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R2018-0130/1

June 4, 2018

Closing Date: Thursday, June 21, 2018 at 6:00 p.m.

FROM: Vice President and Corporate Secretary

Angola - Second Water Sector Institutional Development Project

Additional Financing and Restructuring

Attached is the Project Paper regarding a proposed additional loan and restructuring to Angola for the Second Water Institutional Sector Development Project (R2018-0130), which is being processed on an absence-of-objection basis.

Distribution:
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The World Bank

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Report No: PAD2851

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT PAPER

ON A

RESTRUCTURING AND

PROPOSED ADDITIONAL LOAN

IN THE AMOUNT OF US$150 MILLION

TO THE

REPUBLIC OF ANGOLA

FOR AN

ADDITIONAL FINANCING - SECOND WATER SECTOR INSTITUTIONAL DEVELOPMENT PROJECT

May 31, 2018

Water Global Practice
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective April 30, 2018)

Currency Unit	=	Angolan Kwanza (AOA)
AOA 225.36	=	US$1

FISCAL YEAR
January 1 - December 31

Regional Vice President:	Makhtar Diop
Country Director:	Elisabeth Huybens
Senior Global Practice Director:	Guang Zhe Chen
Practice Manager:	Maria Angelica Sotomayor
Task Team Leader:	Camilo Lombana Cordoba

ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
AFD	*Agence Française de Développement* (French Development Agency)
AOA	Angolan Kwanza
BOD_5	5-day Biochemical Oxygen Demand
BP	Bank Policy
DNA	*Direcção Nacional de Águas* (National Water Directorate)
EPAL	*Empresa Publica de Águas de Luanda* (Luanda Public Water Company)
ERR	Economic Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMF	Environment and Social Management Framework
ESMP	Environment and Social Management Plan
ESSF	Environmental and Social Screening Form
FCMU	*Unidade de Coordenação de Projetos* (Financial and Contract Management Unit)
FM	Financial Management
FY	Fiscal Year
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoA	Government of Angola
GRS	Grievance Redress Service
HH	Household
IAASB	International Auditing and Assurance Standards Board
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IDU	Internal Document Unit
IFAC	International Federation of Accounts
IFR	Interim Financial Report
INRH	*Instituto Nacional de Recursos Hidricos* (National Institute for Water Resources)
IPF	Investment Project Financing
IRSEA	*Instituto Regulador dos Serviços de Electricidade e Água e Saneamento de Aguas Residuais* (Regulatory Institute for Energy and Water Services)
ISA	International Standards on Auditing
JMP	World Health Organization and United Nations Children's Emergency Fund Joint Monitoring Programme
LCU	Local Currency Units
LPCD	Liters per capita per day
MDG	Millennium Development Goals
MFD	Maximizing Finance for Development
MINEA	*Ministério da Energia e Águas* (Ministry of Energy and Water)
Minfin	*Ministério da Finanças* (Ministry of Finance)
NCB	Nationally Competitive Bidding
NPV	Net Present Value
O&M	Operations and Maintenance
OP	Operational Procedures
PAD	Project Appraisal Document
PDO	Project Development Objective
PWSU	Provincial Water and Sanitation Utility

QCBS	Quality and Cost Based Selection
RAP	Resettlement Action Plan
RFQ	Request for Quotation
RPF	Resettlement Policy Framework
RVP	Regional Vice President
SDG	Sustainable Development Goals
SOE	Statement of Expenditures
STEP	Systematic Tracking of Exchanges in Procurement
TA	Technical Assistance
WB	World Bank
WSIDP	Water Sector Institutional Development Project
WSIDP2	Second Water Sector Institutional Development Project
YLL	Years of Life Lost

BASIC INFORMATION – PARENT (Second Water Sector Institutional Development Project - P151224)

Country	Product Line	Team Leader(s)		
Angola	IBRD/IDA	Camilo Lombana Cordoba		
Project ID	Financing Instrument	Resp CC	Req CC	Practice Area (Lead)
P151224	Investment Project Financing	GWA08 (9523)	AFCC1 (6544)	Water

Implementing Agency: Ministry of Energy and Water

Is this a regionally tagged project?
No

Bank/IFC Collaboration

No

Approval Date	Closing Date		Original Environmental Assessment Category	Current EA Category
10-Mar-2017	31-Mar-2024		Partial Assessment (B)	Partial Assessment (B)

[ ] Situations of Urgent Need or Capacity Constraints	[ ] Financial Intermediaries (FI)
[ ] Series of Projects (SOP)	[ ] Project-Based Guarantees

Development Objective(s)

The Project Development Objective is to strengthen the institutional capacity of selected water sector agencies and increase water service coverage in target cities.

Ratings (from Parent ISR)

	Implementation	Latest ISR

	15-Jun-2017	27-Dec-2017
Progress towards achievement of PDO	S	S
Overall Implementation Progress (IP)	S	S
Overall Safeguards Rating	S	S
Overall Risk	S	S

BASIC INFORMATION – ADDITIONAL FINANCING (Additional Financing - Second Water Institutional Development Project - P167201)

Project ID	Project Name	Additional Financing Type	Urgent Need or Capacity Constraints
P167201	Additional Financing - Second Water Institutional Development Project	Restructuring, Scale Up	No
Financing instrument	Product line	Approval Date	
Investment Project Financing	IBRD/IDA	21-Jun-2018	
Projected Date of Full Disbursement	Bank/IFC Collaboration		
31-Jul-2024	No		

Is this a regionally tagged project?	
No	
[ ] Situations of Urgent Need or Capacity Constraints	[ ] Financial Intermediaries (FI)
[ ] Series of Projects (SOP)	[ ] Project-Based Guarantees
[ ] Disbursement-linked Indicators (DLIs)	[ ] Contingent Emergency Response Component (CERC)
[ ] Alternative Procurement Arrangements (APA)	

Disbursement Summary (from Parent ISR)

Source of Funds	Net Commitments	Total Disbursed	Remaining Balance	Disbursed
IBRD	200.00	0.50	199.50	.3 %
IDA				%
Grants				%

PROJECT FINANCING DATA – ADDITIONAL FINANCING (Additional Financing - Second Water Institutional Development Project - P167201)

FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	150.00
Total Financing	150.00
of which IBRD/IDA	150.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	150.00

COMPLIANCE

Policy

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

[ ] Yes [✓] No

Does the project require any other Policy waiver(s)?

[ ] Yes [✓] No

INSTITUTIONAL DATA

Practice Area (Lead)

Water

Contributing Practice Areas

Climate Change and Disaster Screening

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

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

Yes

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
Camilo Lombana Cordoba	Team Leader (ADM Responsible)		GWA08
Antonio Laquene Chamuco	Procurement Specialist (ADM Responsible)	Procurement	GGOPF
Laurent Mehdi Brito	Procurement Specialist	Procurement	GGOPF
Rahmoune Essalhi	Procurement Specialist		GGOPA
Joao Tinga	Financial Management Specialist	Financial Management	GGOAC

Alexander V. Danilenko	Team Member	Economist	GWAGP
Belinda Lorraine Asaam	Team Member	Quality Assurance	GWASO
Benjamin Burckhart	Social Safeguards Specialist		GSU01
Beth Anne Hoffman	Team Member	Legal	LEGAM
George Ferreira Da Silva	Team Member	Finance Officer	WFACS
Habab Taifour	Team Member	WRM	GWA08
Hila Cohen Mizrav	Team Member		GWA08
Jemima T. Sy	Team Member	PPP	GTIPF
Jose C. Janeiro	Team Member	Finance Officer	WFACS
Kristyna Bishop	Social Safeguards Specialist		GSU01
Maria Isabel Nhassengo-Massingue	Team Member	Procurement	AFCS2
Mario Rizzolio	Social Safeguards Specialist		GSU01
Paulo Jorge Temba Sithoe	Environmental Safeguards Specialist		GEN01
Rebecca Jean Gilsdorf	Team Member		GWA08
Sofia De Abreu Ferreira	Counsel		LEGEN
Victor Manuel Ordonez Conde	Team Member	Finance Officer	WFACS

Extended Team

Name	Title	Organization	Location

REPUBLIC OF ANGOLA

ADDITIONAL FINANCING - SECOND WATER SECTOR INSTITUTIONAL DEVELOPMENT PROJECT

TABLE OF CONTENTS

I. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

A. Original Project Objectives and Design

1. The Second Water Sector Institutional Development Project ([WSIDP2], P151224), supported by an IBRD loan in the amount of US$200 million, was approved on March 10, 2017 and signed on July 14, 2017. Total agreed project financing is US$545 million, including counterpart funding and bilateral co-financing. The Project Development Objective (PDO) is to strengthen the institutional capacity of selected water sector agencies and increase water service coverage in target cities. The selected water sector agencies include: nine Provincial Water and Sanitation Utilities (PWSUs), the Luanda Water Utility (*Empresa Publica de Água de Luanda* [EPAL]), the National Institute for Water Resources (*Instituto Nacional de Recursos Hidricos* [INRH]), the national regulator for electricity, water supply and sanitation (*Instituto Regulador dos Serviços de Electricidade e Água e Saneamento de Águas Residuais* [IRSEA]), and the National Directorate for Water (*Direcção Nacional de Águas* [DNA]).

