May 11, 2017 and is planning to cover institutional development, FM, and commercialization of the utility operations. No restructuring was applied to this component as this change was below US\$0.5 million and as such was considered minor.

30. On September 30, 2017, EUR 2.9 million was cancelled upon the closing of the SWWP accounts. This happened due to: (a) savings of the project funds; and (b) substitution of the loan amounts with the EC IPA grant resources for upgrade and refurbishing of the Sarajevo WWTP.

II. OUTCOME

A. RELEVANCE OF PDOs

Assessment of Relevance of PDOs and Rating

Relevance of PDOs - High

31. The PDOs of the project are aligned with the current CPF for BiH (Report No. 99616-BA, November 15, 2015) and specifically its Pillar III - Environmental Sustainability: ensure a sustainable use of natural resources, such as water and forestry, which are key to economic growth in BiH, and adapt to climate change and promote the sustainable development of basic municipal services.

32. At the time of appraisal, the project's objectives were also consistent with the country's development priorities and the World Bank's CPS (Report No. 41330 - BA, November 12, 2007), CPS specifically called for "Particular attention needs to be paid to improving: ... water and waste water services". Given the situation of the water and wastewater sector and most of the country's utilities, including limited new investments, deteriorating stock of infrastructure, poor operation and maintenance (O&M), and inadequate financial performance of the Sarajevo ViK, the project was to follow the authorities' request to rehabilitate damaged wastewater infrastructure. The CPS for 2008–2011 reconfirmed the need for improving public spending and the delivery of public services for the vulnerable



through enhancing delivery of municipal services and strengthening municipal finance. This was achieved through essential rehabilitation and maintenance of the wastewater infrastructure of the Sarajevo ViK, particularly those that needed to address critical health and environmental problems posed by limited access to sanitation and pollution of water resources of the Danube River basin. As it was mentioned earlier, the project utilized the experience of previous World Bank projects and studies.

33. BiH is currently on the accession track toward the EU. As part of the accession process, it will have to comply with the EU environmental requirements including availability of wastewater treatment facilities for all settlements with population equivalent of 10,000. In the next 10–15 years, the sector policy will likely be driven by the EU accession that requires construction and operation of many wastewater treatment facilities, so the experience of the SWWP will be much demanded by municipalities. The annual reports on the EC IPA Country Action Programme for BiH are regularly published and disclosed. The key topics for support include, but are not limited to, harmonization of the relevant legislation in BiH with EU water-related acquis, development of management plans for the Sava River watersheds capacity building, tariffs in the water sector, and strengthening of the water information system.

B. ACHIEVEMENT OF PDOs (EFFICACY)

Assessment of Achievement of Each Objective/Outcome

34. **Reduced populations' exposure to and reliance on highly polluted water from the Miljacka and Bosna Rivers.** The SWWP stopped the flow of wastewater from Sarajevo municipality that was collected and then discharged untreated directly into the Miljacka River. This provided public health benefits for 200,000 residents located downstream of the Sarajevo WWTP because of reduced threat from waterborne and water-washed diseases by intercepting and treating of the wastewater. These benefits materialized immediately after starting operations of the Sarajevo WWTP on May 17, 2017.

35. All wastewater management objectives of the project were achieved. It was done through: (a) extending mains and establishing in-house connections to the wastewater network for at least 48,000 households (150 percent of the original project goal); and (b) rehabilitation of the Sarajevo WWTP and overall enhancement of the treatment processes at the Sarajevo WWTP. The wastewater treatment was enhanced with installation of the nutrient removal processes, rehabilitation of a sludge digester at the WWTP, and installation of the combined heat and power unit (CHP) for electricity and heat generation from the combustion of recovered biogas produced in the sludge digestion process.

36. **Improved efficiency of wastewater collection and treatment in the Sarajevo Canton.** All wastewater generated within the Sarajevo ViK operations mandate is now collected and properly treated. The SWWP also improved operation of the wastewater collection network by reducing the number of sewer blockages by 15 percent from the baseline. The current flow of the wastewater is 160,000 m³ per day, which is 80 percent of the designed capacity of 216,000 m³ per day, which is also above the target of 200,000 m³ per day. The reserved capacity is needed for future city development and in case of emergency flooding within operations' areas of the Sarajevo ViK. The Sarajevo WWTP removes 7,066 tons of BOD₅. In addition, with the introduction of a sludge digestion process financed by the EC IPA, SWWP also reduced the carbon footprint of the Sarajevo ViK by 2,900 tons of carbon equivalent per year.



37. **Improved living conditions of populations in the areas covered by the Sarajevo Water and Wastewater Company and in downstream riverside communities:** The SWWP directly improved living conditions of about 300,000 Sarajevo residents who got connected to the Sarajevo ViK wastewater collection network. These residents, while living in proximity to the Sarajevo ViK wastewater mains were using pit latrines. The evidence of improved living standards was collected during the focus group meeting of beneficiaries in Butila, a typical settlement within the Sarajevo ViK operation mandate (see annex 7 for details). In addition to general convenience and increase in water consumption, the Butila residents also confirmed the increase in the properties' values and influx of small businesses, such as small shops and cafes into residential areas connected to the Sarajevo wastewater collection system. There is no more flooding from the filled latrines. The SWWP also helped reduce threat of pollution of the water table for the Sarajevo ViK water intakes: several underground wells were in proximity to settlements without wastewater connections. This threat is now reduced as wastewater is properly collected and removed.

Justification of Overall Efficacy Rating

Rating: **Substantial**

38. The SWWP substantially achieved its key objectives and exceeded some of its original target outcomes.

C. EFFICIENCY

Assessment of Efficiency and Rating

Rating: **Substantial**

Net present value (NPV) US\$36.3 million, economic rate of return (ERR) 70 percent

39. **Economic analysis.** The original Project Appraisal Document (PAD) used contingent valuation of the willingness to pay for the improved services. The expected economic internal rate of return (EIRR) was assessed at the level of 34 percent. However, tariffs were not adjusted per the results of the study and as such could not be used for the assessment. The original economic model also did not assess the potential property increase. The team used cost-benefit analysis (before and after the project) considering both original project outcome (improving living conditions, using property value increase as a proxy) and additional outcomes related to global benefits with reduction of: (a) nutrients flowing into the Danube River basin; and (b) carbon footprint of the Sarajevo ViK wastewater operations.

40. **Benefits and costs.** The project generated two levels of benefits: local and global. Local benefits reflect increase in the property value of the population newly connected to the Sarajevo WWTP, and public health benefits from reduced threat from waterborne and water-washed diseases by intercepting and then treating of wastewater for population located downstream of the Sarajevo WWTP (the latter is not accounted). Global benefits include reduction of nutrient pollution of the Danube basin, and reduction of GHG emissions, primarily CO₂, by substitution of the coal (lignite)-generated electricity used by the Sarajevo ViK and specifically, Sarajevo WWTP. The benefits are assessed for 20 years after the project completion. In addition to investment costs, the local costs include payment for the wastewater services by the connected customers and additional electricity consumption for nutrient removal.



