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IDA/R2017-0237/1

June 16, 2017

<p>Closing Date: Thursday, July 6, 2017 at 6 p.m.</p>
--

FROM: Vice President and Corporate Secretary

Senegal - Urban Water and Sanitation Project

Additional Financing

Project Paper

Attached is the Project Paper regarding a proposed additional credit to Senegal an Urban Water and Sanitation Project (IDA/R2017-0237), which is being processed on an absence-of-objection basis.

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Report No: PAD2225

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL CREDIT

IN THE AMOUNT OF EURO 28.1 MILLION
(US\$30 MILLION EQUIVALENT)

TO THE

REPUBLIC OF SENEGAL

FOR THE

URBAN WATER AND SANITATION PROJECT

June 14, 2017

Water Global Practice
Africa Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective March 31, 2017)

Currency Unit = CFA Francs (CFAF)
CFAF600 = US\$1
US\$1 = EUR0.93624192

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
AfDB	African Development Bank
AIBD	Blaise Diagne International Airport (<i>Aéroport international Blaise Diagne</i>)
ALG	Guiers Lake Water Supply System (<i>Adduction du lac de Guiers</i>)
CPS	Country Partnership Strategy
DCI	Ductile Cast Iron
DGPRES	Directorate of Water Resources Management and Planning (<i>Direction de la Gestion et de la Planification des Ressources en Eau</i>)
DN	Nominal Diameter
DTPC	Dakar-Thiès-Petite Côte
EIRR	Economic Internal Rate of Return
EOPT	End-of-project target
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FIRR	Financial Internal Rate of Return
FM	Financial Management
GDP	Gross Domestic Product
M&E	Monitoring and Evaluation
NPV	Net Present Value
ONAS	National Sanitation Agency of Senegal (<i>Office National de l'Assainissement du Sénégal</i>)
PAD	Project Appraisal Document
PCU	Project Coordination Unit
PDO	Project Development Objective
P _e	Lease Contractor Rate (<i>Prix Exploitant</i>)
PIU	Project Implementation Unit
P _p	SONES Fee (<i>Prix Patrimoine</i>)
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework

SdE Senegalese Water Utility (*Sénégalaise des Eaux*)
SONES National Water Company of Senegal (*Société Nationale des Eaux du Sénégal*)

Regional Vice President:	Makhtar Diop
Country Director:	Louise Cord
Senior Global Practice Director:	Guang Zhe Chen
Practice Manager:	Alexander Bakalian
Task Team Leader:	Matar Fall

SENEGAL
URBAN WATER AND SANITATION PROJECT

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ADDITIONAL FINANCING DATA SHEET

Senegal

Senegal Urban Water and Sanitation Project - Additional Financing (P162537)

AFRICA

WATER GLOBAL PRACTICE

Basic Information – Parent							
Parent Project ID: P150351				Original EA Category: B – Partial Assessment			
Current Closing Date: 30-Jun-2020							
Basic Information – Additional Financing (AF)							
Project ID: P162537		Additional Financing Type (from AUS):		Scale Up			
Regional Vice President: Makhtar Diop		Proposed EA Category: B		B – Partial Assessment			
Country Director: Louise J. Cord		Expected Effectiveness Date:		16-Sep-2017			
Senior Global Practice Director: Guang Zhe Chen		Expected Closing Date:		31-Dec-2021			
Practice Manager/Manager: Alexander E. Bakalian		Report No:		PAD2225			
Team Leader(s): Matar Fall							
Borrower							
Organization Name	Contact	Title	Telephone	Email			
<i>Ministère de l'Économie et des Finances et du Plan</i>	Abdoulaye Dieng	<i>Directeur de la Coopération Économique et Financière</i>	2218210378				
Project Financing Data - Parent (Senegal Urban Water and Sanitation Project - P150351) (in US\$70 million)							
Key Dates							
Project	Ln/Cr/TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date
P150351	IDA-56730	Effective	15-Jun-2015	26-Oct-2015	18-Jan-2016	30-Jun-2020	30-Jun-2020

Disbursements									
Project	Ln/Cr/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Un-disbursed	% Disbursed
P150351	IDA-56730	Effective	SDR	50.80	50.80	0.00	9.43	41.37	18.56
Project Financing Data - Additional Financing (Senegal Urban Water and Sanitation Project - Additional Financing - P162537) (in US\$, millions)									
<input type="checkbox"/> Loan <input type="checkbox"/> Grant <input type="checkbox"/> IDA Grant <input checked="" type="checkbox"/> Credit <input type="checkbox"/> Guarantee <input type="checkbox"/> Other									
Total Project Cost: 30.00				Total Bank Financing:			30.00		
Financing Gap: 0.00									
Financing Source – Additional Financing (AF)								Amount	
International Development Association (IDA)								30.00	
Total								30.00	
Policy Waivers									
Does the project depart from the CAS in content or in other significant respects?							No		
Explanation									
Does the project require any policy waiver(s)?							No		
Explanation									
Team Composition									
Bank Staff									
Name	Role	Title	Specialization				Unit		
Matar Fall	Team Leader (ADM Responsible)	Lead Water and Sanitation Specialist					GWA07		
Mamata Tiendrebeogo	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Procurement				GGO01		
Fatou Fall Samba	Financial Management Specialist	Senior Financial Management Training Officer	Financial Management				GGODR		
Astou Diaw-Ba	Team Member	Senior Program Assistant	Program Assistant				AFCF1		
Cedric Cubahiro	Team Member	Senior Finance Assistant	Finance				WFALA		

Charles Delfieux	Peer Reviewer	Senior Water Supply and Sanitation Specialist	Water and Sanitation	GWA04
Faly Diallo	Team Member	Senior Finance Officer	Finance	WFALA
Ingrid Cesarine Meka	Team Member	Senior Finance Assistant	Finance	WFALA
Klessigue Robert Dembele	Team Member	Consultant	Safeguards	GSU01
Madio Fall	Team Member	Senior Water and Sanitation Specialist	Water and Sanitation	GWA07
Maman-Sani Issa	Safeguards Advisor	Regional Safeguards Adviser	Environment and Social Development	OPSPF
Melissa C. Landesz	Safeguards Specialist	Natural Resources Mgmt. Spec.	Environment	GEN07
Oumar Diallo	Team Member	Senior Water & Sanitation Spec.	Water and Sanitation	GWA07
Pier Mantovani	Peer Reviewer	Lead Water and Sanitation Specialist	Water and Sanitation	GWA08
Pierre Francois-Xavier Boulenger	Team Member	Senior Water Supply and Sanitation Specialist	Water and Sanitation	GWA07
Richard Verspyck	Team member	Consultant	Water and Sanitation/ Economic and Financial analysis	GWA07
Ruxandra Costache	Counsel	Senior Counsel	Legal	LEGLE
Salamata Bal	Safeguards Specialist	Senior Social Development Specialist	Social Development	GSU01
Taiyeba Granier	Team Member	Senior Program Asst.	Legal Support	LEGAM
Extended Team				
Name		Title	Location	

Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
Senegal	Dakar	Dakar	X		
	Thiès	Tassette	X		
	Thiès	Mbour	X		
	Thiès	Somone	X		
	Thiès	Sally	X		
	Thiès	Nguekhokh	X		
Institutional Data					
Parent (Senegal Urban Water and Sanitation Project - P150351)					
Practice Area (Lead)					
Water					
Contributing Practice Areas					
Additional Financing (Senegal Urban Water and Sanitation Project - Additional Financing - P162537)					
Practice Area (Lead)					
Water					
Contributing Practice Areas					

I. Introduction

1. This Project Paper seeks the approval of the Executive Directors to (a) provide an additional credit in the amount of Euro 28.1¹ million (US\$30 million equivalent) to the Republic of Senegal for the Urban Water Supply and Sanitation Project (P150351) and (b) restructure the original financing (Credit No. 5673-SN).

2. The proposed Additional Financing (AF) will help finance the costs associated with scaled-up activities to enhance the impact of a well-performing project. The proposal also includes a restructuring, which will involve an extension of the closing date of the parent project (from June 30, 2020, to December 31, 2021), minor amendments to the description of three subcomponents, and the revision of its Results Framework.

3. **The AF will enhance the impact of the parent project by providing improved water services to approximately 230,000 additional people, increasing the project outcome target by 70 percent, and improving the overall number of direct beneficiaries by 39 percent.** The activities proposed under the AF will not require a change in the Project Development Objective (PDO), which is “to improve access to water and sanitation services in selected urban areas in a financially sustainable manner.” Additional works are similar in nature to those of the parent project and, therefore, will not generate any additional environmental and social safeguards risks or impacts that will require a change in the project safeguards category (B). An additional implementation period of 18 months will be required to implement the additional activities.

4. **All AF activities will be entirely financed by the proposed additional credit.** No co-financing from the Government or from multilateral or bilateral agencies is foreseen.