2. The project includes four components: 1) Water Supply Institutional Strengthening and Capacity Development; 2) Water Resources Management; 3) Rehabilitation and Expansion of Water Supply Production and Distribution; and 4) Management and Engineering Support. The first component provides for technical assistance (TA) and operational support to the PWSUs; capacity building and development of new instruments and systems for IRSEA; and a study to understand the scope for possible PPPs in the sector. The second component supports INRH capacity building, expansion of the Borrower's hydro-meteorological monitoring network, INRH's development of river basin plans and a national dam safety plan. The third component funds the rehabilitation and expansion of water supply production and distribution facilities in the nine targeted provincial capitals. And the fourth component provides support for project management, technical oversight, financial management (FM), monitoring and evaluation, social and environmental safeguards oversight, as well as the carrying out of engineering studies and the updating of the Sanitation Master Plans for the nine targeted cities.

3. The project is co-financed by the French Development Agency (*Agence Française de Développement* [AFD]), through a Euro-dominated loan of US$150 million equivalent, and by the Government of Angola (GoA), through a US$95 million counterpart contribution. The Board approved the project with a financing gap of US$100 million, and currently the GoA is preparing a parallel financed project with the European Investment Bank in order to cover this gap. In line with the project appraisal document (PAD), the GoA aims to secure financing to fill the financing gap by the end of the second year of the project. Should the financing gap not be filled by the end of year two, the project will be restructured and the activities realigned.

B. Performance of Original Project

4. The WSIDP2 became effective on May 17, 2018. The effectiveness deadline was extended three times due to GoA delays in processing the required counterpart contribution of AKZ 250 million (which was made on January 15, 2018) and meeting the AFD effectiveness conditions, and the associated cross-effectiveness condition under the IBRD loan.

5. Project beneficiary agencies, namely, IRSEA, INRH, and DNA, have already started implementation by

preparing their annual action plans and beginning the procurement processes for key activities and TA consultancies that will be launched before the end of the fiscal year (FY). Preparatory work has been done for Components 1, 2, and 3, including: preparation of the second generation of management contracts and MoUs between Ministry of Energy and Water (*Ministério da Energia e Águas* [MINEA]), the Provinces and PWSUs; commencement of implementation of the Kwanza River basin management plan; and signing of contracts to build a total of 89,000 household connections to be installed in seven cities.

6. An advanced procurement plan was created for a total of US$169 million worth of contracts. To date, contracts for US$84 million have been signed and are ready to start now that the project is effective. The project is expected to disburse around 15 percent of these commitments by the end of FY18.

C. Rationale for Additional Financing

7. The additional financing (AF) will (1) fill a financing gap by replacing existing counterpart co-financing to ensure timely implementation, which has been threatened by an unanticipated change in GoA's financial situation, linked to the downturn in global oil prices; and (2) scale up support to sector institutions to undertake their mandates for sanitation management and to address the challenges of urban sanitation through a pilot project in sanitation.

8. *Country Economic Context:* The AF will seek to address the impact on the project of the ongoing financial constraints in the country. As a result of the drop in oil prices that started in late 2014, GoA revenues were more than halved from 2013 to 2017 (decreasing from 40.2 percent to 17.7 percent of gross domestic product [GDP]). Expenditures had to be adjusted accordingly, with public investments suffering the largest cut (decreasing from 11.4 percent of GDP in 2013 to 3.8 percent of GDP in 2016). Public investment in water declined from local currency unit (LCU) 63.7 billion (0.53 percent of GDP) in 2013 to LCU 55.3 billion (0.33 percent of GDP) in 2016. As a result of the fiscal constraints, the GoA is seeking additional funding from the World Bank in the amount of US$95 million to replace the counterpart funding it committed to under the original project. These funds will finance activities that are already approved under WSIDP2. Without the AF, the project may face delays as the existing disbursement mechanism relies on a pari-passu arrangement, in which World Bank and AFD funds are matched by GoA funds for all activities. The GoA remains fully committed to the project as shown in the interest to rapidly procure key assignments to initiate the implementation of the project; as well as the in willingness to move forward with the policy dialogue through the benefitting agencies, namely IRSEA, DNA and INRH.

9. *Water Supply & Sanitation Sector:* While Angola is a resource-rich country and the third-largest economy in Sub-Saharan Africa, an estimated 28 percent of its population still live below the international poverty line of US$1.90 (PPP 2011), and one in six urban people live in poverty. Angola was not able to meet its Millennium Development Goal (MDG) targets for water and sanitation, as service expansion did not keep pace with population growth. Under-five mortality has fallen from 207 (per 1,000 live births) to 83, but malnutrition rates remain high, as 29.2 percent of children under five are stunted and 15.6 percent are underweight (as of 2007). Low levels of access to sanitation lead to a higher disease burden due to excreta-related illnesses. For example, Angola has been facing a cholera outbreak since December 2017. Further, diarrhea is the leading cause of death in Angola (Global Burden of Disease Study 2016[1]). In 2016 alone, an

[1] Institute for Health Metrics and Evaluation (IHME). GBDCompareDataVisualization. Seattle, WA: IHME, University of Washington, 2016. Available from http:// vizhub.healthdata.org/gbd-compare. April 30, 2018.

estimated 9,121 deaths were attributable to diarrhea caused by poor sanitation, and 4,723 of those deaths were children under five. An additional 6,467 deaths were attributable to diarrheal illness caused by lack of access to handwashing facilities.

10. In urban areas in Angola, an estimated 82.5 percent of households have access to an improved water source, though only 45 percent have access at their premises and only 33 percent have access when needed (World Health Organization and United Nations Children's Emergency Fund Joint Monitoring Programme (JMP) 2015). Most urban households, 89.4 percent, now have access to an improved toilet/latrine – although among the poorest wealth quintile only 63.9 percent of households have access (JMP 2015, 2011). However, about 30 percent of these facilities are shared with neighboring households, and most of these facilities are attached to a pit or septic tank that has not been properly maintained or safely emptied on a regular basis. A small number of urban households, in the urban centers of Angolan cities, are connected to sewer networks (constructed during the colonial period), but they have not been maintained over the past decades and waste is largely released to local rivers untreated. Overall, in urban areas this means that most human waste receives minimal to no treatment before being released into the environment. The challenges of urban sanitation will continue to rise as Angola continues to urbanize (currently urban areas are growing at 5.1 percent per year) and as water supply access continues to increase – both under WSIDP2 and other GoA projects – bringing increased volumes of water to these areas, which in turn creates a considerable liability, if not properly managed.

11. As urban populations rise, sanitation service delivery will need to increase, not only to provide toilets/latrines, but also to ensure that the waste generated at the household level receives an appropriate level of treatment before being released into the environment. This focus on the full sanitation service chain will also help the GoA to reach its targets under the Sustainable Development Goals (SDGs), which consider safe management across the full service chain.