Table 1. Summary of the SWWP Economic Results

	NPV, US\$	ERR, %
From connected beneficiaries	38,134,287	80
From nutrient removal	6,023,485	4
From carbon replacement	8,450,182	34
Total SWWP	36,391,927	70

41. **Cost efficiency analysis.** The SWWP was cost efficient as its investments were at par or below similar costs in the West Balkans region.

Table 2. Cost-efficiency Comparisons

Name of the Project	City	Cost	Unit Cost
Construction of wastewater mains			
Croatia Coastal City Pollution Control Project 2	Biograd	EUR 10.7 million	EUR 0.563 million per km
Croatia Coastal City Pollution Control Project 2	Rijeka	EUR 5.2 million	EUR 0.742 million per km
SWWP	Sarajevo	US\$11 million	US\$0.415 million per km
Construction of WWTP			
Croatia Coastal City Pollution Control Project 2	Zadar, secondary treatment only	EUR 15.2 million	EUR 70 per m ³ a day of capacity
Zagreb Wastewater Treatment Plant (EBRD)	Zagreb, tertiary treatment	EUR 274 million	EUR 110 per m ³ a day of capacity
SWWP	Sarajevo, tertiary treatment	US\$29 million	US\$14.5 per m ³ a day of capacity

42. Competitive bidding helped in reducing construction costs of wastewater mains. More than 50 lots were won by 20 different construction companies, mostly local. Lower construction cost of the WWTP was the result of the fact that the SWWTP was rebuilt instead of being newly constructed and all permits and land allocations were not required for the works at the Sarajevo WWTP. The latter also helped to accelerate the turn-key contract for WWTP reconstruction.

43. The Sarajevo ViK revenue, grew relatively quickly as many new customers started to consume more water and Sarajevo ViK is gradually expanding metered charges. The revenue grew by 17 percent since 2010. The operational cost coverage of the Sarajevo ViK was 77 percent in 2016, up by 28 percent from the 2009 level. The Sarajevo ViK cost-recovery is getting better from year-to-year, however, it is still not sufficient to cover O&M costs yet. See detailed financial performance in annex 4.

44. The Sarajevo Canton Government provides an annual subsidy. The amount of subsidy dropped in recent years, from BAM 6.0 million (2012) to about BAM 500,000 (2016) a year. The level of subsidy for 2017, however, will increase to cover part of the wastewater treatment costs and depreciation of the newly installed equipment (current depreciation rate is 1.7 percent for wastewater assets and will grow to at least 7.0 percent).

45. The project was extended by 18 months as per the request of the client to allow completion of the Sarajevo WWTP reconstruction, its testing, and commissioning to the client.



D. JUSTIFICATION OF OVERALL OUTCOME RATING

Rating: Moderately Satisfactory

46. Although the project achieved High rating for Relevance of Objectives, and Substantial ratings for Efficacy and Efficiency, the ICR team proposes rating the outcome as Moderately Satisfactory given the substantial risk to development outcomes.

E. OTHER OUTCOMES AND IMPACTS (IF ANY)

Gender

47. Although there are no direct relevant gender aspects or poverty impacts, the project provided large benefits for the Sarajevo residents by reducing the threat of and associated costs from the impact of waterborne diseases and by improving water quality for the population downstream of the Sarajevo WWTP. The aspects of living conditions related to every day domestic chores commonly done by women improved by having the access to sanitation services and helped reduce the labor burden on them.

Institutional Strengthening

48. The institutional change/strengthening is deemed to be modest. This is based on the following:

- (a) The Sarajevo ViK now has strengthened capacity with respect to investment preparation requirements and contracting as well as construction supervision. These activities were previously performed by other agencies, often with little consultation and interaction with the entity. The Sarajevo ViK also received training in FM and procurement procedures for World Bank-financed projects, which is generally applicable to most international financing institutions (IFIs).
- (b) At the same time, the SWWP had only limited uptake by the Sarajevo ViK of the TA that was planned to be provided under Component B. Originally, the assistance was designed to provide the support of international consultants and the resources needed to assess and understand the existing shortcomings of their facilities' operations; and training with respect to costing investment choices and investment prioritization. These plans were cut short in expectation of the EBRD loan that started its implementation only in 2017. The EBRD operation plans to address water supply as well as corporate and institutional development of the Sarajevo ViK.
- (c) The Sarajevo ViK remains overstaffed with unskilled people, technically oriented entity with insufficient concern for efficiency, cost recovery, and other related commercial management practices. There is a critical need to transfer qualified staff to properly operate the rehabilitated WWTP for its sustainable operations. The allocated funds were spent instead on equipment that helped improve knowledge of the utility processes, leakage reduction, and laboratory. However, it did not substitute for the institutional development of the Sarajevo ViK.



Poverty Reduction and Shared Prosperity

49. The SWWP significantly contributed to shared prosperity by increasing the living standards of the 300,000 residents now connected to the Sarajevo ViK sewerage system. This coincided with an increase in the property value of their housing. Indirectly, the project helped with savings on water treatment of the Sarajevo ViK water intake, as uncontrolled discharges from latrines were polluting the water table of its water intakes. Additionally, the SWWP significantly reduced the pollution burden for about 200,000 residents along the Miljacka and Bosna Rivers living downstream of the Sarajevo WWTP and may allow for generating more disposable income that can be spent on education, health, and improvement of living standards.

Other Unintended Outcomes and Impacts

50. The project provided substantial global benefits with removal of nutrients and five-day biochemical oxygen demand (BOD₅) from inflows to the Danube River basin by about 800 tons of active nitrogen and phosphorus a year.

51. Experience in working with IFIs also extended beyond the borrower. It was not only the PIT and the PMT and the participating personnel who gained experience in preparation of tender documentation in compliance with international standards but also the local contractors who built wastewater connections. Thus, their experience and skills were improved.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

52. The overall driver for the SWWP was the EU accession process that required operational wastewater collection and treatment capacity to all settlements with 10,000 population equivalent. Reconstruction and restart of the Sarajevo WWTP also had a significant symbolic value because the WWTP was operational during the Sarajevo Winter Olympics in 1984 and was destroyed and looted during the conflict in 1992–1995.

53. The SWWP focused only on one part of the Sarajevo ViK operations—wastewater treatment and wastewater collection from only 17 districts of Sarajevo. Water supply, wastewater collection from most the city, technical operations of the water and wastewater networks, and financial and institutional development remained outside of the SWWP scope and development objectives.

54. The project design incorporated lessons learned from previous World Bank involvement in water and sanitation projects in Europe and Central Asia. At the time of project preparation, the World Bank's involvement in water and sanitation projects in transition countries was extensive. Significant attempts were made to take these lessons into account and take upfront actions to have the right enabling environment, including: (a) securing the commitment of the beneficiary (Sarajevo ViK) and the authorities to the project's financial reform objectives up front, that is, basic decisions on adequate tariffs to be in place before inclusion of the Sarajevo ViK staff in negotiations (this, however, was only partially achieved during implementation); (b) agreeing on the project cost and loan amount on the basis of a realistic assessment of the Sarajevo ViK's ability, financial capacity, and level of tariffs that the Sarajevo Canton



authorities considered to be socially acceptable for their constituents; (c) having a clear understanding and full agreement with the Sarajevo Canton authorities and the Sarajevo ViK managers on all elements of the project; (d) providing TA to the Sarajevo ViK to identify, design, and implement mandatory programs of institutional strengthening and facilities rehabilitation and efficiency improvements (this, however, also was only partially achieved during implementation); (e) building of a strong project implementation capacity early on through the creation of project implementation units (PIUs) (both PIT and PMT); (f) completing bidding packages for the first year of investments and hiring consultants for preparation of bidding packages for the entire investment program by the time of presentation to the World Bank Board; and (g) procuring first-year investments, preparing draft bidding documents for the majority of the investment program, and hiring key consultants by the time of project effectiveness.