II. Background and Rationale for Additional Financing in the Amount of US\$30 Million

Country and Sector Context

5. **The Senegalese economy has been growing faster than 6 percent for two years in a row – and the trend is expected to continue in 2017.** After reaching 6.5 percent in 2015, it would attain 6.6 percent in 2016, led by the primary sector with around 10 percent of growth (though lower than the 18 percent of 2015), boosted by fishing and agriculture. The secondary sector also grew rapidly at 6.8 percent supported by extractives (phosphates and gold), food and chemicals. Services grew at 5.6 percent thanks to transport and financial and intermediation services. Demand components remained robust, led again by exports (over 8 percent growth) while total investment accelerated to close to 8 percent. Ongoing reforms and higher public investment in the context of the National Development Plan 2012-2035 (*Plan Sénégal Emergent*), good climate conditions, and still affordable oil prices help explain this good performance. The Government expects growth to reach 6.8 percent in 2017 as the ambitious

¹ In accordance with current Republic of Senegal per capita income and IDA 17 lending criteria, the credits will be financed under the Single Currency IDA regular credit terms, with 38-year maturity including a 6-year grace period. The single currency amount (EUR 28.1 million) will be converted to the final SDR amount for commitment authority and country allocation management purposes on the day of project approval. For information, the estimated value of the credit in Special Drawing Rights (SDR) is SDR 22.2 million.

reform program and stronger total investment continue impacting the economy. The secondary sector would begin to lead the growth process as higher public investment (particularly in energy and infrastructure), ongoing reforms and dynamic private activity boost industrial production and exports.

6. **The Dakar/Thiès/Petite Côte (DTPC) area, which is currently home to 32 percent of the country's population, is expected to continue to play a prominent economic role in the medium term**, with the expansion of the special economic zone in Diamniadio, the commissioning of the new Blaise Diagne International Airport (*Aéroport International Blaise Diagne*, AIBD), and tourism activities in Petite Côte (tourism is the largest contributor to foreign exchange earnings for Senegal). DTPC's population growth is expected to maintain a high rate (about 4.5 percent from 2016 to 2025), particularly due to the expansion of areas outside the city of Dakar. The emergence of water shortages in DTPC, particularly in Petite Côte, may however jeopardize these economic prospects.

7. **At the time of the parent project design, the development of Senegal's urban water supply and sanitation sector was facing three major challenges:**

- (a) **The emergence of water supply shortages** in the Dakar region, where half of the urban water subsector's activity is concentrated, as well as in Petite Côte, a prime tourist destination close to the Dakar region. These shortages resulted from a rapid population growth and a faster-than-expected growth in the demand for water. Planned large-scale water production investments cannot be completed before 2020 at best, thus leading to a peak hour water supply deficit in the Dakar region of about 60,000 m³ per day and of 35,000 m³ per day in Petite Côte.
- (b) **The access gap between urban water and sanitation services**, particularly prominent outside of the Dakar area (99 percent access rate to water). Access to improved sanitation amounted to 78 percent in Dakar but only 44 percent in other urban centers. While the creation of sewerage networks might not be justified everywhere, sewerage services provided by the National Sanitation Agency of Senegal (*Office National de l'Assainissement du Sénégal*, ONAS) were available only in 17 urban centers (as compared to 56 urban centers for water services).
- (c) **The need for a second-generation reform of the institutional and contractual framework of the sector**, which had been set up in 1995. All sector stakeholders agreed that the lease contract with the private Senegalese Water Utility (*Sénégalaise des Eaux*, SdE) for the delivery of urban water services, which could not be further extended, had to be rebid and should be improved, particularly by shifting additional investment responsibilities to the private operator, while keeping responsibilities for bulk investment programs within the National Water Company of Senegal (*Société Nationale des Eaux du Sénégal*, SONES). At the same time, the results achieved by a well performing and autonomous urban water supply subsector was in contrast with the lagging urban sanitation subsector, which was hampered by both interferences in investment and management decisions, as well as by unfunded mandates, particularly in flood control and drainage.

8. **The parent project represented IDA's contribution to the implementation of the Government's strategy addressing the sector challenges.** At the Government's request, the project focused on (a) addressing the water shortages by quickly developing groundwater resources in the vicinity of Dakar and Petite Côte; (b) developing access to urban sanitation services in secondary urban centers; and (c) supporting the design and implementation of the second-generation sector reform, the principles of which had been formulated in a December 2014 Framework Note, along with strengthening of the capacities of key sector actors.

Parent Project Implementation

9. **The IDA Credit of SDR 50.8 million (US\$70 million equivalent) for the Senegal Urban Water and Sanitation Project was approved on June 15, 2015. The Financing Agreement was signed on October 26, 2015, and became effective on January 18, 2016.** The original PDO of "improving access to water and sanitation services in selected urban areas in a financially sustainable manner" was intended to be achieved through (a) expanding water transmission, storage, and distribution capacities to address difficulties arising from water shortages, improving the delivery of water services in the DTPC area, and facilitating access to services through programs for constructing social water connections throughout the country; (b) helping increase access to urban sanitation services outside of Dakar; and (c) supporting sector institutions and reforms. Sustainability would be strengthened through improving the quality and continuity of water services and maintaining the financial autonomy of the sector. The project included three components:

- **Component A: Water Supply (US\$48.9 million).** This component is implemented by SONES.
- **Component B: Sanitation (US\$16.8 million).** This component is implemented by ONAS.
- **Component C: Institutional Strengthening and Project Management (US\$4.3 million).** This component is implemented by the Project Coordination Unit (PCU) with the support of various technical departments of the Ministry of Water and Sanitation.

10. **Since its inception, the project's progress has been rated Satisfactory on the achievement of the PDO and on implementation progress.** The current status of all activities scheduled under the parent project is given in Table 2.1 of Annex 2.

11. **Table 2.1** Table 1 lists the outcome indicators, as reported during the appraisal mission of April 2017.

Table 1. Outcome Indicators

Indicator	Unit	Baseline	Current Value	Target Value	Comments
Outcome Indicators					
People provided with access to 'improved water sources' under the project (urban)	Number	0	95,013	180,000	53% of the end-of-project target (EOPT), in line with PAD forecasts
People provided with access to 'improved sanitation facilities' under the project	Number	0	0	80,000	Activity under way. No impact expected before the completion of the first batch of works (2018)
People with access to enhanced water supply services under the project	Number	0	0	330,000	Same as above
Direct project beneficiaries,	Number	0	95,013	590,000	16% of the EOPT, in line with PAD forecasts
of which female (%)	%	0	50	50	In line with the EOPT
Financial equilibrium of the urban water supply sector	Yes/No	Yes	Yes	Yes	Financial equilibrium maintained ²
Coverage of cash operating expenditures of sewerage activities of ONAS	%	69	85.4	90	Substantial progress toward the EOPT
Beneficiaries that feel project investments reflected their needs	%	0	0	80	First survey to be carried out in FY18

Note: PAD = Project Appraisal Document of the original project.

12. **The disbursement rate (19 percent) is in line with the PAD disbursements forecasts.** To date, 70 percent of the large waterworks contracts (drilling, water storage, and transmission) and the large sanitation works contracts in Joal-Fadiouth have been awarded. The procurement performance of the project was rated Satisfactory and the financial management (FM) performance was rated Satisfactory during the supervision undertaken in December 2016. The overall fiduciary (procurement and FM) risks were assessed as Moderate. There is no financial audit pending and the parent project complies with the covenants agreed upon.

13. **Project implementation has complied with the Environmental and Social Management Framework (ESMF) and the Resettlement Policy Framework (RPF)**, albeit with some delay that has affected the start-up of some works contracts. The PCU's safeguards team is being strengthened to ensure adequate monitoring of safeguards' implementation.

14. **The findings of the recent Water Supply Master Plan of the DTPC area, financed by the parent project, point to the need to rapidly reinforce interconnections between the Dakar and Petite Côte water supply schemes.** Taking into account the creation of additional water supply capacity under the parent project, the water demand of Petite Côte will still face residual production deficits amounting to about 50,000 m³ per day by 2021. The master plan found that the medium-term least-cost solution for filling this gap would be to transfer water

² SONES' net cash balance (previous year plus net cash flow from operations minus debt service and variation of working capital requirements) positive or equal to zero

from the Dakar system. The latter is being reinforced by the third phase of transfer of water from Guiers Lake to Dakar through a 250 km pipe— known as the Guiers Lake Water Supply System (*Adduction du lac de Guiers*, ALG3).

15. The support to the Government water sector reform is being implemented satisfactorily and the sector has maintained its financial equilibrium. The consultant in charge of assisting the Government in the design and implementation of the water sector's second-generation reform was recruited in March 2016. Various institutional options for urban water and sanitation service provision have been explored. A consensus has emerged that creating a new asset-holding company for urban sanitation would not be feasible, neither would a shift of the urban sanitation mandate from ONAS to SONES. However, a separate lease contract for urban sanitation services is under consideration. Consequently, the Government has issued a revised version of the December 2014 Framework Note (*Note de cadrage*) for the reform, to be considered by the consultants in preparing the bidding documents.

16. The 2015 tariff revision has been implemented as scheduled. The revision enabled significant improvement of the financial situation of SONES and ONAS as (a) SONES' share of water revenues increased from CFAF 122 per m³ sold in 2014 to about CFAF 146 per m³ in 2016 and (b) ONAS' share of the tariff increased by 35 percent.