12. With the introduction of the Water Law (2002), responsibility for professionalization of service delivery (and cost-recovery tariffs) have been devolved to provincial governments. The PWSUs are being strengthened under WSIDP and WSIDP2 to deliver water supply services. Overall, for the sanitation sector, the PWSUs are responsible for service delivery, whereas DNA is responsible for policy making and IRSEA is responsible for economic regulation. However, although their mandates include sanitation, these institutions currently do not have the expertise, personnel, or existing policies and regulatory framework to carry out their sanitation mandates. Further, the PWSUs lack the service framework – in terms of technical, social and financial considerations; the technical capacity; and the financial means to provide these services. The proposed AF, building off the successes in strengthening these institutions under WSIDP, will support the PWSUs and national government institutions in carrying out their mandate for sanitation service provision, policy implementation and regulation of urban sanitation.

13. The AF is an important first step in addressing the urban sanitation challenges in Angola and building the capacity of GoA institutions – both national institutions and PWSUs – to start delivering sanitation services. The AF is in line with broader GoA and World Bank priorities, as reflected in the existing Country Partnership Strategy (CPS 2014-2016[2]), which puts considerable focus on knowledge transfer and institutional capacity development and includes as one of its two pillars "enhancing the quality of service delivery." The CPS also

[2] World Bank Report Number 76225. Extended to FY19 through the Angola Performance and Learning Review World Bank Report Number 100984.

places strategic emphasis on more inclusive development, which will be achieved through the AF's focus on peri-urban, low-income communities. Though there have been a number of donor-financed investments in sanitation in Angola over the past years, these investments were often designed without sufficient consideration of operation and maintenance and without full participation of the Government and affected communities. The core principles underlying the proposed sanitation activities for this AF align with the Citywide Inclusive Sanitation approach,[3] which the World Bank is supporting in a number of countries. Under this AF, the GoA will be able to align donor financing from the World Bank and AFD to pursue initial piloting for sanitation service delivery. This AF will ultimately provide GoA, with support from the World Bank and AFD, the opportunity to pilot approaches to addressing urban sanitation, and following the success of the pilots, the GoA will be better positioned to scale-up urban sanitation service delivery across Angola.

14. *Overall Rationale:* Following the successes seen under WSIDP in strengthening water sector institutions, the GoA now aims to further strengthen these institutions and support them in carrying out their mandates for sanitation. The GoA has requested from IBRD an AF of US$150 million, of which US$55 million will be used to strengthen key sector agencies to support piloting sanitation service delivery with small-scale, onsite solutions in peri-urban areas of one or more cities. The remaining funds will be used to cover the GoA's co-financing of US$95 million. The AF will provide guidance and technical inputs to the sanitation related activities supported under the parent project. In addition, the AF will benefit from the existing implementing arrangements under WSIDP2 (including the implementing unit, which is well positioned to undertake the additional activities) and synergies with the other institutional strengthening and capacity building activities supported by the project. The original project will be restructured accordingly and include an updated results framework, to incorporate indicators for the sanitation intervention.

II. DESCRIPTION OF ADDITIONAL FINANCING

15. The proposed AF is sought in order (i) fill the financing gap that has emerged as it is necessary to replace the US$95 million in Government counterpart financing and (ii) to scale up interventions to add a fifth component (US$55 million) to strengthen the institutional capacity of sector agencies related to the sanitation services, through piloting sanitation service delivery using small-scale, onsite solutions in peri-urban areas. The original operation will be restructured to include three additional intermediate results indicators for the sanitation activities and to reflect the updated financing allocation.

16. The PDO, closing date, and implementation arrangements will all remain unchanged. The *Unidade de Coordenação de Projetos* (Financial and Contract Management Unit [FCMU WB/AFD]) will be strengthened with the addition of a technical expert to support the new sanitation activities. Following approval of the AF, both the original project and AF will use the new Procurement Regulations (2017). Though the AF will include new activities, only minimal changes to the FM and safeguards arrangements are foreseen. Nevertheless, framework safeguards instruments (i.e., Environment and Social Management Framework [ESMF] and Resettlement Policy Framework [RPF]) have been updated by the GoA to reflect the new scope of the project. The new sanitation activities will take place within the existing geographic boundaries of the project, but the scope of activities will expand to include sanitation service delivery, a sub-sector that falls under the same

[3] Citywide Inclusive Sanitation focuses on ensuring the institutional, financial, social and technical systems are in place to provide safe management of sanitation across the full service chain (from household containment to treatment and end use) for all residents of a city.

national and provincial institutions as water supply.

A. New Component for Piloting Small-Scale Sanitation Service Delivery in Peri-Urban Areas

17. **Component 5: Piloting Small-Scale Sanitation Service Delivery in Peri-Urban Areas (IBRD financing US$55 million).** The project will approach sanitation as a service to be delivered and as such, will include activities to support national and provincial institutions in carrying out their mandates for sanitation service delivery, policy implementation and regulation as well as pilot activities to increase access (through infrastructure improvements). In line with this approach, technical solutions will consider the full sanitation service chain, i.e., household containment, collection, conveyance, treatment and safe disposal. For this purpose, the project will use the Citywide Inclusive Sanitation approach. Two sub-components are proposed in this AF. Annex 1 contains a detailed description of this component, including a description of the principles of the Citywide Inclusive Sanitation approach.

18. *Sub-Component 5a: Citywide Inclusive Sanitation Planning and Institutional Development (IBRD financing US$2 million).* This sub-component will support the national and provincial agencies in planning for the necessary institutional, policy and regulatory changes that will be required in order to carry out their mandates for sanitation, through: (a) the provision of TA to the DNA for updating and drafting necessary policies and instruments for overseeing sanitation service delivery; and the Regulatory Agency (IRSEA) for drafting and implementing economic regulation for sanitation services, likely including a framework for setting tariffs/fees for sanitation; (b) development of the proposed approach and guidelines for the preparation of the Participatory Sanitation Master Plans, including focusing on women's participation. These plans will be used to update the existing master plans; (c) the provision of TA to the PWSU(s) of the benefitting province(s) to, *inter alia*, build their capacity for operation and maintenance of the fecal sludge management system and treatment facility; (d) the provision of TA to undertake a study to explore the possible role of the private sector for urban sanitation service provision; (e) support to develop behavior change/information education campaigns in the pilot communities to educate households on the importance of proper sanitation and hygiene behaviors; and (f) the development of a national strategy for scaling up the approach to urban sanitation. The parent project will finance the actual TA activities and the updating of sanitation master plans, for each of the nine cities, which will consider a range of technical solutions for providing services to the whole city (as compared to the existing plans that focus on sewered sanitation only in the central part of the city).

19. *Sub-Component 5b: Piloting Delivery of Small-Scale Sanitation Services in Peri-Urban Areas (IBRD financing US$53 million).* Under this sub-component, infrastructure improvements (detailed in Annex 1) will be implemented in select peri-urban areas to provide the PWSU(s), who are responsible for both water supply and sanitation, with an opportunity to pilot onsite sanitation service delivery. The piloting will take place in one or more of the nine provincial capitals (additional information on each city is provided in Annex 2). The specific city (or cities) will be chosen through a competitive process, based on completion of the updated sanitation master plans, PWSU readiness and performance, and PWSU and provincial government support.

B. Change in Financing Arrangements

20. Table 1 shows the updated project costs and updated percent of financing that will be covered by the World Bank and AFD financing, once the initially agreed counterpart funding of US$95 million is replaced by the proposed AF. The total World Bank financing will increase from US$200 million to US$350 million, while the total project cost will increase from US$545 million to US$600 million (Annex 4. Presents the changes

between the disbursement categories of the Original Loan). The financing gap of US$100 million identified during the preparation of WSIDP2 will remain unchanged until the GoA secures the required funds to fill the gap and notifies the World Bank. The GoA is in discussion with the European Investment Bank to provide financing in order to cover this gap. The GoA aims to secure financing to fill the financing gap by Q4 CY18. Should the financing gap not be filled by July 2019, the project will be restructured and the activities realigned. Co-financing will continue to be provided by the World Bank and AFD based on their share of the overall secured financing of the project: IBRD 70 percent and AFD 30 percent.