55. Prior financial and project management experience, gained by implementing World Bank-financed projects such as the UISDP, PHRD grant for the preparation of the SWWP (former MDP), and the Neretva and Trebišnjica River Basin Management Project (BiH/Croatia), P084608 significantly helped the project preparation.

56. The SWWP did not have Substantial or High risks in terms of its outcomes through the implementation period. Adequate mitigation measures, such as relocation of wastewater connection areas, enumeration of beneficiaries, and financial grants from the EC IPA were timely incorporated into the SWWP program. Additional FM arrangements in the project were included in the audit of project financial statements by an independent auditor acceptable to the World Bank and on the terms of reference acceptable to the World Bank. In addition, the Sarajevo ViK regularly forwarded, to the World Bank, its utility annual financial statements audited by local auditors and in compliance with the local laws and regulations.

57. Sufficient consideration was given to environmental and social issues and safeguards. The project was screened and classified as category B in accordance with the World Bank's operational policies. A review of potential environmental impacts associated with the investments was carried out during the project preparation with the assistance of foreign consultants. This was complemented by a specific Environmental Management Plan (EMP). The project was not anticipated to have significant negative environmental effects and would not result in any involuntary resettlement or land acquisition because it focused on rehabilitation of the existing networks and facilities. Moreover, it was anticipated that the project would have a positive environmental impact, as it would result in improved drinking water quality, improved quality of wastewater released after treatment and better handling of solid and liquid wastes, reduction in the use of chemicals and better handling of water treatment residuals, and reduced risk of sewage spills. With advanced treatment technology and implementation of the sludge digestion process, the project was also able to reduce nutrient pollution of the Danube River basin and reduce the Sarajevo WWTP's carbon footprint.

58. Both project preparation and the process of declaring the loan effective were relatively long for such a type of project. Preparation of the project started in 2007, with five BiH municipalities. By 2008, only two municipalities remained in the project pool, Sarajevo and Banja Luka. Finally, after the QER that took place in November 2009, the project was simplified to Sarajevo only. The original board date was delayed by six months. The Loan Agreement for this project was negotiated in fall 2009 and approved by the World Bank Board of Directors on December 21, 2009. It became effective on July 15, 2010, with a delay of about three months because of the processing of subsidiary loan agreements (one within the BiH Ministry of Finance and Treasury and another between the Ministry of Finance on one side and the



Sarajevo Canton and the Sarajevo ViK on the other). As mentioned earlier, the EC IPA grant preparation took another two years (finally ratified on December 20, 2012), and this also somewhat delayed the works at the SWWTP.

B. KEY FACTORS DURING IMPLEMENTATION

59. There were four changes of the authorities during the project implementation. However, the effect of these changes was limited at the SWWP level. The issue of the annual financial contribution was finally resolved with the client in 2010 and never appeared again. The client was very responsive and provided its comments, requested information such as performance reports, audited statements and other documents required for the proper supervision, and made financial contributions on time. The tariff issue remained through the project implementation, however, but it supposedly was to be resolved at the implementation of the EBRD loan. Both the Project Management Unit (PMU) and the PIT capacity for implementing the project was sufficient. Both units had skilled staff with clear roles and responsibilities.

60. Project design was primarily focused on technical achievements. Financial improvements were considered to a limited extent, focusing on relatively modest financial targets: (a) secured local financial contribution from the Sarajevo ViK to the project was required every year from the project initiation; and (b) increase in the revenue by 10 percent was expected during the project implementation. The Sarajevo Canton Government, however, was reluctant to discuss tariff adjustments or tariff reforms through the project referring these to political difficulties and potential of the reform through the EBRD loan.

61. Maintaining the overall lending envelope, the SWWP rearranged several construction contracts on wastewater connection to the Sarajevo ViK mains. Several communities originally included in the connection plan with the Sarajevo ViK wastewater mains declined to participate and finances were reallocated to other parts of the city for a variety of reasons. The total number of connections increased to 48,000 or 150 percent of the original target. The length of the newly constructed wastewater mains was increased by about 9.1 km. The decision process in obtaining construction permits was quite prolonged for many awarded contracts, although all construction of wastewater connections was completed and closed within the original time frame of the SWWP.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

M&E Design

62. Key outcome and output indicators were clearly aligned with the project objective, except for specific indicators to measure the 'improved living conditions' aspect of the PDO, which were missing. The team considered the number of beneficiaries and assumed that all benefited from improved living condition, by default, as residents of the areas of the improved service.

63. Other indicators were well defined, and the baseline and targets were realistic.

M&E Implementation

64. The PIT and the PMU implemented the data collection and monitoring systems immediately at the beginning of the project. Effective systems were put in place and indicators were systematically



monitored by the PMU. It was diligent in data collection and reporting on performance data to the World Bank. The M&E results were appropriately reported in the SWWP Implementation Status and Results Reports.

M&E Utilization

65. Information collected was useful in assessing the progress toward project implementation and informing the client. The client will continue monitoring the Sarajevo WWTP operations, costs and revenues of wastewater operations, and number of sewerage blockages for years to come after the SWWP closure.

Justification of Overall Rating of Quality of M&E

Rating: Substantial

66. The M&E system was adequate with respect to design and implementation of the monitoring system to track SWWP results and inform project management and decision making.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

67. The project was classified as environmental category B in accordance with the World Bank policies because it would have financed rehabilitation of the existing sewerage infrastructure. During the project preparation, a review of the potential environmental impact of the proposed investments was carried out and a draft Environmental Assessment (EA) report was prepared by the Sarajevo VIK. This report analyzed potential adverse environmental issues related to the proposed rehabilitation investments and ensured that these aspects are mitigated during project design. The draft EA report including the EMP was discussed at public meetings held on October 13 and October 26, 2009 in Sarajevo. The draft document was posted and became available from October 19, 2009. The final EA/EMP document, including comments from the public meetings, was submitted to the World Bank's InfoShop for disclosure on October 26, 2009. PIT consultants implemented the EMP under overall supervision of the PMT. Monitoring reports included water and soil quality sampled from the project area.

68. The project was assessed against OP 4.11 Physical Cultural Resources. Although no cultural resources were present within a project area, the EMP contained provisions for 'chance finds' consistent with the local regulation inserted into the contractor's bidding documents package.

69. The project was assessed against OP/BP 7.50 Projects on International Waterways. It was found that it consisted exclusively of existing facilities and would rehabilitate existing facilities only and not: (a) adversely change the quality and quantity of water flows to the riparian countries; and (b) be adversely affected by other riparian countries' possible water use. Additionally, the project did not increase the water use. The project team requested an exception to the notification requirement under OP 7.50 in accordance with paragraph 7(a). The official Europe and Central Asia Vice Presidency memorandum was prepared and subsequently cleared on September 29, 2009.