Rationale for the AF

17. The elimination of water shortages in the Petite Côte area, as envisaged under the parent project, has been brought into question by recent technical developments. The expectations that the water production and transmission gap in Petite Côte would be filled through local water resources will not materialize, due to the following facts:

- (a) Seawater desalination in Petite Côte was considered a key solution to help satisfy the water demand. However, recent feasibility studies have concluded that the Petite Côte area is not suitable for the construction of a desalination plant due to unfavorable bathymetric conditions (fluctuations of the water level).
- (b) The financial envelope of the parent project was insufficient to finance a transmission line between Tassette and Petite Côte; and financing has not been made available from other external partners, as they are currently focused on ALG3.

18. At the end of 2016, the water sector actors decided to design a priority investment program to eliminate water transmission bottlenecks and restore a satisfactory level of services in Petite Côte. At the same time, it was agreed that an AF would be sought from IDA, which would focus on urban water supply as the other components of the parent project were on track and were not facing similar challenges.

19. Water shortages would be eliminated by the creation of additional water transmission capacity that will enable the conveying of needed water volumes produced by ALG3 (50,000 m³ per day by 2021) to Petite Côte. The transmission mains would consist of (a) feeders with diameters varying from 1,200 mm to 1,000 mm, which will connect the AIBD area to Mbour through Nguekhokh and (b) smaller feeders connecting various centers of Petite Côte (Somone, Saly, and Joal). Groundwater produced from the Tassette well field will continue to be

conveyed to Thiès and Dakar after 2021, as Petite Côte will be entirely supplied with water from ALG3. Figure 2.1 of Annex 2 visualizes the interconnections between ALG3 and Petite Côte.

20. **The design of the interconnections between ALG3 and Petite Côte, as recommended by the DTPC Master Plan, would rely on regional synergies between water supplies to Petite Côte and to the AIBD/Diamniadio areas.** In line with the master plan's findings, the Tassette well field, being developed under the parent project, will help eliminate water shortages in Thiès by producing 23,100 m³ per day, whereas water shortages in Petite Côte will be addressed by creating additional water transmission capacities that will enable conveying of water volumes produced by ALG3 (50,000 m³ per day by 2021) to Petite Côte. The link between ALG3 and Mbour would go through the AIBD area, which would enable use of a transfer pipe already financed by the African Development Bank (AfDB) and also delivery of water to Mbour through a gravity-fed line (without any need of additional pumping). Additional feeder pipes will need to be laid to connect this main transmission line with urban centers in Petite Côte (Saly, Somone, and Joal-Fadiouth).

21. Activities to be financed under the proposed AF will be grouped under Components A and C of the parent project. They are briefly described in Section III, Changes to Component and Costs, and detailed in Annex 2.

22. **The AF is the preferred financing mechanism,** because it will (a) save time associated with the project preparation while maintaining the positive momentum of results achieved to date; (b) capitalize on the current effective implementation arrangements that have generated satisfactory results under the parent project; and (c) complement the timely and effective interventions of other development partners (AfDB, the European Investment Bank, the Islamic Development Bank, and AFD - the French Aid Agency) that are financing the expansion of the ALG. In addition, the expected impact of the AF on the reliability and continuity of water services will reinforce the positive environment for the incoming bidding process for the selection of the new private operator of urban water services, which is key to the success of the reform.

Consistency with the Country Partnership Framework and World Bank Twin Goals

23. **As for the parent project, the AF will remain in line with the second pillar of the 2013–2017 Country Partnership Strategy (CPS)** (Report No. 73478-SN) discussed by the Board on February 19, 2013, which aims to improve access to basic services including water and sanitation. The project will contribute directly to the World Bank's twin goals of eradicating poverty and fostering prosperity shared more equally to the benefit of the poor. Access to clean water and sanitation is a key health determinant. Tourism, which will benefit from the project, is a key contributor to Senegal's GDP and is likely to be conducive to offer job activities to the poor in the project area.

III. Proposed Changes

Summary of Proposed Changes
The proposed AF aims to scale up urban water supply activities of the parent project that are designed to help eliminate water shortages in the DTPC area and improve the quality and reliability of water services,

in line with the original PDO.

Accordingly, it is proposed to (a) revise the associated Results Framework (revise targets of some outcome and intermediary indicators); (b) revise the components and costs to reflect the scale up of existing activities; and (c) adjust the related areas in procurement, disbursement and implementation schedule. Implementation arrangements will mostly be maintained, as well as the structure of the parent project. It is also proposed to extend the closing date of the parent project by 18 months (from June 30, 2020, to December 31, 2021) to ensure sufficient time to implement the additional activities. These changes are reflected in the amendment to the Financing Agreement of the parent project.

Change in Implementing Agency	Yes [] No [X]
Change in Project's Development Objectives	Yes [] No [X]
Change in Results Framework	Yes [X] No []
Change in Safeguard Policies Triggered	Yes [] No [X]
Change of EA category	Yes [] No [X]
Other Changes to Safeguards	Yes [] No [X]
Change in Legal Covenants	Yes [] No [X]
Change in Loan Closing Date(s)	Yes [X] No []
Cancellations Proposed	Yes [] No [X]
Change in Disbursement Arrangements	Yes [X] No []
Reallocation between Disbursement Categories	Yes [] No [X]
Change in Disbursement Estimates	Yes [X] No []
Change to Components and Cost	Yes [X] No []
Change in Institutional Arrangements	Yes [] No [X]
Change in Financial Management	Yes [] No [X]
Change in Procurement	Yes [X] No []
Change in Implementation Schedule	Yes [X] No []
Other Change(s)	Yes [] No [X]

Development Objective/Results

Project's Development Objectives

Original PDO – No change

The proposed Project Development Objective (PDO) is to improve access to water and sanitation services in selected urban areas in a financially sustainable manner.

Change in Results Framework

Explanation:

The EOPT of some current outcome and output indicators will be adjusted to reflect the impact of the AF activities, as detailed in the table below. The target date for all the indicators will be aligned with the

revised project closing date, as detailed in Annex 1.

Revisions to the Results Framework					Comments/Rationale for Change	
PDO Indicators						
Current (PAD)		Proposed Change*				
People with access to enhanced water supply services under the project		Change in the target value: increased from 330,000 to 560,000 people; change of the target date			New definition takes into account the impact of the additional water produced or transferred (instead of the water produced only). The target date and target are reset to take into account the outcome impact of the AF and the increased implementation period.	
Direct project beneficiaries		Change in the target value: increased from 590,000 to 820,000 people; change of the target date			Outcome impact of the AF and the increased implementation period	
Beneficiaries that feel project investments reflected their needs		Change of the target date			Increased implementation period of the AF	
Intermediate Results indicators						
Current (PAD)		Proposed Change*				
Length of feeder pipes constructed under the project		Change in the target value: from 45 km to 99.5 km; change of the target date			Impact of the AF activities and increased implementation period	
Compliance						
Source of Funds	Finance Agreement Reference	Description of Covenants	Date Due	Recurrent	Frequency	Action
IDA	Sch 2.V.1	Tariff adjustments		<input checked="" type="checkbox"/>	Yearly	New
In order to ensure the financial sustainability and maintain the Financial Equilibrium of SONES throughout Project implementation, the Recipient shall implement all necessary measures, including, <i>inter alia</i> , any adjustments in water tariffs in accordance with the Water and Sanitation Law.						
Source of Funds	Finance Agreement Reference	Description of Covenants	Date Due	Recurrent	Frequency	Action
IDA	Sch 2.V.1	ONAS financial sustainability	31-Dec-2019	<input type="checkbox"/>		New

No later than December 31, 2019, the Recipient shall ensure that all measures, including any required sanitation surcharge revisions in accordance with the Water and Sanitation Law are in place to allow ONAS to achieve financial sustainability including covering at least 90 percent of its cash operating expenditures related to sewerage activities.

Conditions

Source Of Fund	Name	Type

Description of Condition

There are no effectiveness or disbursement conditions associated with the AF.

Risk

Risk Category	Rating (H, S, M, L)
1. Political and Governance	Low
2. Macroeconomic	Low
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Low
5. Institutional Capacity for Implementation and Sustainability	Low
6. Fiduciary	Moderate
7. Environment and Social	Low
8. Stakeholders	Low
9. Other: Climate Change and Disaster	Low
OVERALL	Moderate

Finance

Loan Closing Date - (Senegal Urban Water and Sanitation Project - Additional Financing - P162537)

Source of Funds	Proposed Additional Financing Loan Closing Date
IDA	31-Dec-2021

Loan Closing Date(s) - Parent (Senegal Urban Water and Sanitation Project - P150351)

Explanation:

The proposal includes a request to extend the closing date of the parent project from June 30, 2020, to December 31, 2021, to ensure sufficient time to implement the proposed additional activities.