Table 1: Revised Project Cost and Financing (US$ Million)

Project Components	Project Cost	IBRD Original	IBRD AF	AFD Financing	GoA Contrib.	Financing Gap
Component 1: Water Supply Institutional Strengthening and Capacity Development	US$74.00	US$26.24	US$19.68	US$19.82	US$0	US$8.00
Component 2: Water Resources Management	US$35.20	US$12.46	US$9.34	US$9.37	US$0	US$4.00
Component 3: Rehabilitation and Expansion of Water Supply Production and Distribution	US$324.00	US$116.54	US$87.41	US$87.42	US$0	US$32.90
Component 4: Management and Engineering Support	US$62.30	US$22.24	US$16.68	US$16.88	US$0	US$6.10
Component 5: Piloting Small-Scale Sanitation Service Delivery in Peri-Urban Areas	US$55.00	US$22.02	US$16.51	US$16.52	US$0	US$0
Contingencies and Fees	US$49.50	US$0.5	US$0.375	US$0.00	US$0	US$49.00
Total	**US$600.00**	**US$200.00**	**US$150.00**	**US$150.00**	**US$0.00**	**US$100.00**
% Secured Financing		70%		30%	0%	0%

C. Changes to the Results Framework

21. The PDO will remain unchanged as the proposed additional component will continue to support the strengthening of institutional capacity of the same selected water sector agencies. For sanitation, the results

framework will track the development of guidelines for sanitation master planning (for use in all urban areas of Angola), the approval of master plans for the nine provincial capitals, the start of implementation of a master plan in a selected city (or cities), and the development of a national strategy for scaling up the approach to urban sanitation. To track these achievements, three intermediate results indicators, shown in Table 2, will be added. The first will assess the development of master planning guidelines; the second will measure the number of people provided with safely managed sanitation service delivery (following the SDG definition, requiring containment, as well as safe conveyance, treatment and disposal); and the third will track the development of a plan for scaling up the approach to urban sanitation. Under WSIDP2, there is an existing indicator on completion of the updated master plans.

22. Annual target values are also reflected in Table 2. Prior to construction, the master planning process, which will begin in Year 2 of the project, will need to be complete. Consequently, completion of construction and service delivery results are not anticipated until Year 5. The number of project beneficiaries is based on conservative estimates of unit costs and types of facilities to be built/rehabilitated. These figures will be updated following the master planning process and the number of beneficiaries may be revised accordingly.

Table 2: Additional Intermediate Results Indicators

		Cumulative Target Values							
Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6		End Target
Approval of guidelines for participatory urban sanitation master planning	No	No	No	Yes	Yes	Yes	Yes		Yes
Number of people provided with safely managed sanitation service delivery under the project (Number)	0	0	0	0	0	10,000	35,000		35,000
Development of a national strategy for scaling up the piloted approach to urban sanitation	No	No	No	No	No	No	Yes		Yes

D. Changes to Procurement Arrangements

23. All financing under Investment Project Financing (IPF), including AF, identified on or after July 1, 2016 are subject to the World Bank Policy "Procurement in IPF and Other Operational Procurement Matters" dated July 2016 and are required to apply the Procurement Regulations for IPF Borrowers dated July 2016 and revised in November 2017. While the WSIDP2 is subject to the Procurement Guidelines and Consultant Guidelines, respectively, dated January 2011 and revised in July 2014, the project only recently became

effective. Taking advantage of the AF, (which will be subject to the Procurement Regulations), upon approval of the AF, both the original project and the AF will be subject to the Procurement Regulations of July 2016 revised in November 2017, in order to (i) ensure consistency in the use of procurement instruments within the same project and (ii) take advantage of innovations introduced by the Procurement Regulations throughout all project implementation phases. As advanced procurement has begun for the parent project, WSIDP2 procurement will fall under the new Procurement Regulations from the date of the AF approval onward, for activities for which the procurement process did not start yet.

24. For the preparation of the AF, a Project Procurement Strategy for Development, limited to the AF part of the project, along with related Procurement Plan, was prepared by the Borrower, with support of the World Bank. Both the Original Project and the AF will be subject to the new Procurement Regulations. With this in mind, and considering the amendment and restatement of the Legal Agreement, procurement matters for the overall project will follow the new 2017 General Conditions.

III. KEY RISKS

25. The overall risk rating of the original project is Substantial, and the task team proposes that the AF retains the same rating. The Political and Governance, Macroeconomic, Institutional Capacity for Implementation and Sustainability, Fiduciary, Safeguards, Stakeholders, and Other all remain Substantial.

26. The Political and Governance risk is Substantial given concern that political interference at the provincial level may prevent PWSUs from establishing cost-recovery tariffs. Support to IRSEA in developing a standardized, technical model for setting tariffs may help mitigate this risk. Additionally, some of the PWSUs do not yet have their Board of Directors appointed. The World Bank team has raised this issue, and the need for timely prioritization of their appointments, with the Ministry of Finance (*Ministério da Finanças* [Minfin]).

27. The Macroeconomic risk continues to be Substantial largely due to the impacts of the global decline in oil prices on the Angolan economy. Annual GDP growth was three percent in 2015, but fell to -0.67 percent in 2016. The general downturn in the economy has also affected non-oil sectors. Within the water sector, much of the impact is linked to the sector's revenues being collected in local currency, whereas the investment costs, and some operating costs, are tied to foreign currencies. This difference is of concern for the long-term sustainability of the sector. Some of the macroeconomic risk has been mitigated under this AF with the proposed IBRD replacement of US$95 million in counterpart co-financing.

28. Institutional Capacity for Implementation and Sustainability remains a Substantial risk as the PWSUs and national sector agencies (i.e., DNA, IRSEA and INRH) still have limited capacity for implementation and sustainability. The FCMU, by contrast, is a strong implementing entity with the necessary skills to implement the parent project and proposed AF. The risks due to the limited capacity of the PWSUs and national institutions will continue to be mitigated through the use of management contracts funded under the parent project. In the PWSU(s) where sanitation pilots occur, the management contract(s) will be amended to ensure the PWSU receives sufficient support in developing capacity for sanitation service delivery. The project will further mitigate some of the risk due to weak capacity through continued TA and capacity building for the national and provincial institutions.

29. Fiduciary Risk also remains Substantial because of concerns about the FCMU's ability to attract and

retain qualified procurement and FM specialists, difficulties in securing hard currency, and possible delays in securing work permits for international consultants (given lengthy processes to do so). To mitigate these risks, the FCMU will prioritize the retainment of these key staff and plan project timelines realistically based on experience with procurement under WSIDP.

30. Safeguard Risk is Substantial given the large number of construction activities that will be undertaken, under the WSIDP2. These activities come with both environmental and social risks. These risks will be mitigated through the use of the ESMF and RPF prepared for the project, and the associated Environmental and Social Impact Assessments (ESIA) and Resettlement Action Plans (RAPs).

31. Stakeholder risk remains Substantial given the risk that households may not connect to the water supply systems and similarly may not be interested in participating in the sanitation service improvements. These risks are significantly mitigated given the project's design and focus on community engagement prior to the beginning of works. Similarly, under the AF, the risk of non-payment by households will be mitigated through the project's use of community engagement activities and the range of technical and financing options being explored for sanitation services.

32. The Other Substantial risk under the project is due to the existing financing gap (of US$100 million). As noted, the GoA is in the process of securing financing, from the European Investment Bank, for a parallel financed project to cover this gap.

IV. APPRAISAL SUMMARY

A. Economic and Financial Analysis

ERR: 14.4 percent
NPV: US$201 million

33. *Cost-Benefit Analysis*. The economic model uses a cost-benefit analysis methodology and compares the results of the scenarios with project and without project. The analysis considers the whole project (WSDIP2 and the proposed AF together), including both water supply and sanitation activities. Annex 3 contains a more detailed description of the analysis. These calculations use most of the assumptions and parameters included in the original economic models used to calculate the economic benefits for WSIDP2, as included in the WSIDP2 PAD and Project Concept Note. The economic feasibility analysis of the project compares estimated economic benefits of the project with its economic costs. As the project costs are given, the primary analytical challenge of this analysis is to estimate the expected benefits that occurred or are likely to occur because of project implementation. In the cost-benefit analysis, benefits were assessed at financial prices due to a lack of data on economic prices.