70. The project did not trigger OP/BP 4.12 as it did not involve land acquisition or resettlement.

71. The project was constantly in compliance with fiduciary and procurement requirements.



72. The World Bank review of the FM arrangements at the PMT concluded that the FM system, including accounting, budgeting, organization and staffing, internal controls, funds flow (including counterpart funding), audit, and financial reporting, continued to be adequate and satisfactory to the World Bank. The project units were well staffed and well managed. Quarterly unaudited interim financial reports (IFRs) were submitted regularly and timely to the World Bank and were found acceptable.

73. There were some issues related to counterpart funding contributed by the Sarajevo Canton (specifically for FY2013). Both the PMT and the PIT undertook appropriate actions and received the remaining amount of Sarajevo Canton Government counterpart funding for 2013 and then for all fiscal years.

74. The audits were conducted on time. Auditors regularly issued unqualified opinions on the project financial statements. The management recommendation letters never contained any internal controls deficiencies or accounting issues. The auditor's reports and audited financial statements as well as management recommendation letters were delivered to the World Bank on time throughout the project duration.

75. Overall internal control while preparing withdrawal applications was fully adequate. The required supporting documents were in place and properly checked and authorized for payment by respective staff. The correct disbursement percentage and exchange rate was also used. The procurement performance was mostly satisfactory during implementation with no procurement delays through the project.

C. BANK PERFORMANCE

Quality at Entry

76. The SWWP utilized the experience of previous World Bank projects in BiH, such as the UISDP (Credit No.3954-BA) and the First and Second Solid Waste Management Project (P057950; Credit Nos. 3672-BA and 3672-1-BA; Loan No. 7629-BA), while the analytical basis for the policy dialogue with authorities is provided by the 2009 sector study 'From Stability to Performance: Local Governance and Service Delivery in Bosnia and Herzegovina'. The project also utilized a PHRD grant (TF92826, US\$480,000) provided by the Government of Japan.

77. The project was fully aligned with the Government's interests, objectives, and sector needs. All wastewater network development plans and designs were developed before the SWWP effectiveness. It was ready for implementation immediately, although five original locations were changed as per the request from the Sarajevo Canton.

78. While the World Bank team understood well the problems that exist in the water supply and wastewater services sector in BiH and tried to design a project to improve the operational performance of the Sarajevo ViK, the SWWP preparation took a relatively long time—almost three years elapsed between the approval of the project concept and the approval of the project by the Board. Agreements among institutions and stakeholders, as well as political and enabling environment circumstances, tend to change during such a long period. This specifically applies for FM, tariff adjustment process, institutional development, and other elements of the sustainable operation of any water utility.



79. The burden of cofinancing arrangements for the Sarajevo Canton Government contribution, which were at the core of the project design should have been more carefully considered and their impacts on implementation progress better analyzed by the World Bank team in consultation with stakeholders. Exclusion of the Sarajevo ViK from contribution to the project just extended its institutional dependency on the Sarajevo Canton Government. It did not help that the company became more diligent in investment planning and incurring associated costs of O&M of such investments. Additionally, overreliance on the EBRD financial intervention had slowed down the institutional reform process at the Sarajevo ViK.

Quality of Supervision

80. Given the nature of the SWWP design and the numerous external changes that took place during the implementation period (for example, four changes in authorities and four Sarajevo ViK directors), intense supervision and follow-up by the World Bank was required. The World Bank undertook regular supervision (and more frequent supervision when needed), including field visits and physical checks of investments. Critical problems and bottlenecks were identified as early as possible and solutions sought in collaboration with the PMT and the PIT. The midterm review focused on acceleration of the largest contract for WWTP rehabilitation.

81. The strengths of the supervision performance included: (i) a proactive supervision team, well balanced in skills between HQ and the field, and with substantive experience in improving wastewater utility performance; (ii) adequate weight given to community ownership of the new connections and benefits associated with proper wastewater collection. In general, the supervision team had a good measure of practicality and continuity and the impact of the Bank team's supervision effort was considerable despite the challenges.

82. However, the World Bank team did not manage to address the SWWP's shortcomings on Component B major parts of which were also a part of the prospective EBRD loan, which was left largely unimplemented. Also, the complexity of the major contract on rehabilitation of the Sarajevo WWTP, specifically because it had three sources of funding (World Bank loan and two EC IPA grants that had different systems of VAT accounting somewhat delayed the project implementation and increased its duration by 18 months.

Justification of Overall Rating of Bank Performance

Rating: Moderately Satisfactory

83. The World Bank's overall performance is rated Moderately Satisfactory. The World Bank team was continuously engaged throughout the project preparation and implementation and demonstrated good professionalism. However, there were some shortcomings in the preparation phase (long preparation time, and overreliance on external factors to address long-term sustainability) and during implementation. The team missed the restructuring opportunity to address some of those shortcomings and formally reflect the impact of the EC IPA grant. There was still the need to cancel 25 percent of the loan funds because of substitution of the loan proceeds with the EC IPA grant. It is important to note that the collaboration between the World Bank and the borrower, particularly the PIT and the PMT, has been valuable and critical for the project's final achievements.



D. RISK TO DEVELOPMENT OUTCOME

84. The authorities and all different levels of stakeholders continue to be committed to the sustainability of wastewater treatment. The Sarajevo Canton Government has also been demonstrating their commitment financially. However, there are several challenges for the authorities in the post-completion phase of the project, to maintain the achievements, specifically: (a) low financial capacity because of low tariffs and substantial overall inefficiencies in the Sarajevo ViK operations, (b) low technical capacity, lack of qualified staff, and lack of interest from the authorities in improvement of the utility's accountability through corporatization and reforms. In detail, the following is urgently required to maintain the project achievements:

- (a) **Need for additional support for rehabilitation of water supply and wastewater systems.** Because the project only included priority/rehabilitation works in the Sarajevo WWTP, many parts of the systems in the Sarajevo ViK are still in need of upgrade and rehabilitation. The reported nonrevenue water (NRW) increased from 71 percent in 2009 to about 75 percent in 2016. The number of breaks in the water network was 2.47 per km of the network (2014) that resulted in systematic interruption with supply of water less than 20 hours a day on average. And generally, without reliable water and wastewater services, it will be difficult to implement any tariff reforms and consumers will likely not find tariff increases acceptable.
- (b) **Review of cost recovery for water supply and wastewater services provision.** The financial sustainability of the Sarajevo ViK is still precarious and efforts are needed to ensure that the Sarajevo ViK can fully cover their operating costs, when the WWTP operates in full capacity. The formal cost recovery was in the range of 128–130 percent, with the collection rate constantly below 90 percent, meaning that the Sarajevo ViK is operating just to cover its O&M costs with no margin for depreciation and resources for effective borrowing. At the same time, investment programs, including financing options, also need to be more systematically developed on par with the city development and increased demand on the quantity and quality of services. The Sarajevo Canton Government fully recognizes the situation with cost recovery and additional cost associated with proper operation of the Sarajevo WWTP. The financial need is assessed at the level of at least BAM 3.0 million per year (US\$2.4 million). This estimate will be refined with the financial report from the contractor's report. It is also expected that at least 80 percent of the Sarajevo WWTP electricity cost will be offset by the utilization of biogas from the sludge digestion process. The Sarajevo Canton Government also believes that there should be a significant cost reduction because the EBRD lending operation is focusing on reduction of NRW and energy efficiency that may offset the increased cost of the Sarajevo WWTP operations.
- (c) **Shortage of professionals at the Sarajevo WWTP.** The Sarajevo WWTP management recognizes that the plant does not have enough professionals for the proper operations of the WWTP. While the plant is new and may not require a lot of maintenance during its early normal operations, longer-term maintenance would be required. The Sarajevo WWTP trains new personnel for maintenance of the WWTP from 2017. However, this process may be delayed because of shortage of qualified staff.