Ln/Cr/TF	Status	Original Closing Date	Current Closing Date	Proposed Closing Date	Previous Closing Date(s)
IDA-56730	Effective	30-Jun-2020	30-Jun-2020	31-Dec-2021	

Change in Disbursement Arrangements							
Explanation: A separate Designated Account will be established for the AF activities.							
Change in Disbursement Estimates (including all sources of Financing)							
Explanation: To reflect the inclusion of the AF							
Expected Disbursements (in US\$, Million) (including all Sources of Financing)							
Fiscal Year	2016	2017	2018	2019	2020	2021	2022
Annual	3.60	6.90	18.00	23.00	26.00	12.00	10.50
Cumulative	3.60	10.50	28.50	51.50	77.50	89.50	100.00
Allocations - (Senegal Urban Water and Sanitation Project - Additional Financing - P162537)							
Source of Fund	Currency	Category of Expenditure	Allocation		Disbursement % (Type Total)		
			Proposed		Proposed		
IDA	US\$	(1) Goods, works, and consultants' services, Training and Operating Costs under Parts A.1(b), A.4, C.1 (a), (b), and (c), and C.3 of the project	30.00		100.00		
		Total	30.00				
Components							
Change to Components and Cost							
Explanation: The description of the three subcomponents will be amended to incorporate the additional activities, as follows:							
<ul style="list-style-type: none">The description of Part A.1 will be amended to read as: “Development of water resources to increase water availability and quality, in selected areas through, <i>inter alia</i>, expanding: (a) water production capacity by drilling and equipping new boreholes with connection pipes to collect ground water; (b) water transmission by providing and installing feeder pipes, booster pumping stations, and constructing a ground storage tank; (c) water storage by constructing storage tanks; and (d) provision of goods for the purpose.”The description of Part A.4 will be amended to read as: "Providing consultants' services for (a) works supervision and control and (b) carrying out of technical studies for water supply systems for selected urban centers.”The description of Part C.1 (c) will be amended to read as: “(c) carrying out hydrogeological							

studies.”

The proposed additional activities will increase the costs of Components A and C by US\$28.74 million and US\$1.26 million, respectively. The costs of Component B will not be affected. AF activities are briefly described below.

Component A: Water Supply

- A.1 Development of water resources: The AF will expand activities related to water transmission by providing and installing additional feeder pipes.
- A.2 Rehabilitating water infrastructure in the urban center of Nguekhokh: No change
- A.3 Increasing access to safe water in selected urban centers: No change
- A.4 Providing consultants’ services: The AF will expand activities related to control and supervision of the additional works.

Component B: Sanitation - No change

Component C: Institutional Strengthening and Project Management

- C.1 Strengthening the recipient's capacity for monitoring and knowledge of groundwater resources: The AF will expand activities related to the construction of piezometers and to the carrying out of hydrogeological studies.
- C.2 Support to the recipient in the reforms of the water and sanitation sector: No change
- C.3 Support to the recipient in the areas of project coordination, supervision, financial management, communication and outreach, procurement, monitoring and evaluation (M&E), and supervision of implementation of the safeguards instruments: including through the provision of technical assistance, training, Operating Costs, goods and services for the purposes.

Current Component Name	Proposed Component Name	Current Cost (US\$, millions)	Proposed Cost (US\$, millions)	Action
Component A: Water Supply	Component A: Water Supply	48.90	77.64	Revised
Component B: Sanitation	Component B: Sanitation	16.80	16.80	No change
Component C: Institutional Strengthening and Project Management	Component C: Institutional Strengthening and Project Management	4.30	5.56	Revised
	Total	70.00	100.00	

Other Change(s)

Change in Procurement

Explanation:

As the Concept Note of this AF was prepared after July 2016, the New Procurement Framework should have been applied to the AF’s procurement. In view of the short preparation time, and to avoid parallel processes that could be confusing for the Project Implementation Unit (PIU), an exception was allowed to apply instead the World Bank’s previous guidelines (Guidelines: Procurement of Goods, Works, and Non-

Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, dated January 2011 and revised July 2014, and Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, dated January 2011 and revised July 2014).

The Chief Procurement Officer approved the exception to apply the World Bank's previous guidelines.

An updated Procurement Plan, including updated thresholds for applicable procurement methods and prior reviews, was prepared and agreed upon during appraisal.

Change in Implementation Schedule

Explanation:

The implementation schedule is changed to reflect additional activities for 2017–2021.

IV. Appraisal Summary

Economic and Financial Analysis

Explanation:

Rationale for public sector provision/financing. The Senegalese urban water sector has developed a successful public-private partnership that has been operating since 1996. The sector autonomously covers all its costs including the debt service, from income generated by water sales. The involvement of the private sector through a lease contract has helped generate productivity gains and reduce operating costs. The parent project supports the formulation of a second-generation reform, including the bidding for a new urban water supply lease contract and increasing private sector participation in the delivery of urban water sanitation services.

Added value of the World Bank's support. The parent project was a continuation of the World Bank's support to the water and sanitation sector in Senegal provided over two decades. The World Bank's involvement in preparing the second-generation reforms was decisive in creating confidence and visibility for other donors to engage in the long-term investment programs of the sector. The World Bank's added value will also be high during the AF implementation phase, with support provided by a seasoned decentralized team working in the water sector in Senegal for a long time.

Economic analysis. The economic analysis included in the PAD of the parent project consisted of a cost-benefit analysis of the urban water supply component and of a cost-effectiveness analysis of the urban sanitation component. As the AF will only finance urban water supply activities, the updated economic analysis focuses on urban water supply and assessing the economic internal rate of return (EIRR) and the net present value (NPV) of the overall water activities. The PAD analysis was updated to reflect the current outcome of actual implementation and the impact of AF activities, as well as the most recent data on water demand and consumer surplus. Project benefits include the increased water consumption and the consumer surplus accruing to beneficiaries shifting from other water sources to water service connections. Project costs include investment costs, incremental operating costs, and renewal costs.

The results of the updated analysis for the Water Supply component and each of its subcomponents are given in Table 2, together with the results of the PAD analysis of the parent project. The NPVs are computed with the discount rate used in the PAD analysis (10 percent) and the current recommended rate for sustainable development projects (6 percent).

Table 2. Results by Subcomponent

Subcomponent	Tassette/Petite Côte	Nguekhokh	Social Connections Program	Overall Project
PAD analysis				
EIRR (%)	10.8	15.2	36.2	14.4
NPV at 10% (US\$, millions)	2.2	1.3	11.0	14.6
NPV at 6% (US\$, millions)	19.3	3.6	19.7	42.7
Updated analysis				
EIRR (%)	13.8	14.1	31.3	15.2
NPV at 10% (US\$, millions)	12.2	1.0	6.3	19.1
NPV at 6% (US\$, millions)	41.5	3.0	11.7	55.8

The updated analysis exhibits a higher NPV and EIRR than the PAD analysis for the overall project. At subcomponent level, the changes are attributable to (a) the decrease of the consumer surplus resulting from the modification of assumptions related to the price of water supplied from alternative sources (standposts, neighbors, and open wells), which affects the results of the social connections program (without any linkage to the AF activities), and (b) the improvement of the results of the Tassette/Petite Côte subcomponent, which is mainly attributable to the increased availability of water in the Petite Côte through the transfer of water from ALG3. The latter finding demonstrates that the AF activities have a positive economic impact.

Financial analysis. The financial impact of the parent project and of the additional activities can be measured by the financial internal rate of return (FIRR). The financial cash flow stream is derived from the economic cash flows by eliminating the benefits that do not accrue to SONES and SdE (consumer surplus) and taking into account the actual revenue collection (97 percent). The FIRR is now estimated at 11.4 percent. The PAD estimate for the parent project was 8.3 percent.

Financial situation of SONES and ONAS. The PAD noted that SONES' financial equilibrium would be maintained through limited tariff revisions that would increase SONES' share in the consumer tariff (the so-called SONES fee [*prix patrimoine*, P_p]). A tariff revision took place in 2015, which enabled increasing P_p from CFAF 120 per m^3 to CFAF 146 per m^3 . SONES' financial statements for 2016 show that its financial equilibrium has been maintained. Similarly, the 2015 tariff revision enabled ONAS to improve the ratio of coverage of cash operating expenditures by operating revenues from 69 percent in 2014 to 85.4 percent in 2016, ahead of PAD expectations.

Economic and Financial Analysis is further detailed in Annex 5.

Technical Analysis

Explanation:

The water investment program supported by the AF originates from an investment program designed by SONES in close coordination with SdE. The water transmission facilities have been designed to facilitate interconnections in the DTPC regional scheme and to optimize energy costs. They represent the least-cost option for addressing water shortages in the short to medium term. No major technical issues are expected from the AF because technologies considered for water supply systems are proven and well established.

Readiness. The implementation teams are in place within SONES, ONAS, and the PCU with adequate capacities. The Project Implementation Manual has been updated to reflect the AF activities. The ESMF and the RPF have been updated, reviewed by the World Bank and disclosed in-country and at the World Bank's external website on April 7, 2017. Technical design studies of the AF activities financed under the

parent project are under way.

Social Analysis

Explanation:

Social inclusion. The project will continue to rely on pro-poor policies for developing access, including social water connections programs.