34. *With and without scenarios*. The net benefit of the project was estimated as the incremental benefit of two scenarios: with and without project scenarios. The "with project" scenario includes the proposed investment program under Components 3 and 5b and their associated number of connections, toilets/latrines, and constructed septage treatment facility. The without project scenario assumes the investments are not done and therefore the proposed expansion in the number of connections and sanitation facilities would not happen in the absence of available government funding.

35. The proposed investment will give a boost to nine PWSUs located in different regions of Angola and

help them to achieve water supply coverage to 70 percent and above. It is expected that utilities will take over operation of the infrastructure, and continue expanding water and sanitation systems according to the urbanization rate, maintaining coverage rates that were achieved during the project implementation.

36. For water components, the benefit flow comes from the reduction of the water services costs to the currently unserved population of about 1.2 million. After the installation of the new connections, the water consumption will also grow to at least 50 liters per capita a day (lpcd). Payment for this water will be according to the current tariff set by each individual company with consumption of 50 lpcd in a range from AOA 765 to AOA 1,100 per month for the average family. Current consumption for unserved populations is estimated at the level of 10 lpcd, or 51 liters for the average family. The cost of this water is assessed at the level of AOA 7,650 per family per month. The reduction in coping costs ranges from AOA 6,000 - 7,000 per family per month depending on location. The benefits will become available to new customers from the third year of implementation onward.

37. Benefits from sanitation investment include reduced burden from morbidity with excreta-related diseases by at least 15 percent, reduced coping costs associated with handling waste, and increased value of housing with latrines, equivalent to the amount of investment. The benefit flow comes from the reduction in the sanitation services costs for the currently unserved population of about 7,000 households living in suburban areas. It is conservatively assumed that the incidence of diseases and their treatment costs are the same as for all Angola on average. The coping cost of AOA 4,500 (US$20) per family per year is assessed as nuisance conditions (due to open defecation) and sanitation management at the household level. The WSIDP2 AF will also increase the value of the housing, for houses where latrines/toilets are provided. It is assumed that this increase will correspond to the value of the latrines/toilets. The cost of new pit/septic tank emptying is added as a new cost for households receiving latrines/toilets.

38. The improved sanitation benefits will become available to new customers from the fifth year of implementation onward with the full set of benefits starting from year seven when all construction works will be completed. After the installation of the new latrines and septage treatment facility operations, the coping cost for sanitation management will be reduced along with frequency of excreta-related diseases: it is expected that project interventions will reduce morbidity and associated costs of their treatment by at least 15 percent, reducing the hazard of epidemics, morbidity and mortality from diarrheal and other excreta-related diseases, which will subsequently result in increased labor productivity of the society.

39. Additional benefits are expected from the Components 1, 2 and 5a, which will bring transparent procurement, performance assessment and fact-based investment decision processes to the Angolan water sector that will reduce risk of mishandling the scarce financial resources and technical expertise. Global benefits are expected from the reduction of the greenhouse gas (GHG) emissions, nutrient discharges with proper septage treatment as well as release of the BOD_5 into surface water and groundwater environments. These benefits, while important, are not be accounted for in this AF.

40. The benefits are calculated for the 20 years from the project start. This corresponds to the 14 years after the project completion. The discount rate is 6 percent, per World Bank (WB) guidelines. The same rate was used for the WSIDP2.

41. The project will not bring an additional financial burden to the beneficiaries, as their service costs will be at least 60 percent lower than the current coping costs.

42. *Model Result*. The economic rate of return (ERR) for the WSIDP2 with AF is 14.4 percent, and the net present value (NPV) is US$201 million.

43. *Stress Test*. If the costs of components 1, 2, 3 and 5 are included in the economic assessment, then the ERR becomes 9.6 percent and the NPV is US$111 million. The project will also save the lives of at least 15,500 children, or 730,000 productive years, considering that life expectancy in Angola will grow from 50 to 60 years between now and 2036. We did not put monetary terms to these health benefits, although they are large.

44. The project is resilient to external shocks: if the investment cost grows by 30 percent, then the ERR will decrease to 10.5 percent and the NPV will decrease to US$128 million. Overall this means that the project is resilient to cost increases.

45. For the purposes of sensitivity analysis, the shadow exchange rate is estimated at the level of US$1=AOA 270 and AOA 400 respectively (see Table 3). The project will be operating within the local financial environment. While all operational and maintenance costs and benefits will be in Angolan Kwanza, the project financing is in US dollars. We estimated the economic effects on the benefits and project costs varying the exchange rate of the local currency to US dollar. The project is sustainable to external shocks related to fluctuation of the exchange rate.

Table 3: Projected NPV and ERR based on various exchange rates.

Exchange rate (US$= AOA)	NPV, US$	ERR, %
225	201 million	14.4
270	97 million	8.3
400	27 million	6.6

46. The economic outcomes of the WSIDP2 with AF (including the sanitation component) are slightly lower if compared with the original project. The NPV is US$130 million lower while the ERR is 7 percentage points below the rate obtained for the parent project. This difference is caused by the inability to assess, with the necessary precision, some additional economic benefits associated with improved sanitation, specifically global economic benefits. These include, but are not limited to, reduction of nutrient and BOD_5 discharges into surface waters, reduced pollution with septage of ground water, and similar benefits.

B. Technical

47. In order to address the existing sanitation challenges in urban Angola, especially with respect to operating and maintaining infrastructure, strengthening institutions responsible for the sector will need to be prioritized. Without focusing on these institutions, any intervention will continue to suffer from poor sustainability. Pilot-scale infrastructure interventions can thus provide an opportunity to build the capacity of these institutions and further develop relevant sector policies, regulations, and service delivery models while also providing households with access to safely managed sanitation services (in line with the SDGs). Though the PWSUs have very limited existing capacity for sanitation service provision, the project will undertake the piloting with a PWSU that has completed its master plan and expressed interest, and under WSIDP2, the management contract will provide additional technical support to the PWSU.

48. The World Bank technical team has visited some peri-urban communities in different cities to gain a better understanding of conditions on the ground and the type of sanitation interventions that may be most appropriate in these contexts. The overall proposed approach to sanitation service delivery is in line with global good practice as it incorporates institutional, financial, regulatory, social and technical considerations and considers a range of technical solutions for different areas within the city. Further, the approach has been informed by a number of recent projects and studies by other development partners, including the African Minister's Council on Water, European Union Water Initiate, the International Institute for Environment and Development, Luta Contra Pobreza Urbana, the Water and Sanitation Program, and UNICEF.

49. The sequencing of activities is also well suited to meet GoA's needs. By providing TA to create an action plan for institutional development and capacity building – both at the national and provincial levels – the project will ensure that capacity needs are addressed in a timely manner. The TA will also provide a plan for modifying the envisioned sanitation master planning process to be more participatory, which will help ensure the appropriateness of proposed solutions and increase the likelihood of project success. The master planning process itself will help ensure that technically feasible, environmentally appropriate, cost effective solutions are chosen for the small-scale pilot(s).

50. The treatment facility will be designed to ensure compliance with existing Angolan effluent discharge regulations, following Presidential Degree no.261/11. There are no existing legal standards for sanitation designs (e.g., septic tanks, sewers, etc.). Under the proposed Component 5a, the possibility of developing such standards will be explored. Additionally, if the facility is located in an international water basin, the project will ensure the impacts will be minimal, if any, for affected international waters.

51. The current scope of proposed service models for sanitation service delivery is narrow at this point and focuses heavily on the PWSUs as service providers. This focus on PWSUs as service providers takes into account (i) the limited existing private sector role in sanitation service delivery in Angolan cities; and (ii) the role of the project as a pilot that provides the PWSUs with an opportunity to first attempt a more familiar, straightforward service delivery model. However, these models may be revisited as part of the master planning process and following the proposed study on private sector engagement.

52. Given the known financial constraints that the PWSUs are facing for water supply, developing a TA action plan for IRSEA will help ensure that they are able to develop a framework for sanitation service provision tariff/fee setting that supports cost recovery efforts.