V. LESSONS AND RECOMMENDATIONS

- 85. A project of such scale and ambition should not take care of only one part of the utility's operations.** The absence of a holistic approach in project design resulted in asymmetric results: while all wastewater is now collected and treated, and the number of wastewater blockages continues to go down, low institutional and financial capacity, growing water losses, and overall financial status of the Sarajevo ViK pushes it to reduce hours of operation to achieve short-term gains, while shortening the life of its mains and pumps with intermittent operations. Reliance on other actors to implement complementary activities constitutes a risk and requires adequate mitigation. Also, inclusion of a simple institutional TA component does not guarantee buy-in and might warrant a more secure mechanism for their commitment during implementation. If the decision is taken to implement the project from the multiple sources, then stronger coordination need to be agreed and followed between all donors.
- 86. Project objectives should be closely tailored to the capacity of the Government and related agencies** to implement the project and to the conditions of the enabling environment existing at the time of project preparation. Therefore, a large project, implemented by a borrower with limited experience, as is the case here, should be: (a) simple in design, including approval processes; (b) prepared in a participatory manner with all relevant agencies involved in the decision making and approval of the design; and (c) monitored for sustainability and financial issues throughout the entire project.
- 87. Implementation of utility strengthening through a PMU and PIT distances the knowledge from the demand.** The current experience of implementing the project through the PMT and the PIT, that is, a PIU, although an appropriate arrangement at the time and largely shielded from excessive political influences, illustrates the dangers of limited connectivity to the authorities at higher levels as well as limited institutional capacity development at the same level..
- 88. Operation costs need to be properly calculated and affordability of tariffs needs to be carefully assessed before the project.** This specifically applies to grants. The team missed a good opportunity to restructure the project and conduct an incremental cost analysis and predict the tariff level required to cover at least O&M costs.



ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Improve the living conditions of populations in the areas covered by the Sarajevo Water and Waste Water Company and in downstream riverside communities by: (a) reducing the population's exposure to, a

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Reduction in river pollution measured by amount of BOD5 removed at the WWTP (tones/year)	Number	0.00 22-Dec-2009	8640.00 01-Jul-2014	31-May-2017	7066.00 23-May-2017

Comments (achievements against targets): The target is fully achieved. All wastewater collected is treated to a tertiary level at the Sarajevo WWTP. The original target considers the maximum wastewater flow, which happens during the spring floods for which the plant has enough capacity to capture and control all wastewater during such emergencies.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Volume of waste water collected treated at primary level (m3/day)	Cubic Meter(m3)	0.00 22-Dec-2009	200000.00 01-Jul-2014	31-May-2017	160000.00 23-May-2017

Comments (achievements against targets): All generated wastewater is now collected at the Sarajevo WWTP. Excess capacity is needed for the future city



growth and during floods' emergencies.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
People provided with access to improved sanitation services	Number	0.00 15-Dec-2012	300000.00 01-Jul-2014	31-May-2017	300000.00 23-May-2017
People provided with access to "improved sanitation facilities" - urban	Number	0.00 15-Dec-2012	0.00 01-Jul-2014	31-May-2017	300000.00 23-May-2017

Comments (achievements against targets): 100% of residents are connected to the wastewater network, adding 300,000 people to this service.

Unlinked Indicators

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of sewer connections benefiting from rehabilitation works	Number	0.00 22-Dec-2009	32000.00 01-Jul-2014	31-May-2017	48000.00 23-May-2017

Comments (achievements against targets): The target is achieved with 50% over the original target, within the original financial envelope.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of sewer blockages	Number	3300.00	2900.00		2800.00



per year		22-Dec-2009	01-Jul-2014	31-May-2017	23-May-2017
Comments (achievements against targets): The target is fully achieved and number of breaks are below the original target.					

A.2 Intermediate Results Indicators

Component: High Priority Infrastructure Rehabilitation

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Cumulative length of sewage collectors repaired and/or rehabilitated (km)	Kilometers	0.00 22-Dec-2009	16.00 01-Jul-2014	31-May-2017	26.50 23-May-2017
Comments (achievements against targets): The length of the new mains built is 140% to the original plan, however within the original financial envelope.					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
% of WWTP rehabilitation works completed	Percentage	0.00 22-Dec-2009	100.00 01-Jul-2014	31-May-2017	100.00 23-May-2017
Comments (achievements against targets): 100%. Wastewater treatment plant is completed and transferred to the Client in October 2017.					

Unlinked Indicators

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised	Actual Achieved at
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				Target	Completion
Increased revenues (in %)	Percentage	100.00	110.00		117.00
		22-Dec-2009	01-Jul-2014	31-May-2017	23-May-2017
Comments (achievements against targets): The increase of the revenue billed is 117%, or seven percent above the target.					



B. KEY OUTPUTS BY COMPONENT

Objective/Outcome 1 High Priority Infrastructure Rehabilitation	
Outcome Indicators	<ul style="list-style-type: none"> • Reduced pollution of Miljcka River with BOD₅ and nutrients • Improved living conditions for about 200,000 residents of Sarajevo
Intermediate Results Indicators	<ul style="list-style-type: none"> • Cumulative length of the constructed network • Volume of wastewater undergoing at least primary treatment • Number of wastewater blockages
Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)	<ul style="list-style-type: none"> • Repair and replacement of the sewers network. Repaired 28 km of the network and connected 48,000 premises or about 200,000 residents of Sarajevo • Reduced pollution to 300,000 residents living downstream to Sarajevo WWTP • Rehabilitation and upgrade of the Sarajevo WWTP to the EU standard
Objective/Outcome 2 Institutional Development Support	
Outcome Indicators	<ul style="list-style-type: none"> • Improved institutional status of the Sarajevo ViK
Intermediate Results Indicators	<ul style="list-style-type: none"> • Increased revenue of the Sarajevo ViK
Key Outputs by Component (linked to the achievement of the Objective/Outcome 2)	<ul style="list-style-type: none"> • Sufficient finances to cover O&M cost of the Sarajevo ViK



ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
Aniruddha Dasgupta Advisor	
Jonathan Kamkwala Country Sector Coordinator (Task Team Leader [TTL])	
Yan F. Zhang	Urban Economist (previous TTL)
Vesna Frančić	Senior Operations Officer
Bjorn Philipp	Urban Specialist
Nataša Vetma	Senior Social Development Specialist
Paula Lytle	Environmental Specialist
Esmā Kreso	Safeguards Specialist
Ruxandra Floroiu	Environmental Engineer
Nikola Kerleta	Procurement Analyst
Lamija Hadžagić	FM Specialist
Dominique Bichara	Senior Counsel
Felix Jakob	Engineer (Consultant)
Delphine A. Hamilton	Senior Program Assistant
Senad Savić	Team Assistant
Supervision/ICR	
Iyad Rammal	TTLs
Karina Mostipan	Procurement Specialist(s)
Lamija Marijanović	FM Specialist
Sana Kh.H. Agha Al Nimer	Team Member
Sanja Tanić	Team Member
Esmā Kreso	Safeguards Specialist
Igor Palandžić	Team Member

B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US\$ (including travel and consultant costs)
Preparation		
FY09	60.814	275,768.21
FY10	27.643	114,180.06
Total	88.46	389,948.27
Supervision/ICR		
FY10	6.274	40,648.61
FY11	18.669	97,449.73



FY12	12.841	78,686.22
FY13	14.704	100,647.90
FY14	9.903	58,609.82
FY15	27.794	76,934.64
FY16	24.545	95,924.79
FY17	28.899	122,744.48
FY18	10.964	59,410.26
Total	154.59	731,056.45



ANNEX 3. PROJECT COST BY COMPONENT

Components	Amount at Approval (US\$, millions)	Actual at Project Closing (US\$, millions)	Percentage of Approval (%)
Component A: High Priority Infrastructure Rehabilitation	36.0	38*	105*
Component B: Institutional Development Support	0.5	0.5	100
Component C: Project Management	0.5	0.5	100
Total	37.0	39.0	104*

*Additional funding was provided by EC IPA on a grant basis



ANNEX 4. EFFICIENCY ANALYSIS

1. Key assumptions for economic and financial analyses:

Discount rate	12%
Global warming potential of methane (tons carbon dioxide/tons methane)	21
Ratio of m ³ CO ₂ emitted per m ³ of CH ₄ combusted	1
tCO ₂ /MWh emission factor for fuel used on the grid for electric power (and heat) generation	0.2
tCO ₂ /MWh emission factor for methane as fuel for the turbines	0.2
MJ-to-ton methane conversion factor	0.000018
Efficiency of grid electric power supply (gas)	40%
Electrical efficiency of the turbines run on methane	45%
kW capacity of each of the methane-fired turbine	1,000
Current number of employees at wastewater process	148
Number of additional employees for the nutrient component	5
Number of additional employees for the methane component	5
Annual salary of workers, US\$	2,500
Daily consumption of gas for heating (average for year)	10,000
Conversion efficiency of boilers MJ/MJ	50%
Calorific factor of natural gas (technically methane) KJ/m ³	36,176
Discount rate used in calculations	12%
Global benefit of nutrient reduction (US\$/ton)	5
Global benefit of GHG reduction (US\$/Ceq. ton) in 2020	15
Global benefit of GHG reduction (US\$/Ceq. ton) from 2025	25
Increase in the housing value	5%

2. For the purposes of this Implementation Completion and Results Report, the World Bank team used cost-benefit analysis (before and after the project). The original PAD used contingent valuation of the willingness to pay for the improved services. The expected EIRR was assessed at the level of 34 percent. However, tariffs were not adjusted per the results of the study and as such could not be used for the assessment. The original economic model also did not assess the potential property increase.

3. **Project background.** The key objectives of the SWWP was to improve the living conditions of (a) populations in the areas covered by the Sarajevo ViK through connecting their properties to wastewater mains served by the Sarajevo ViK and (b) downstream riverside communities by reducing the population’s exposure to and reliance on highly polluted water from the Miljacka and Bosna Rivers through rehabilitating and refurbishing the Sarajevo WWTP.

4. These objectives were achieved through the financing of: (a) extending mains and establishing in-house connections to the wastewater network for at least 32,000 households; and (b) rehabilitation of the SWWTP and overall enhancement of the treatment processes at the Sarajevo WWTP; this includes installation of the nutrient removal processes, rehabilitation of a sludge digester at the WWTP, and



installation of the CHP)for electricity and heat generation from the combustion of recovered biogas produced in the sludge digestion process.

5. **Benefits.** The project generated two levels of benefits: local and global. Local benefits reflect increase in the property value of the population newly connected to the Sarajevo WWTP and public health benefits from reduced threat from waterborne and water-washed diseases by intercepting and then treating of wastewater for the population located downstream of the Sarajevo WWTP. The Sarajevo WWTP is also one of the local beneficiaries with reduced power demand (by 90 percent) from the local grid and comprehensive substitution of heat demand with own heat generation from biogas burning. Global benefits include reduction of nutrient pollution of the Danube basin and reduction of GHG emissions, primarily CO₂, by substitution of the coal (lignite)-generated electricity used by the Sarajevo ViK, specifically, the Sarajevo WWTP. The benefits are assessed for 20 years after the project completion.

6. **Costs.** In addition to investment costs, the local cost will include payment for the wastewater services by the connected customers and additional electricity consumption for nutrient removal. The Sarajevo WWTP covers the cost of additional staff to maintain newly connected residents and additional operations at the Sarajevo ViK.

7. **Baseline.** Nearly 48,000 properties located in the administrative territory served by the Sarajevo ViK, while being in direct proximity to the wastewater mains, were not connected to this service. They relied on pit latrines, cesspools, and other second-best solutions. These latrines were randomly emptied and not properly maintained. In addition, the territory of such residential areas was constantly flooded. These altogether created a public health hazard and affected the value of housing for unconnected properties.

8. More than 200,000 people living downstream of the Sarajevo ViK were getting polluted water due to discharges of untreated wastewater that was collected in the area of the Sarajevo WWTP. The 1984-built Sarajevo WWTP had a standard two-stage treatment process without nutrient removal and sludge digestion processes. The plant was destroyed and looted during the 1992–1996 and was barely functional at the project inception, with only a grit collection unit fully functional in 2008. Health benefits for the population living downstream of the SWWTP are not assessed because of lack of information.

9. **Nutrient discharges.** From 1993 to 2008, untreated wastewater was discharged into the Miljacka River, part of Danube basin, resulting in significant pollution with biological substances, including active phosphorus and nitrogen. The 2009 World Bank investment plan did not directly address nutrient reductions. However, the rehabilitation of the Sarajevo WWTP and the completion of the sewerage network and main collectors would have resulted in significant reductions in the load of nutrients in any case. The EC IPA grant provided additional resources to enhance the secondary treatment process and reduce discharges of these pollutants and made the wastewater effluent correspond to the EU wastewater regulation. Also, the project reduced the number of people not connected to the wastewater system by connecting them to the Sarajevo ViK wastewater mains (their sewage is also treated at the WWTP now) that also reduced pollution with BOD₅ and nutrients. The impact of this program on the nutrient load into the Miljacka River and the current loads are summarized in table 4.1.