Gender. In line with the parent project, the AF will help reduce gender inequalities. The elimination of water shortages will eliminate the burden of water hauling, a time-consuming and physically stressful task, which mostly falls on female members of households. The parent project also addressed gender inequalities resulting from the lack of access to safe sanitation facilities, which places women and girls at a greater disadvantage relative to men and boys. The Sanitation component of the parent project aims to provide safe household sanitation facilities, as well as adequate and convenient solutions to wastewater disposal—another task falling exclusively on women. Women will also play a prominent role in the hygiene education and information programs and be involved in the selection of the location of public sanitation facilities.

Citizen engagement. The parent project includes the financing of customer satisfaction surveys, which will be carried out by the National Agency of Statistics and Demography, under an agreement signed with the PCU. These surveys will be used to mainstream citizen engagement, particularly into feedback of the urban population on the quality and availability of water services. The intermediate indicator for citizen engagement is the percentage of beneficiaries who feel that project investments reflect their needs.

Environmental Analysis

Explanation:

Environmental impact. There are no significant or irreversible adverse environmental impacts expected from the implementation of activities to be financed under the proposed AF. Most of the adverse environmental and social impacts associated with these investments will be small in scale and site specific, typical of a Category B project, and therefore easily manageable at an acceptable level.

Safeguards policies and instruments. The project's Environmental Assessment category remains B (Partial Assessment). The AF will not trigger other safeguards policy than the four policies (OP/BP 4.01 - Environmental Assessment, OP/BP 4.04 - Natural Habitats, OP/BP 4.11 - Physical Cultural Resources, and OP/BP 4.12 - Involuntary Resettlement) triggered by the parent project. As the exact physical locations of future investments were not known at appraisal, the recipient accordingly updated the ESMF and the RPF. The ESMF and RPF have been reviewed and disclosed both in-country and at the World Bank's external website on April 7, 2017.

During the parent project's implementation, screening of subprojects has taken place to ensure identification and mitigation of any adverse impacts. Environmental and Social Impact Assessments (ESIAs) and Resettlement Action Plans (RAPs) are being developed. The safeguards team of the PCU is being strengthened to ensure adequate monitoring of the implementation of safeguard documents.

Risk

Explanation:

The overall risk associated with the AF is rated Moderate. The ratings replicate the ratings of the PAD of the parent project, which noted that (a) the project followed a series of similar operations funded by IDA in a continuous cycle over two decades, with successful reforms implemented within a framework of a

permanent sector dialogue with all stakeholders and a stable country context, and (b) the key residual risk was associated with the effective adoption and implementation of the sector reforms. As mentioned earlier, the reform process is on track, and there is no need to revise the rating.

All risks listed in the Systematic Operations Risk-Rating Tool are rated Low or Moderate.

V. World Bank Grievance Redress

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

Annex 1: Revised Results Framework and Monitoring Indicators

Senegal Urban Water and Sanitation Project - Additional Financing (P162537)

Project Development Objectives							
Original Project Development Objective - Parent:							
The proposed Project Development Objective (PDO) is to improve access to water and sanitation services in selected urban areas in a financially sustainable manner.							
Proposed Project Development Objective - Additional Financing (AF): No change							
Results							
Core sector indicators are considered: Yes					Results reporting level: Project		
Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
Revised	People in urban areas provided with access to ‘improved water sources’ under the project	<input checked="" type="checkbox"/>	Number	Value	0.00	95,013.00	180,000.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			
Revised	People provided with access to ‘improved sanitation facilities’ under the project	<input checked="" type="checkbox"/>	Number	Value	0.00	0.00	80,000.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			
Revised	People provided with access to ‘improved sanitation facilities’ – urban	<input checked="" type="checkbox"/>	Number	Value	0.00	0.00	80,000.00
			Subtype	Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
			Breakdown	Comment			
Revised	People with access to enhanced water supply services under the project	<input type="checkbox"/>	Number	Value	0.00	0.00	560,000.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			Target in the

							original project was 330,000
Revised	Direct project beneficiaries	<input checked="" type="checkbox"/>	Number	Value	0.00	95,013.00	820,000.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			Target in the original project was 590,000
No Change	Female beneficiaries	<input checked="" type="checkbox"/>	Percentage	Value	0.00	50.00	50.00
			Subtype				
			Supplemental				
Revised	Financial equilibrium of the urban water supply sub-sector	<input type="checkbox"/>	Yes/No	Value	Yes	Yes	Yes
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			
Revised	Coverage of cash operating expenditures of sewerage activities of ONAS	<input type="checkbox"/>	Percentage	Value	69.00	85.40	90.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			
Revised	Beneficiaries that feel project investments reflected their needs	<input checked="" type="checkbox"/>	Percentage	Value	0.00	0.00	80.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			
Revised	Beneficiaries that feel project investments reflected their needs – female	<input checked="" type="checkbox"/>	Number	Value	0.00	0.00	328,000.00
			Subtype				
			Supplemental				
Revised	Total beneficiaries - female	<input checked="" type="checkbox"/>	Number	Value	0.00	0.00	410,000.00
			Subtype				
			Supplemental				
Revised	Total beneficiaries - male	<input checked="" type="checkbox"/>	Number	Value	0.00	0.00	410,000.00

			Subtype				
			Supplemental				
Revised	Beneficiaries that feel project investments reflected their needs – male	☒	Number	Value	0.00	0.00	328,000.00
			Subtype				
			Supplemental				
Intermediate Results Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
Revised	Additional water production capacity constructed under the project	☐	Cubic Meter(m ³)	Value	0.00	0.00	35,500.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			
Revised	New piped household water connections that are resulting from the project intervention	☒	Number	Value	0.00	10,557.00	20,000.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			
Revised	Water storage capacity constructed under the project	☐	Cubic meter (m ³)	Value	0.00	0.00	24,600.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			
Revised	Length of feeder pipes constructed under the project	☐	Kilometers	Value	0.00	0.00	99.50
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			Target in the original project was 45 km
Revised	New household sewer connections constructed under the project	☒	Number	Value	0.00	0.00	6000.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			
Revised	On-site sanitation facilities constructed under the project	☐	Number	Value	0.00	0.00	320.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021

				Comment			
Revised	Length of sewers constructed under the project	<input type="checkbox"/>	Kilometers	Value	0.00	0.00	100.00
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			
Revised	Adoption of a new institutional framework for urban water and sanitation	<input type="checkbox"/>	Yes/No	Value	No	No	Yes
				Date	14-Apr-2015	22-Mar-2017	31-Dec-2021
				Comment			

Annex 2: Detailed Description of Modified or New Project Activities

Senegal Urban Water and Sanitation Project - Additional Financing (P162537)

1. This annex reviews how the existing challenges facing urban water services and the PDO will be addressed by the proposed AF and then provides a detailed description of the activities financed under the AF.

Access and Sustainability Challenges

2. Urban water services in the DTPC area have faced, for some time, pressing challenges linked to the gap between fast-growing water demand and the available supplies. Pending the completion of the expansion of the water system supplying the area from the Guiers Lake (the so-called ALG3) and of a desalination plant in the vicinity of Dakar, the parent project was designed to provide interim solutions to address the water shortages in Dakar and Petite Côte by 2018 through the abstraction of groundwater resources in Tassette and Mbour-Mbodiène. The Tassette groundwater was expected to be first delivered to the Dakar area through a Tassette-Thiès pipeline, until the commissioning in 2021 of ALG3. After 2021, the groundwater was to be conveyed to Petite Côte. However, the parent project did not include financing for the transfer pipe from the well field to Petite Côte, which was expected to take place later.

3. The parent project finances an in-depth review study of the water demand and of the supply solutions that could be contemplated for the DTPC area by 2035 (the DTPC Master Plan), taking into account updated forecasts of the population growth and the needs of the touristic sites and of the newly developed areas in the vicinity of the AIBD and the City of Diamniadio. The conclusions of the study points to enduring challenges for satisfying water demand in the short and medium term:

- DTPC's water demand is growing at a greater pace than initially expected.
- Although the preparation and implementation of ALG3 is on track (with financing from AfDB, the European Investment Bank, the Islamic Development Bank, and the French Aid Agency), feasibility studies have concluded that Petite Côte was not suitable for the construction of a desalination plant, due to bathymetric conditions.
- Taking into account the creation of additional supply capacity under the parent project, the water demand of Petite Côte will face production deficits amounting to about 50,000 m³ per day by 2021, which are compounded by bottlenecks in water transmission, as local water resources are fully used.
- The least-cost medium-term solution for supplying Petite Côte will be to transfer water from ALG3 through gravity-fed feeder pipes. At the same time, groundwater from the Tassette well field will continue to supply the Thiès area after the commissioning of ALG3.

4. In 2016, the sector actors agreed to address these challenges by designing a priority investment program to eliminate water transmission bottlenecks and restore a satisfactory level of services in Petite Côte. At the same time, it was agreed that an AF would be sought from IDA,

which would focus on urban water supply as the other components of the parent project were on track and were not facing similar challenges.

Relationship between Additional Activities, the PDO and Challenges

5. In line with the PDO, the proposed AF will help scale up the results of the parent project in developing access to sustainable water services, by expanding water transmission and storage capacities to improve the reliability and quality of water services by eliminating water shortages.