53. The project estimates for investment costs are based on best available evidence at this time. Given the GoA's lack of experience in sanitation and the lack of existing experience in Angola with some of the specific proposed solutions, the cost estimates will need to be updated as the project progresses, though the current estimates are meant to be conservative. More cost-effective alternatives, including shared sanitation and household co-financing of household facilities, have been considered, but are deemed ill-suited to GoA's current needs and the context. Experiences from previous projects in Angola (e.g., those led by NGOs and other development partners) have shown that households prefer individual household facilities, as compared to shared household facilities, and in order to get sufficient scale in a timely manner, the pilot will not rely on household financing for construction. These decisions/approaches will be reviewed during the community engagement for the master planning processes and a more thorough review will be done to inform how the sanitation service model might be scaled up in other cities following the piloting.

C. Financial Management

54. The FCMU will have fiduciary responsibility for the implementation of the proposed AF. The recent FM supervision mission conducted in March 2018, concluded that the FCMU has been working to ensure compliance with FM requirements of World Bank-financed operations. The project submitted to the World Bank acceptable project audited financial statements for the fiscal year ended December 31, 2016, therefore there is no outstanding audit report under this operation.

55. The FM and Disbursement arrangements in place for the WSIDP2 will also apply for this operation, and changes in those arrangements are not expected. However, in light of discussions between GoA and AFD, the opportunity of using an offshore account to deposit funds from the World Bank will be explored. Therefore, the project funds, expenditures, and resources will be accounted for using the existing automated accounting software and the basis of accounting will be cash basis. Disbursement of IBRD funds will be done on transactions basis (Statement of Expenditures [SOE]). The proposed project will make use of advances, direct payments, reimbursement and special commitment methods for disbursements. The FCMU will prepare quarterly unaudited interim financial reports (IFRs) and provide such reports to the World Bank within 45 days of the end of each calendar quarter. The project financial statements will be audited annually by the independent auditor in accordance with International Standards on Auditing (ISA) as issued by the International Auditing and Assurance Standards Board (IAASB) within the International Federation of Accounts (IFAC).

56. The project's FM arrangements satisfy the World Bank's minimum FM requirements under World Bank Policy and Directive for IPF and have an overall residual FM risk rating of Substantial.

D. Procurement

57. The structure of the procurement function within the FCMU is in place, with one Senior Procurement Specialist and two Procurement Officers. The process of mobilization of the second Procurement Specialist is underway, and will thus complete the procurement team of the FCMU, as per the institutional arrangements. All the procurement staff under the project have the required qualifications. The proposed arrangements for the FCMU will be retained under the AF and are adequate to satisfactorily manage the additional resources. The FCMU is using the Systematic Tracking of Exchanges in Procurement (STEP) consistently for prior review activities, but also for post review activities. The FCMU enters in STEP procurement notices and contract award notices, for all contracts (under prior and post review), as well as information on payment under each signed contract, in a timely manner. Procurement will be subject to the Procurement Regulations for IPF Borrowers, July 2016, revised in November 2017; and will also follow the Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and International Development Association (IDA) Credits and Grants, dated July 1, 2016.

58. The current procurement plan includes the following key items. Procurement of consultancy services to develop and undertake behavior change/information education campaigns, design and supervision of construction/rehabilitation of household toilets/latrines, with septic tanks for up to 5 households in the pilot communities (estimated at US$11 million) will be done for each of the pilots through Quality and Cost Based Selection (QCBS). Construction/rehabilitation of household toilets/latrines, with septic tanks for up to 5 households with community participation of local small contractors, through Request for Quotation (RFQ), with a cost estimate of US$33.75 million for pilots. Design and supervision of small septage/fecal sludge

treatment facility and septic tanks for clusters of households, at a cost estimate of US$2 million, will be procured through QCBS. Construction of small septage/fecal sludge treatment facilities and septic tanks for cluster of more than 5 households will be done in two lots totaling about US$5 million. Supply of vacuum trucks for emptying septic tanks (US$0.6 million) will be procured through Nationally Competitive Bidding (NCB). A study exploring the possible role of private sector service providers for urban sanitation service provision, with a cost estimate of US$200,000, will be procured through QCBS, while the development of a national strategy for scaling up the approach to urban sanitation will be done by an Individual Consultant (US$75,000), following the update of the master plans. The process of updating the sanitation master plans in consultation with relevant stakeholders, using the citywide inclusive sanitation approach has already been included in the Procurement Plan of the parent project.

E. Social (including Safeguards)

59. OP/BP 4.12 (Involuntary Resettlement) is triggered for this project due to the nature of the proposed investments. An RPF has therefore been prepared that establishes the standards and procedures to follow in the event that individual investments have been determined to result in possible impacts on households and/or businesses. The project has been reviewed for resettlement issues, and procedures for activities that may require land acquisition have been agreed with the GoA. The RPF updating process was subject to broad public consultation in the nine beneficiary cities and has been disclosed in Angola and at the World Bank's external website on April 30, 2018. For the AF the impacts will be avoided and/or mitigated through provisions adopted during the project preparation phase and/or the development of the technical designs. In case negative impacts expected from the project investments under the AF cannot be avoided, potential impacts will be mitigated/compensated through the implementation of the sub-project-specific activities, in line with the updated RPF.

60. During the detailed planning and design of individual sub-projects, a screening process will determine whether or not the Involuntary Resettlement policy is triggered due to land acquisition needs, impacts on assets, or impacts on livelihoods. It is expected that engineers will try to utilize unused government land and rights-of-way when designing distribution networks and other project works in order to reduce the number of affected households and businesses. For cases where project activities cannot find unused public land for project investments, a RAP will be prepared based on the guidance and standards set forth in the RPF. The RAP will be prepared by the Borrower, reviewed and cleared by the World Bank, and implemented so that affected persons will receive compensation prior to the beginning of project activities.

61. When it is determined that a RAP is necessary, a baseline census will be conducted to determine who and what is affected as well as the nature of impacts. The date of the baseline census will serve as the cut-off date, after which time any person moving into the area, or assets being added to the area, will not be eligible for compensation or resettlement assistance. Any person using or occupying the land prior to the census will be eligible for assistance regardless of their ownership either by legal or traditional means. All data collection and monitoring will be disaggregated based on gender, age, and socioeconomic status. This information will be included in reporting.

62. During RAP preparation, consultations will be conducted with affected communities in order to ensure robust communications and to allow beneficiaries to be actively involved in the planning, preparation, and implementation process. Beneficiaries will also be informed of the grievance redress mechanisms to be used if they have a complaint that is not being effectively handled by contractors, consultants, or the FCMU.

63. For individual households receiving water connections and/or improved sanitation services, only those households requesting service will experience temporary disturbance within their property as part of the installation process. This will not require compensation, as it is requested by the household and is not an involuntary acquisition of land. The FCMU and contractors' environment and social staff will work with beneficiaries to determine water supply and sanitation locations as well as timing in order to reduce impacts on assets within household compounds, such as gardens or trees.

64. As the specific sites and infrastructure interventions are not yet determined, it is difficult to predict what impacts the project could have on labor influx (and related issues). For example, if local non-governmental organizations (NGOs) are used for construction of facilities (which is currently being considered), there will not likely be any impacts due to labor influx. However, if the project site and type of interventions end up being such that labor influx is reasonably expected, appropriate measures will be put in place to minimize the risk of gender-based violence and other potential adverse community impacts. These measures and, any possible mitigation measures, will be in line with emerging practices and lessons learned from other infrastructure projects on these issues.

65. **Social Inclusion and Citizen Engagement:** To encourage low-income households to connect to the water and sanitation systems, and in order to better explain the benefits and responsibilities of obtaining the services, the works contracts for service extensions will include the carrying out of public consultation and education programs in each area of service expansion. Such campaigns may include a range of activities, as appropriate, including information campaigns, public hearings, distribution of posters and leaflets translated into the local language, interactive drama/theatre groups, and community dialogue initiatives with women and men. In addition, as an input into the design of service extensions, contractors will carry out a minimum of two information/consultation sessions in each sub-project area. The first one will be offered to the general population, while the second one will exclusively target women, as women are key beneficiaries of the interventions and their needs/preferences surrounding water and sanitation are likely different than those of men in the community. Experience under the parent project shows the importance of separate consultation meetings for women to ensure they are able to fully participate and voice their preferences, and for sanitation this will be even more important, given the sensitive nature of some topics (e.g., menstrual hygiene management). The objective of these sessions will be to inform and obtain feedback about: (a) an adequate interface with the community to develop principles for community involvement, a participative framework, and mechanisms for community awareness and education; (b) identification of community preferences and priorities with regard to the provision of services, including target groups such as small, medium and large enterprises, groups with special needs and/or low-income and vulnerable households (for example, the aged, HIV/AIDS-affected persons, and persons with disabilities, households outside the formal network, women, and the socially excluded); (c) the role of the communities in construction oversight, as well as recurrent operation and maintenance of the systems; and (d) an assessment of water, sanitation and hygiene-related education needs of the community.