**Table 4.1. Annual Wastewater and Nutrient Discharges into the Miliacka River: Original Scheme and Results of the Investments**

	Unit	Before the Project	After the Project
Annual wastewater flow to the WWTP	Million m ³ /yr	43.0	48.0
Uncontrolled discharges	Million m ³ /yr	5.0	0.0
N content at the WWTP outlet	mg/l	18.0	3.0
P content at the WWTP outlet	mg/l	2.5	0.65
N discharges total	Ton/yr	872.0	145.0
P discharges total	Ton/yr	121.0	31.5
Total nutrients per year	Ton/yr	993.0	176.5

Note: N = Nitrogen, P = Phosphorus.

10. **GHG emissions.** The project GHG emissions were mainly related to electricity and heat consumption that was successfully substituted by biogas production that eliminated heat demand and substituted electricity, much of which is produced by coal-burn power generation.¹ The project also significantly reduces methane emissions by digesting the primary and secondary sludge and converting it into biogas. The biogas is burned at the CHP that now covers 100 percent of the heat demand and would cover up to 90 percent of the WWTP electricity demand from November 2017.

Table 4.2. GHG Emissions with the Project (thousand tons carbon equivalent per year)

	Baseline Demand	Project	Reduction
CO ₂ emissions from electricity use	2.74	1.52	1.22
CO ₂ emissions from heat use	1.95	0.33	1.68
Total GHG	4.69	1.85	2.90

11. **Local benefits assessment.** The major benefit comes from newly connected customers. The value of their housing increased on average by 5 percent. So, investment of US\$11 million resulted in a US\$38 million benefit with an internal rate of return (IRR) of 80 percent. Investment in anaerobic digestion, prevention of methane emission from the wastewater sludge, and the CHP process at the plant saved heat and electricity replacement of nearly US\$3 million a year to the Sarajevo WWTP operations' costs.

12. **Global environmental benefits.** The project resulted in global environmental benefits from the reduction of nutrient (P and N) discharges into international waters and GHG emissions into the atmosphere. Considering that the estimated global benefit from the reduction of 1 kg of nutrients is about US\$5,² the NPV of the global benefits (discounted to 2017) that the project will produce through the

¹ <https://bankwatch.org/campaign/coal/BiH>.

² The figure of US\$5 per kg has been adopted on the basis of available references, such as: US\$2 per kg proposed by G. Constantinides (Cost-Benefit Analysis Case Studies in Eastern Africa for the GPA Strategic Action Plan on Sewage. UNEP, 2000); SEK 62 per kg (US\$7.36 per kg) proposed for the marginal benefit of N reduction proposed by I.M. Gren and H. Folmer (Cooperation vs. Non-Cooperation in Cleaning of an International Water Body with Stochastic Environmental Damage: The Case of the Baltic Sea. Swedish University of Agricultural Sciences, Uppsala, September, 2001); EUR 11.50 per kg as the critical emission 'tax' level for the removal of P from detergents, as proposed by I. Ijjasz (Reducing Phosphorus in the Danube Basin Workshop, Hungary, 1995); and SEK 47 per kg (US\$5.58 per kg) and SEK 112 per kg (US\$13.30 per kg) for the marginal cost of reduction of nitrogen and phosphorus to coastal waters as proposed by K. Elofsson (Cost Efficient Reductions of Stochastic Nutrient Loads to the Baltic Sea, Paper presented at the 7th Ulvoe Conference 19–21 June 2000).



reduction of nutrient discharges has been calculated to be negative US\$6.5 million. Considering that the estimated global benefit from the reduction of 1 ton of carbon equivalent is about US\$15 until 2025 and then US\$30, the NPV of the global benefits (discounted to 2017) that the project will produce through the reduction of GHG emissions into the atmosphere has been calculated to be US\$8.4 million with an IRR of 34 percent.

13. **Sensitivity test.** If the volume of wastewater will reach the designed capacity (of 200,000 m³ per day) then the benefits will grow to US\$45 million, mainly because of increase of carbon replacement and nutrient removal. The project will also increase the economic value, if more people are connected to the Sarajevo ViK mains.

Table 4.3. Summary of the SWWP Economic Results, Baseline

	Baseline		Wastewater Flow Increased to Designed Capacity	
	NPV, US\$	IRR, %	NPV, US\$	IRR, %
From connected beneficiaries	38,134,287	80	38,134,287	80
From nutrient removal	(6,023,485)	4	(1,345,923)	10
From carbon replacement	8,450,182	34	9,350,182	37
Total SWWP	36,391,927	70	45,238,546	73

Financial Analysis

14. The SWWP did not resolve the financial issues and problems of the Sarajevo ViK. As of 2010, tariffs were below the operating costs, collection was poor, and there were high losses and high level of staff costs. Tariffs were reviewed; however, the tariff increase is a complex political issue for the Sarajevo Canton Government, as the tariff levels are in the range of 1.9–2.0 percent of the gross national income per capita.

15. The Sarajevo ViK water and wastewater charges are based on occupancy. So, the expansion of wastewater collection services to almost half of Sarajevo residents did not bring expected increase in revenue, and wastewater treatment fees are not implemented yet.

16. During the SWWP implementation, the Sarajevo ViK increased revenue flow, however, exceeding the SWWP target by 7 percent. The O&M costs were reduced too. The cost recovery now is 77 percent (increase from 51 percent in 2010). The collection rate remains low at 85 percent level. The company has an ability to write-off bad debt from nonpayers, so the account receivable is in a range of 2–3 months, despite the poor collection.

17. The Sarajevo Canton Government provides an annual subsidy. The amount of subsidy dropped in recent years, from BAM 6.0 million (2012) to about BAM 500,000 (2016) per year. The level of subsidy for 2017 will increase to cover part of the wastewater treatment costs and depreciation of the newly installed equipment (current depreciation rate is 1.7 percent for wastewater assets and will grow to at least 7.0 percent).

18. The Sarajevo ViK plans to significantly reduce its costs through improvement of collection, operation efficiency, and reduction of losses. The model presented in table 4.4, based on the data reported for 2016, demonstrates the potential performance improvement of the Sarajevo ViK: if proper actions are taken consistently, the company can achieve its cost-recovery goals.



Table 4.4. Reform Steps for the Sarajevo ViK and Their Financial Outcomes

Step of the reform	Current status	Increase payment collection from 84% to 100%	Reduction of non-labor cost by 15%	Reduction of NRW from 77% to 25%	Increase of the revenue by 10%
Cash flow rate	65%	77%	88%	133%	146%

19. Table 4.5 presents financial results of the Sarajevo ViK.

Table 4.5. Sarajevo ViK Financial Results

Year	Total Revenue Billed, BAM	Billed to Residential Customers, BAM	Wastewater Billing, BAM	Wastewater Billing, Residential, BAM	Collection of Bills, BAM	Total O&M Costs, BAM	Wastewater O&M Costs, BAM
2012	33,554,893	21,048,545	9,891,424	6,347,321	29,427,055	63,759,373	21,040,593
2013	37,633,984	24,096,457	10,752,761	6,891,577	31,303,145	63,096,022	20,821,687
2014	41,549,577	25,718,322	11,585,614	6,754,463	35,365,875	57,436,355	18,953,997
2015	43,089,061	26,342,229	12,928,628	7,498,604	35,600,348	56,578,192	18,670,803
2016	43,546,494	26,251,169	12,902,470	7,483,433	36,696,342	56,765,500	18,732,615

Table 4.6. Sarajevo ViK Performance Indicators

Year	Cost Recovery, %	Cost Recovery of Water Operations, %	Cost Recovery of Wastewater Operations, %	Collection Rate of Bills Issued, %	Unaccounted Water Losses, %	Hours of Uninterrupted Supply, Year Average	Residential Water Consumption, Liters Per Capita Per Day
2012	53	55	47	88	73	21	144
2013	60	64	52	83	74	19	139
2014	72	78	61	85	75	20	135
2015	76	80	69	83	75	20	133
2016	77	81	69	84	76	20	133



ANNEX 5. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

The draft ICR was submitted for comments to the Client agencies: Ministry of Finance and Treasury, Sarajevo Canton Government and Sarajevo ViK. The report was reviewed and no comments were given except minor editorial suggestions.