6. The AF activities will address the abovementioned challenges. In line with the master plan's findings, the Tassette well field, being developed under the parent project, will help eliminate water shortages in Thiès by producing 23,100 m³ per day, whereas water shortages in Petite Côte will be addressed by creating additional water transmission capacities that will enable conveying of water volumes produced by ALG3 (50,000 m³ per day by 2021) to Petite Côte. The transmission mains will consist of large feeders connecting ALG3 to Mbour and smaller feeders connecting various centers of Petite Côte (Somone, Saly, and Joal). To benefit from synergies, the upstream section of the transmission lines is designed to accommodate both the water needs of Petite Côte and those of the AIBD area and its economic activity poles. This upstream section (a 4.7 km pipe with a 1,400 mm diameter) is already financed by AfDB. Figure 2.1 provides a map of the water interconnections.

Detailed AF Activities

7. The detailed AF activities, together with their costs (including contingencies and excluding taxes), are listed below. The classification of components and subcomponents is identical to the one used by the parent project.

8. **Component A: Water Supply (US\$28.74 million equivalent).** The following activities are planned under this component:

- A.1 Development of water resources: Additional activities under this subcomponent will help increase the availability of water and improve the quality of water services in Petite Côte by expanding the water transmission capacity by:
 - Linking ALG3 and Mbour through supplying and laying (a) a 8.5 km feeder pipe (ductile cast iron [DCI], nominal diameter (DN) 1,200 mm) linking the AIBD zone to Sindia; (b) a 11 km feeder pipe (DCI, DN 1,100 mm) linking Sindia and Nguekhokh; and (c) a 12 km feeder pipe (DCI, DN 1,000 mm) linking Nguekhokh and Mbour, and
 - Supplying and laying feeder pipes (DCI, DN 500 mm) linking the ALG3-Mbour transmission line to water storage tanks in Saly (3 km) and Somone (12 km) and linking Mbodiène and Joal-Fadiouth (8 km).³
- A.2 Upgrading Nguekhokh water system: No additional activity

³ The DN 700 transmission line between Mbour and Mbodiène is financed under the parent project.

- A.3 Social connections program: No additional activity
 - A.4 Consultants' services: Additional activities under this subcomponent will consist of supervision and control of the additional waterworks.
9. **Component B: Sanitation.** No additional activity.
10. **Component C: Institutional Support and Project Management (US\$1.26 million equivalent).** The following additional activities are planned under this component:
- C.1 Support to the Directorate of Water Resources Management and Planning (*Direction de la Gestion et de la Planification des Ressources en Eau*, DGPRE) (US\$0.92 million equivalent): Additional activities under this subcomponent will help strengthen groundwater monitoring and improve knowledge of groundwater resources, by
 - Constructing two trial boreholes in the Maastrichtian aquifer in Diogo, and
 - Financing a groundwater study of the Diogo aquifer.
 - C.2 Technical and institutional studies: No additional activity
 - C.3 Support to project management (US\$0.34 million equivalent) through the provision of support to implementation of the Environmental and Social Management Plan (ESMP), including
 - The preparation of RAPs and ESIAs;
 - The preparation of the strategic environmental study of the DTPC Water Supply Master Plan; and
 - Monitoring the implementation of the ESMP.

Figure 2.1. Interconnections between ALG3 and Petite Côte

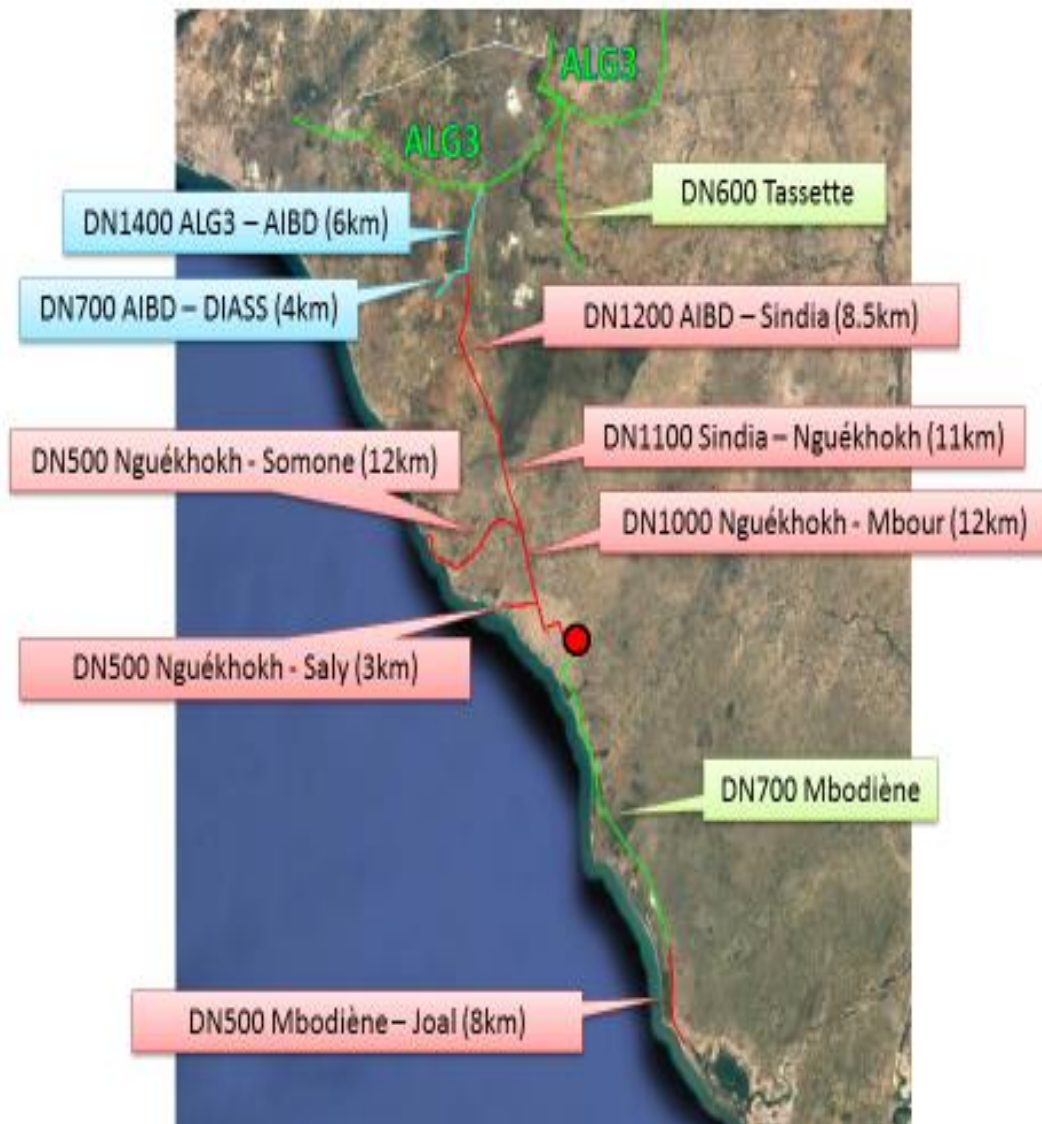


Table 2.1. Status of the Activities Financed under the Parent Project

Project Components	Activities	Costs (US\$, millions)		Activity/Output Indicator from the PAD	Current Status
		Original Allocation	Disbursements As of April 12, 2017		
A. Water Supply	A.1.Development of groundwater resources	1.21	0.64	Drilling of 7 boreholes and pumping station	Contracts awarded on October 31, 2016, at a cost of US\$0.78 million; construction ongoing
		1.20	—	Equipment of boreholes and connection pipes	Bidding documents being prepared
		9.91	—	Supply and laying of water transmission pipes (16.6 km, DN 600 pipe and 4.7 km, DN 800 pipe)	Contract awarded in April 2016 at a cost of US\$5.20 million and signed
		4.31	—	Construction of water storage tanks in Thiès (2 × 10,000 m ³)	Procurement process launched
		2.43	—	Construction of water storage tank and pumping station	Bidding documents being prepared
		0.13	—	Detailed design and bidding documents for water storage tanks	Contract signed in October 2015 at a cost of US\$0.13 million. Activity under way
		0.86	—	Supervision of the above works	Proposal evaluation under way
		0.65	0.20	Drilling of 4 boreholes	Contract signed on October 24, 2016, at a cost of US\$0.52 million. Works ongoing
		1.64	—	Equipment of boreholes	Bidding documents being prepared
		1.16	—	Pumping station in Mbour	Bidding documents being prepared
		12.56	—	Supply and laying of water transmission pipes (24.4 km, DN 700 pipe) and of connection pipes	Contract awarded in November 2016 at a cost of US\$6.34 million and being signed
		5.43	—	Construction of 3 water storage tanks in Mbodiène (2,000	Contract awarded in November 2016 at a cost of

Project Components	Activities	Costs (US\$, millions)		Activity/Output Indicator from the PAD	Current Status
		Original Allocation	Disbursements As of April 12, 2017		
				m ³), Pointe Sarène (1,500 m ³), and Nguekhoh (1,100 m ³)	US\$3.14 million and being signed
	A.2 Nguekhoh	0.72	—	Rehabilitation of Nguekhoh water distribution network	Contract signed on September 6, 2016, at a cost of US\$0.56 million
		0.26	—	Renewal of service connections in Nguekhoh	Bidding documents being prepared
		0.86	—	Supervision of the above works	Proposal evaluation under way
		0.13	—	Technical control	Contract awarded in November 2016 and being finalized
	A.3 Social connections	4.83	2.05	Construction of 20,000 social connections and of distribution network (160 km)	Contract signed in April 2016 at a cost of US\$4.73 million and ongoing. About 10,557 connections and 54 km completed
	A.4 Consultants' services	0.69	—	Technical studies for Dakar poles and Petite Côte	Contract signed in August 2016 at a cost of US\$0.31 million and ongoing
B. Sanitation	B.1 Joal-Fadiouth	5.98	0.85	Construction of sewers (44 km), house connections (2,967), and 5 pumping stations	Contract signed in June 2016 at a cost of US\$3.67 million and ongoing
		3.13	1.28	Construction of 1 wastewater treatment plant (2,000 m ³ /day) and 1 sludge treatment plant (60 m ³ /day)	Contract signed in June 2016 at a cost of US\$3.94 million and ongoing
		0.42	0.12	Construction of 321 on-site sanitation facilities and 8 public latrines	Contract signed in August 2016 at a cost of US\$0.63 million and ongoing
		0.43	—	Works supervision	Contract awarded in December 2016 at a cost of

Project Components	Activities	Costs (US\$, millions)		Activity/Output Indicator from the PAD	Current Status
		Original Allocation	Disbursements As of April 12, 2017		
		0.16	0.05	Information, education, and communication	US\$0.76 million and being finalized Contract signed on August 24, 2016, at a cost of US\$0.23 million and ongoing
	B.2 Social connections in several cities	5.88	—	Construction of sewers (55.4 km), sewerage social connections (3,018) in Diourbel, Mbour, and Richard Toll	Bidding documents being prepared
		0.27	—	Works supervision	Request for Proposals being prepared
		0.09	—	Information, education, and communication	Request for proposals being prepared
	B.3 Technical studies	0.43	—	Detailed design and bidding documents on the Sanitation Master Plan of Dakar East	Contract awarded on November 16, 2016, at a cost of US\$0.26 million and being finalized
C. Institutional Strengthening and Project Management	C.1 Support to DGPPE	0.38	—	Construction of 6 piezometers	Bidding process being launched
		0.05	—	Remote metering and control equipment	Bidding documents being prepared
		0.31	0.09	Groundwater studies of Ndiass Horst system	Contract awarded on August 20, 2016, at a cost of US\$0.43 million. Activity under way
	C.2 Technical and Institutional studies	0.17	—	Technical assistance to ONAS	Bidding documents being finalized
		0.52	0.07	Institutional studies of second-generation reform	Contract awarded on March 11, 2016, at a cost of US\$0.30 million. Activity under way

Project Components	Activities	Costs (US\$, millions)		Activity/Output Indicator from the PAD	Current Status
		Original Allocation	Disbursements As of April 12, 2017		
		0.43	0.03		
				Support to rural water supply reform	Two contracts signed for ongoing studies aimed at supporting the Rural Boreholes Agency to (a) optimize water treatment stations and (b) elaborate the Procedures Manual
	C.3 PCU support	0.04	—	Financial audits	Contract being finalized
		1.91	0.63	Project coordination and management	Activity under way
		0.17	—	Beneficiaries surveys	Terms of reference submitted to the World Bank for 'no objection'
		0.34	0.03	Support to implementation of the ESMP	RAP/EIES contracts awarded on September 5, 2016. Activity under way
		70.00	6.04		

Note: DN = Nominal Diameter; ESMP = Environmental and Social Management Plan; RAP = Resettlement Action Plan.

Annex 3: Revised Estimate of Project Costs

Senegal Urban Water and Sanitation Project - Additional Financing (P162537)

Activities	Unit	Quantity	Unit Price (CFAF, thousands)	Cost (CFAF, millions)	Cost (US\$, millions)
Component A: Water Supply				17,245	28.74
A.1 Development of water resources				16,745	27.91
<i>Transmission line ALG3-Mbour</i>				<i>14,056</i>	<i>23.43</i>
Transmission pipe DCI DN1200 AIBD-Sindia	km	8,5	511	4,348	7.25
Transmission pipe DCI DN1100 Sindia- Nguekhokh	km	11	453	4,983	8.31
Transmission pipe DCI DN1000 Nguekhokh- Mbour	km	12	394	4,725	7.87
<i>Transmission lines to Petite Côte</i>				<i>2,689</i>	<i>4.48</i>
Transmission pipe DCI DN500 Nguekhokh-Saly	km	3	117	351	0.58
Transmission pipe DCI DN500 Nguekhokh- Somone	km	12	117	1,403	2.34
Transmission pipe DCI DN500 Mbodiène-Joal	km	8	117	935	1.56
<u>A.4 Consultants' services</u>				<u>500</u>	<u>0.83</u>
Supervision (including all waterworks)	Lump sum	1	500,000	500	0.83
Component B: Sanitation				0	0.00
Component C: Institutional Strengthening and Project Management				755	1.26
<i>C.1 Support to the DGPPE</i>				<i>550</i>	<i>0.92</i>
Trial boreholes (Maastrichtian aquifer in Diogo)	Number	2	160,000	320	0.53
Groundwater study of the Diogo aquifer	Lump sum	1	230,000	230	0.39
<i>C.2 Technical and institutional studies</i>				<i>0</i>	<i>0.00</i>
<i>C.3 Support to project management</i>				<i>205</i>	<i>0.34</i>
Support to implementation of the ESMP					
Environmental study of the DTPC Water Supply Master Plan	Lump sum	1	30,000	30	0.05
RAPs	Lump sum	1	93,000	93	0.16
ESIAs	Lump sum	1	27,000	27	0.04
ESMP monitoring	Lump sum	1	55,000	55	0.09
Total				18,000	30.00

Annex 4: Revised Implementation Arrangements and Support

Senegal Urban Water and Sanitation Project - Additional Financing (P162537)

1. **The implementation arrangements under the AF will be similar to those of the parent project.** The following paragraphs list adjustments to be made to adapt original arrangements and procedures to the AF and provide updated information on implementation experience with regard to fiduciary aspects, safeguards, and M&E as needed.
2. **Procedures.** The Project Implementation Manual of the parent project has been updated to reflect proposed activities of the AF.
3. **Staffing.** The PCU team is being strengthened with the recruitment of a full-time environmental specialist, a social specialist and a procurement specialist. Given the limited workload generated by the AF activities, no further staff recruitment is required to implement the AF.
4. **FM assessment.** The overall FM performance of the parent project was rated Satisfactory during the supervision undertaken in December 2016 and the FM risk was assessed as Moderate. The interim unaudited financial reports for the ongoing project have been submitted with acceptable quality. However, improvement points related to budget monitoring strengthening and travel documentation were identified for the PCU. The overall risk for the AF is rated as Moderate.
5. **External audit.** The terms of reference of the auditor of the parent project will be expanded to include the AF activities.
6. **Accounting arrangements.** The PCU has a multi-project computerized accounting system that is adequate to take into account the additional activities.
7. **Reporting and monitoring.** The unaudited interim financial report format of the ongoing project will be updated to include the AF.
8. **Budgeting arrangements.** Periodic reports of budget monitoring variance analysis and recommendations should be prepared by the FM team on a quarterly basis.
9. **Disbursement arrangements and flow of funds.** Disbursement for the project will follow the existing disbursement arrangements for the parent project. A separate Designated Account will be opened at an acceptable commercial bank to facilitate payment for eligible expenditures under the AF.
10. **Procurement.** SONES will manage the procurement of all civil work activities for this AF. The Procurement Plan of the AF has been prepared based on the current guidelines, reviewed and approved by the World Bank on April 12, 2017.
11. The procurement risk is assessed to be Moderate because of some delays registered in recent procurement. An additional Procurement Specialist is being recruited to strengthen the project team. The project will be supervised twice a year to ensure that project procurement

arrangements still operate well and funds are used for the intended purposes and in an efficient way.

12. **Safeguards.** As mentioned earlier, the safeguards team of the PIU is being strengthened by the recruitment of one social specialist. The project's Environmental Assessment category remains B (Partial Assessment). The AF triggers the same safeguards policies as the parent project (OP/BP 4.01, OP/BP 4.04 – Natural Habitats, OP/BP 4.11, and OP/BP 4.12). As the exact physical location of future investments is not yet known, the PIU updated the ESMF and RPF, which were reviewed by the World Bank and disclosed both in-country and at the World Bank's external website on April 7, 2017. The AF project costs include a financial provision for the implementation and monitoring of the safeguards instruments.

13. **M&E.** The M&E arrangements of the parent project will continue to apply. The PCU contracted the National Agency for Statistics and Demography to carry out satisfaction surveys to obtain customers' feedback on the delivery of water services. The PCU will carry out beneficiary assessments before completion.