The EC IPA also confirmed that it has no comment to this ICR.



ANNEX 6. SUPPORTING DOCUMENTS (IF ANY)

1. Project Appraisal Document (PAD), dated November 24, 2009.
2. Implementation Supervision Reports (numbers 1 – 12)
3. World Bank Supervision Aide Memoires
4. Sarajevo Waste Water Project – Concept Review Minutes
5. Sarajevo Waste Water Project – Quality Enhancement Review (QER) Minutes
6. Sarajevo Waste Water Project – Decision Meeting Review Minutes
7. Sarajevo Waste Water Project – November 2015 Restructuring Paper
8. Sarajevo Waste Water Project – Loan Agreement, dated June 25, 2010
9. EC IPA Grant Agreement
10. Federation Project Agreement
11. Sarajevo Waste Water Project – Amendment to the Loan Agreement, dated November 30, 2015
12. Sarajevo Waste Water Project – Progress Reports from Implementing Agency
13. Guidelines for Reviewing World Bank Implementation Completion and Results Report, Independent Evaluation Group (IEG), November 12, 2013
14. Implementation Completion and Results Report, Guidelines, OPCS, updated on July 22, 2014



ANNEX 7. BENEFICIARIES MEETING SUMMARY

1. A meeting of beneficiaries connected to the Sarajevo ViK wastewater network was conducted in the Butila village, part of the Sarajevo municipality, on July 11, 2017 at 11:30–13:30. The meeting discussion was moderated by Alexander Danilenko from the World Bank.
2. Butila village is located about 15 km to the west of the Sarajevo city center, near the SWWTP. The village was severely damaged during the 1992–1995 conflict . Since 1996, it is repopulated with residents. Several houses are still abandoned. The village has about 50 private one–two floor houses. Butila looks well managed. Village roads are paved and houses are well maintained. Every house has a small garden. There are three small grocery shops, two car repair shops, and a relatively large shop selling construction materials. There are about 270 residents in the village. Majority of the residents are working in Sarajevo. Few residents are temporary workers in EU countries. Major sources of income are salaries and pension.
3. Before connecting to the Sarajevo ViK wastewater network, all residents used pit latrines for domestic sanitation. This setting significantly limited their water consumption as the volume of their pits was limited. Also, during spring and fall, after the snow melt and during autumn rain, the pit latrines were flooded and their content spilled over to the properties, irrigation channels, and roads. Spills had an intolerable smell and were a clear threat to the health of Butila residents. Some of them, especially those with small children, were planning to move away from Butila and find better accommodation.
4. Butila was connected to the Sarajevo ViK system in 2014. The contractor financed by the SWWP built 750 m of secondary main wastewater network of 300 mm diameter to connect Butila with the Sarajevo ViK wastewater system. The wastewater is collected by gravity. The contractor provided extensions to every house and residents built in-house plumbing on their own under the supervision and advise of the SWWP contractor.
5. The list of 11 participants-residents of Butila are the following:
 - (a) Glavaš Stjepan
 - (b) Ozegović Avdo
 - (c) Kukuljać Ruzdija
 - (d) Medvedović Marko
 - (e) Cokić Sucro
 - (f) Kukuljać Rifat
 - (g) Boloban Salem
 - (h) Kvesić Anto
 - (i) Rifatbegović Dijana



(j) Selimović Halima

(k) Mandžo Zahida

6. The following questionnaire was followed during the focus-group meeting (Focus Group Discussion Butila - Connected to the network):

1. Do you live in the house that was connected to the wastewater collection system during 2009–2017? (Yes/No)
11 yes
2. When was your house connected to the system? (Year)
2014 (11)
3. Did you pay (contributed in kind or labor) for getting connected to the wastewater collection system? (Yes/No) If yes, please clarify.
Yes. We got connections and built internal plumbing ourselves. We also used the opportunity to expand our kitchens and indoor showers. We spent on average BAM 1,500 for such improvements.
4. How were you making wastewater collection and removal before your house was connected? (had a private latrine, discharged all into the open canal, had a community cesspool, other)
We had pit latrines and channels. Sometimes we used kitchen water for watering plants.
5. How long did it take for you to get connected to the wastewater system and get wastewater connection from the beginning of construction to actual use of the wastewater system? (Years and months)
6–7 months since the contractor came to our village. The actual connection started in January 2014 and ended in July 2014. Butila was included in the SWWP program in 2010.
6. What kind of problems did you experience at the construction of the wastewater connection? (transport, noise, smell, dust, logistical issues, other - please describe)
Normal issues - but we did not complain. All was properly managed and controlled.
7. Could those issues have been avoided? How?
No issues.
8. Are you satisfied with the current level of services?
Extremely satisfied. We are very thankful to the World Bank and Sarajevo Canton Government.
9. How much do you pay per month?
Our tariffs did not change as we pay a monthly bill that includes water and wastewater services. We do have water meters, but payments are based on number of people in the house.
10. Did connection for the wastewater of your house and your neighbors helped to clean the area where you live?



Yes, very much. Before the project, we were one of the most depressed villages in the area, and now we see new people are coming and want to buy or build new houses in Butila.

11. Do you think that the price of real estate increased after the project? (Yes/No). By how much approximately (ideally in %)?

We believe that it increased by 5–10 percent. However, it is safe to say 5 percent to the value of houses (average price of the house is BAM 200,000). We know that in other places where the SWWP operated, the property value may have increased even more, that is, 20 percent.

12. Did the connection of your neighborhood attract new businesses close/closer to your house? (Yes/No)

Yes. Grocery shops, car repair shops, and construction materials shop. More cars are passing our village now too.

13. Have you seen any change in the overall health of your community/neighborhood since the wastewater system was installed?

Yes, we see positive changes. Children stay here through the year but earlier were taken away when the village was flooded. We smell good air and feel much better than before. We also do not need to beg for wastewater sucking machines anymore. We are very happy.

14. Do you and your family personally feel that the system has made you safer in terms of health? (Yes/No)

Yes - all 11

15. What do you think could be done to wastewater services in your area?

All is perfect. We are just happy.

16. If this project did not exist yet and a similar project was under preparation - what do you think should be done as it was done under this project? That is, what worked well?

We will probably move away if we found a place.

17. If this project did not exist yet and a similar project was under preparation – what do you think should be done differently? i.e. what did not work well?

Everything was great. We just regret that it did not happen earlier.