Annex 5: Economic and Financial Analysis

Senegal Urban Water and Sanitation Project - Additional Financing (P162537)

1. The Economic Analysis section of this annex aims to update the cost-benefit analysis carried out for the parent project by taking into account (a) the actual implementation, to date, of the parent project and (b) the impact of the activities proposed in the AF.
2. The Financial Analysis section aims to (a) assess the financial impact of the AF's activities and (b) review the financial situation of SONES and ONAS.
3. These assessments show that (a) the overall project (combining the parent project and the AF) will generate an EIRR and an NPV that are close to the values estimated in the PAD; (b) SONES has maintained financial equilibrium since the parent project start-up, whereas ONAS' coverage of its cash operating expenditures has improved markedly; and (c) the overall project yields a higher FIRR than estimated in the PAD.

Economic Analysis

4. The economic analysis included in the PAD consisted of a cost-benefit analysis of the urban water supply component of the project and of a cost-effectiveness analysis of the urban sanitation component. As the AF will only finance urban water supply activities, the updated economic analysis focuses on urban water supply activities.
5. **Methodology and scope.** The cost-benefit analysis has been updated to assess the EIRR and the NPV of all water activities carried out under the parent project and the proposed AF. The analysis encompasses 76 percent of total project costs. It considers an investment program consisting of the Water Supply component, an allocated portion of the Institutional Strengthening and Project Management component, and the incremental (with/without project) costs and benefits (including consumer surplus) associated with these investments. All calculations are carried out over a 30-year period, using constant prices and excluding taxes and financing costs.
6. **Update of parent project's analysis.** The PAD analysis was updated to take into account the following:
 - (a) The PAD analysis considered a comprehensive system of water facilities, which regrouped (i) the urban water supply component of the parent project and (ii) a provision for the construction of the transfer pipe to convey Tassette groundwater to Mbour by 2021. The design has been revised during appraisal to enable conveying water from the ALG3 scheme to Mbour, which will transit from the ALG3 transmission line through the AIBD area, Sindia, and Nguekhokh. The upstream section of this transmission line is financed by AfDB. The transmission line is designed to accommodate the water needs of the AIBD area and Petite Côte up to 2035, that is, beyond the water volumes required to eliminate the water deficits considered in the AF. The investment costs are adjusted accordingly (see paragraph 8).

- (b) The PAD analysis also assumed that the Tassette-Thiès facilities (transfer pipe and storage tanks) would not be used for project purposes after 2021 and considered their residual value as a project benefit. This assumption is no longer valid, as these facilities will be used after 2021.
- (c) To date, the parent project's procurement generated substantial costs savings. The water transmission, water storage, and drilling contracts were awarded at 54 percent of the PAD-estimated cost.
- (d) The time schedule of investments, project benefits, and costs that result from actual implementation.
- (e) The most recent estimates of the assumptions used in the computation of the consumer surplus, which result from the consumer surveys carried out in the 2015 tariff study.⁴ The PAD analysis relied on data provided by the 2010 tariff study.

7. The following tables provide the detailed assumptions used in the updated analysis.

8. **Investment costs.** The investment costs considered in the updated analysis are given in table 5.1, together with those of the PAD analysis. The costs of the transmission lines have been adjusted as follows:

- (a) The cost of the AIBD-Mbour feeders has been adjusted to reflect the fact that their design would enable transiting the 2035 water needs of Petite Côte; therefore, only 60 percent of the cost has been taken into account in the analysis
- (b) The cost of the ALG3-AIBD pipeline (US\$7.1 million) financed by AfDB has to be added to the AF investments; as its design would enable transiting the 2035 water needs of the AIBD area and Petite Côte, only 50 percent of this cost has been taken into account in the analysis

Table 5.1. Investment Costs for Economic Analysis (CFAF, millions)

Activities	PAD Analysis	Updated Analysis
Tassette and Petite Côte	20,560	30,147
Nguekhokh	1,840	1,721
Social connections	2,800	2,835
Project management (including safeguards)	723	816
Total	25,923	35,519

Source: Contract awards and design studies.

9. **Incremental benefits.** The incremental benefits generated by the project activities are listed in Table 5.2, which also links activities and the PDO.

⁴ Revision of the water and sanitation tariffs—Artelia/EDE—August 2015

Table 5.2. Project Economic Benefits

Development Objective/Activities	Incremental Benefits
Improving access to water services (existing consumers)	The increase of production and transmission capacities will be used to eliminate water deficits in affected areas and generate additional water consumption from existing users
• Tassette and Petite Côte	Benefits will vary over time and will be as follows: - From 2018 onward, Tassette water will be distributed in Thiès and Dakar; benefits will be increased water revenues from existing water users. - After 2021 (and the commissioning of ALG3), ALG3 water will be conveyed to Petite Côte through the AIBD and Mbour; benefits will be water revenues from existing water users.
• Mbour-Mbodiène and Nguekhokh	Water produced by facilities will be distributed in the urban centers of Petite Côte; benefits will be increased water revenues from existing users.
Increasing access to safe water (social connections)	- Incremental water revenues from new connections - Consumer surplus accruing to beneficiaries

10. **Incremental revenues.** The incremental consumption, water prices, and revenues are estimated on the basis of current data on water consumption and current water rates. The assumptions for estimating incremental revenues accruing to the water utilities are summarized in Table 5.3.

Table 5.3. Consumption and Water Rates

Beneficiaries	No. of People Served	Consumption (liters per capita per day)	Average Revenue (CFAF/m³)
Dakar and Thiès consumers	219,000	65	477
Petite Côte consumers	518,000	65	465
Nguekhokh consumers	43,000	60	376
Household with social connection	9 per household	50	306

Source: SONES/SdE and World Bank estimates.

11. **Consumer surplus.** The 2015 tariff study provides a detailed analysis of the sources of water of the population that is not connected to SdE networks and points to the relatively high percentage of households fetching water from open wells. The updated data lead to estimates of consumer surplus that are substantially lower than expected in the PAD analysis.

Table 5.4. Consumption and Water Prices with and without the Project

Current/ Future Source of Supply	% of Unconnected Households	Without Project		With Project	
		Consumption (liters per capita per day)	Average Price (CFAF/m³)	Consumption (liters per capita per day)	Average Price (CFAF/m³)
Standpost/social connection	41	20	1,228	50	306
Open well/social connection	43	25	0	50	306
Neighbor/social connection	16	15	1,200	50	306

Source: 2015 tariff study and World Bank estimates.

12. **Results.** Table 5.5 provides the results of the PAD analysis and the results of the updated analysis for the water component and each of the subcomponents. The NPV is computed with the discount rate used in the PAD analysis (10 percent) and the current recommended rate for sustainable development projects (6 percent). The updated analysis exhibits a higher NPV and EIRR than the PAD analysis. The changes are attributable to (a) the decrease of the consumer surplus resulting from the modification of assumptions (see paragraph 11), which affects the results of the social connections program (without any linkage to the AF activities), and (b) the improvement of the results of the Tassette/Petite Côte subcomponent, which is mainly attributable to the increased availability of water in Petite Côte through the transfer of water from ALG3. The latter finding demonstrates that the AF activities have a positive economic impact.

Table 5.5. Results by Subcomponent

Subcomponent	Tassette/Petite Côte	Nguekhokh	Social Connections Program	Overall Project
PAD analysis				
EIRR (%)	10.8	15.2	36.2	14.4
NPV at 10% (US\$, millions)	2.2	1.3	11.0	14.6
NPV at 6% (US\$, millions)	19.3	3.6	19.7	42.7
Updated analysis				
EIRR (%)	13.8	14.1	31.3	15.2
NPV at 10% (US\$, millions)	12.2	1.0	6.3	19.1
NPV at 6% (US\$, millions)	41.5	3.0	11.7	55.8

Financial Analysis

Financial Impact of the Project

13. The financial impact of the parent project and of the additional activities can be measured by the FIRR. The financial cash flow stream is derived from the economic cash flows by eliminating the benefits that do not accrue to SONES and SdE (consumer surplus) and taking into account the actual revenue collection (97 percent)⁵ and the full cost of the transmission lines (without adjustment). The FIRR is now estimated at 11.4 percent. The PAD estimate was 8.3 percent.

Financial Situation of SONES and ONAS

14. The PAD noted that SONES' financial equilibrium would be maintained through limited tariff revisions that would increase SONES' share in the consumer tariff (P_p). A tariff revision took place in 2015, which enabled increasing the P_p from CFAF 120 per m³ to CFAF 146 per m³. SONES' financial statements for 2016 show that its financial equilibrium of the sector is maintained. Similarly, the 2015 tariff revision enabled ONAS to improve the ratio of coverage of cash operating expenditures by operating revenues, from 69 percent in 2014 to 85.4 percent in 2016, ahead of PAD expectations.

⁵ This is the collection rate of private customers' bills, which represent the bulk of incremental water sales. In any case, public customers' bills are fully collected, albeit with delays, either through direct payment or through compensation with arrears on taxes and onlent debt due by SONES.