F. Environment (including Safeguards)

66. The WSIDP2 AF project is classified as category "B," as it is likely to generate temporary, manageable and localized adverse environmental and social impacts and risks. The project activities will involve the construction or rehabilitation of sanitation and drainage infrastructure (sewerage networks, household latrines, fecal sludge treatment facilities) in a subset of the same nine municipalities of Angola covered by WSIDP2. These activities will largely contribute to positive outcomes, such as reducing the prevalence of

unhygienic environmental conditions in urban neighborhoods which cause high rates of child stunting, trigger cholera epidemics and chronic diarrhea outbreaks, and lead to high child mortality, while also generating significant adverse environmental and social impacts that require due safeguards consideration. As such, OP/BP 4.01 on Environmental Assessment is triggered. Since the precise location of all sub-project sites will be determined during implementation through eligibility criteria that will also entail screening procedures for investments with high adverse environmental impacts, the Borrower updated existing safeguards instruments for WSIDP2, namely: (i) an Environmental and Social Management Framework (ESMF) and (ii) an RPF, which were disclosed in country and in the World Bank Internal Document Unit (IDU) on April 30, 2018. These instruments will provide guidance and procedures for the preparation of subsequent ESIA/RAP/Environment and Social Management Plans (ESMP) once the specific details of the sub-projects design and precise locations are determined.

67. The ESMF details the sub-project types to be financed under the AF and associated adverse impacts that may be generated during implementation. Potential sub-project types include, among others, the following: (i) sewerage infrastructures, including network connections; (ii) small to medium scale drainage infrastructure; (iii) household latrines/toilets, under cost sharing arrangements; (iv) fecal sludge treatment facilities and transfer stations. These activities may generate potential environmental and social risks mostly related to sensitivity of the environment receiving the effluent; management of construction waste, which is common in any civil works; public nuisance due to presence of odors; health and safety issues (both from dealing with toxic waste disposal and fecal sludge treatment, as well as from construction activities); noise and vibration, which even when not beyond acceptable levels, may still be inconvenient for communities; dust generation; and loss of assets and livelihoods of communities in the vicinity of the work sites. The ESMF contains an updated social and environmental checklist and an Environmental and Social Screening Form (ESSF) to screen potential environmental and social effects so that effective mitigation measures are clearly defined and presented in subsequent ESIA/ESMP. The ESMF also includes principles and guidelines to be followed by the FCMU for site-specific ESIA/ESMP preparation. These documents will contain estimated costs for safeguards implementation including specific provisions to address labor influx (as deemed appropriate when specific details on works, site locations and type of contractors is known), physical cultural resources and community health and safety.

68. The preparation of the ESMF and RPF for the parent project involved extensive stakeholder consultations and participation processes, which included among others, civil society organizations, targeted project beneficiaries, key government agencies and Municipalities involved in the implementation of the proposed project sub-projects. A dissemination workshop was carried out, to share the findings; structure and approach detailed in the draft ESMF, and receive feedback to be considered into the final version of the ESMF and for consideration in the final design of the project. The ESMF and RPF were updated to reflect the new scope of interventions considering the sanitation pilot and have been disclosed in-country and on the World Bank's website.

69. The Borrower's capacity to implement environmental safeguard policies during WSIDP and WSIDP2 has proven to be acceptable. The existing FCMU includes one experienced safeguards specialist, and safeguard procedures are well established. The FCMU team will further be strengthened in safeguards capacity with a broad team, clear roles and procedures, to adequately manage environmental impacts of WSIDP2 and the AF activities.

70. For the septage/fecal sludge treatment facility, the World Bank technical team visited potential

wastewater treatment plant sites (that were indicated in previous master plans) in two cities. Though additional studies would be required, preliminary visits suggest that finding treatment facility sites will not be challenging, particularly given the small-scale nature of the treatment facilities envisioned under the project. The treatment facility will be designed and constructed in line with existing Angolan standards, namely Presidential Decree 261/11, which includes effluent discharge standards.

G. Other Safeguard Policies

71. OP 7.50 International Waterways is applicable to the project, as some of the water supply systems and potential sanitation activities under the project rely on sources of water interconnected with the Congo/Zaire River and the Zambezi River, which are considered to be international waterways for purposes of the policy. However, the activities to be financed under the project in cities located in international basins (i.e., Dundo and Luena) do not entail the construction of additional water production capacity, and there will be no discharge of treated waste into transboundary water systems. Hence, the project (a) will not adversely change the quality or quantity of water flows to the other riparian; and (b) will not be adversely affected by other riparian's possible water use. A Memorandum for Exception to Notification Requirements under OP 7.50, Project on International Waterways, was submitted to the World Bank's Africa Regional Vice President (RVP). The RVP approved the exception on April 26, 2018.

72. OP 4.37 Safety of Dams is triggered through the AF as the parent project includes TA activities related to dams and dam safety planning (and the OP was not previously triggered). However, no physical works in relation to small or large dams will be undertaken under the project, nor do any project investments rely on the appropriate operation of an existing dam. As required, necessary dam safety plans will be prepared and terms of reference for and the composition of the independent Panel of Experts will be reviewed and approved by the World Bank.

V. WORLD BANK GRIEVANCE REDRESS

73. 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/en/projects-operations/products-and-services/grievance-redress-service*. For information on how to submit complaints to the World Bank Inspection Panel, please visit *www.inspectionpanel.org.*

VI. SUMMARY TABLE OF CHANGES

	Changed	Not Changed
Change in Results Framework	✓	
Change in Components and Cost	✓	
Change in Disbursements Arrangements	✓	
Change in Safeguard Policies Triggered	✓	
Change in Procurement	✓	
Change in Implementing Agency		✓
Change in Project's Development Objectives		✓
Change in Loan Closing Date(s)		✓
Cancellations Proposed		✓
Reallocation between Disbursement Categories		✓
Change of EA category		✓
Change in Legal Covenants		✓
Change in Institutional Arrangements		✓
Change in Financial Management		✓
Change in APA Reliance		✓
Change in Implementation Schedule		✓
Other Change(s)		✓

VII. DETAILED CHANGE(S)

RESULTS FRAMEWORK

Project Development Objective Indicators

Intermediate Indicators

Number of people provided with safely managed sanitation service delivery under the project
Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00	0.00	35,000.00	New
Date	23-Mar-2018	23-Mar-2018	29-Mar-2024	

Approval of guidelines for participatory urban sanitation master planning
Unit of Measure: Yes/No
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	No	No	Yes	New
Date	09-Apr-2018	09-Apr-2018	31-Mar-2024	

Development of a national strategy for scaling up the piloted approach to urban sanitation
Unit of Measure: Yes/No
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	No	No	Yes	New
Date	02-May-2018	02-May-2018	31-Mar-2023	

COMPONENTS

Current Component Name	Current Cost (US$, millions)	Action	Proposed Component Name	Proposed Cost (US$, millions)
Water Supply Institutional Strengthening and Capacity Development	74.00		Water Supply Institutional Strengthening and Capacity Development	74.00
Water Resource Management	35.20		Water Resource Management	35.20
Rehabilitation and Expansion of Water Supply Production and Distribution	373.50		Rehabilitation and Expansion of Water Supply Production and Distribution	373.50

Management and Engineering Support	62.30		Management and Engineering Support	62.30
	0.00	New	Piloting Small-Scale Sanitation Service Delivery in Peri-Urban Areas	55.00
TOTAL	**545.00**			**600.00**

DISBURSEMENT ARRANGEMENTS

Change in Disbursement Arrangements

Yes

Expected Disbursements (in US$, millions)

Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024
Annual	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cumulative	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Latest ISR Rating	Current Rating
Political and Governance	Substantial	Substantial
Macroeconomic	Substantial	Substantial
Sector Strategies and Policies	Moderate	Moderate
Technical Design of Project or Program	Moderate	Moderate
Institutional Capacity for Implementation and Sustainability	Substantial	Substantial
Fiduciary	Substantial	Substantial
Environment and Social	Moderate	Substantial
Stakeholders	Substantial	Substantial
Other	Substantial	Substantial
Overall	Substantial	Substantial

COMPLIANCE

Change in Safeguard Policies Triggered

Yes

Safeguard Policies Triggered	Current	Proposed
Environmental Assessment OP/BP 4.01	Yes	Yes
Performance Standards for Private Sector Activities OP/BP 4.03	No	No
Natural Habitats OP/BP 4.04	No	No
Forests OP/BP 4.36	No	No
Pest Management OP 4.09	No	No
Physical Cultural Resources OP/BP 4.11	No	No
Indigenous Peoples OP/BP 4.10	No	No
Involuntary Resettlement OP/BP 4.12	Yes	Yes
Safety of Dams OP/BP 4.37	No	Yes
Projects on International Waterways OP/BP 7.50	Yes	Yes
Projects in Disputed Areas OP/BP 7.60	No	No

LEGAL COVENANTS – Additional Financing - Second Water Institutional Development Project (P167201)

Sections and Description
No information available

Conditions

Type	Description
Disbursement	No withdrawal shall be made under Categories (1), (5) and (10) for each Participating Province unless the Borrower has submitted evidence, satisfactory

	to the Bank, that with respect to said particular Participating Province, the Participating Agreement between the Borrower, through MINEA, and the respective Participating Province have been signed

VIII. RESULTS FRAMEWORK AND MONITORING

Results Framework
COUNTRY : Angola
Additional Financing - Second Water Institutional Development Project

Project Development Objectives

The Project Development Objective is to strengthen the institutional capacity of selected water sector agencies and increase water service coverage in target cities.

Project Development Objective Indicators

Action	Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source / Methodology	Responsibility for Data Collection
No Change	Name: Number of people in urban areas provided with access to Improved Water Sources under the project		Number	0.00	951,150.00	FCMU-WB	Reports	Quarterly
Description: This indicator measures the actual number of people in urban areas who benefited from improved water supply services that have been constructed under the project. Guidance on "improved water sources": Improved water sources include piped household connections (house or yard connections), public standpipe, boreholes, protected dug well, protected spring and rainwater collection. Hence, "Improved Water Sources" do not include, inter alia, water provided through tanker truck, or vendor, unprotected well, unprotected spring, surface water (river, pond, dam, lake, stream, irrigation channel), or bottled water. The definition of what is considered an 'improved water source' follows the UNICEF-WHO Joint Monitoring Program definition. Note that "Improved Water Sources" does not refer to the question of new versus rehabilitated water sources, but is the standard definition								

used to track progress on the Millennium Development Goals. Guidance on people with access: The data on the number of people provided with access can be estimated by TTLs by multiplying i) the actual number of piped connections with an estimate of the number of people per household connection; and/or ii) the actual number of community water points with an estimate of the number of people per community water point. The assumptions made regarding number of people per connection made should be carefully documented in the 'comments' section of the indicator when data is entered in the ISR. Guidance on urban classification: The classification should follow the official definition used in the country.

No Change	**Name:** Direct project beneficiaries		Number	0.00	951,150.00	FCMU-WB	Reports	Quarterly
No Change	Female beneficiaries		Percentage	50.00	50.00			
Description: Direct beneficiaries are people or groups who directly derive benefits from an intervention (i.e., children who benefit from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental information. Supplemental Value: Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.								
No Change	**Name:** Number of independent audits of PWSU financial statements documenting financial performance		Number	0.00	9.00	FCMU-WB	Reports	Annually
Description: This indicator reflects the extent to which the PWSUs are able to identify and record revenues and expenses and possess the required systems and organizational capacity to provide financial information about the utilityâ□□s operation. Information in audited financial reports document PWSU performance, key financial challenges, and, over time, the evolution of improvements to operations and finances.								
No Change	**Name:** Percentage of hydrometric stations supported by the project, providing		Percentage	0.00	80.00	FCMU-WB/INRH	Reports	Annual

	information to INRH							
Description: This indicator captures the extent to which the hydrometric stations supported by the project are in working condition, and whether all the prerequisites to information availability are in place. This indicator will measure progress towards the institutional strengthening activities of INRH and is related to the PDO.								
No Change	**Name:** Regulatory framework for water and sanitation services in place		Yes/No	No	Yes	FCMU-WB/IRSEA	Reports	Annual
Description: This indicator will capture information about the progress of various regulatory instruments supported by the project needed to establish a sound regulatory framework for the water and sanitation sector. This indicator will measure progress towards the institutional strengthening activities of IRSEA and is related to the PDO.								

Intermediate Results Indicators

Action	Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source / Methodology	Responsibility for Data Collection
No Change	**Name:** Number of water utilities that the project is supporting		Number	0.00	9.00	FCMU-WB	Reports	Semi-annual
Description: Total number of utilities providing water supply with which the Bank is working under the project.								
No Change	**Name:** Average audited cost-recovery ratio for the 5 PWSUs supported by WSDIP I		Percentage	0.00	80.00	FCMU-WB/IRSEA	Reports	Annual

Description: This indicator measures the financial sustainability of the utilities by comparing collected revenues and operational expenditures, as a proxy variable to assess the overall performance of the utility (reducing costs and increasing billings and collections). This first group of 5 PWSUs received initial assistance under WSIDP I and therefore have a higher target ratio. The 5 PWSUs are Malanje, Cuanza Norte, Uige, Huambo, and BiÃ©.								
No Change	**Name:** Average audited cost-recovery ratio for 2 PWSUs to be supported by WSDIP II		Percentage	0.00	80.00	FCMU-WB/IRSEA	Reports	Annual
Description: This indicator measures the financial sustainability of the utilities by comparing collected revenues and operational expenditures, as a proxy variable to assess the overall performance of the utility (reducing costs and increasing billings and collections). Because these utilities will begin to receive assistance under WSIDP II, more modest targets have been set. The 2 PWSUs are Huila and Moxico.								
No Change	**Name:** Average audited cost-recovery ratio for 2 PWSUs to be supported by WSDIP II after year 3		Percentage	0.00	70.00	FCMU-WB/IRSEA	Reports	Annual
Description: This indicator measures the financial sustainability of the utilities by comparing collected revenues and operational expenditures, as a proxy variable to assess the overall performance of the utility (reducing costs and increasing billings and collections). Because these utilities are currently being supported by AfDB and will only be supported by WSIDP II after year 3 of the project, a different timeline for target achievement has been defined. The 2 PWSUs are Namibe and Lunda Norte.								
No Change	**Name:** Integrated River Basin Management Plans supported by the Project		Number	0.00	2.00	FCMU-WB/INRH	Reports	Annual
Description: This indicator will measure the completion of Integrated River Basin Management Plans for the prioritized basins.								
No Change	**Name:** Assessment of the safety status of prioritized dam carried out by a panel of		Number	0.00	6.00	FCMU-WB/INRH	Reports	Annual

	experts							
Description: This indicator will measure the progress on the assessment of the safety status of prioritized dams; a panel will analyze the dams in groups of four and it is expected to have this exercise repeated every 3 years.								
No Change	**Name:** New piped household water connections that are resulting from the project intervention		Number	0.00	186,500.00	FCMU-WB	Reports	Annual
Description: Number of new piped household water connections which result from the project intervention. A piped household water connection is defined as a connection that provides piped water to the consumer through either a house or yard connection. Hence, they do not include, inter alia, standpipes, protected well, borehole, protected spring, piped water provided through tanker trucks, or vendors, unprotected wells, unprotected spring, rivers, ponds and other surface water bodies, or bottled water.								
No Change	**Name:** Length of water supply network laid under the project		Kilometers	0.00	1,675.00	FCMU-WB	Reports	Quarterly
Description: This intermediary indicator tracks progress through monitoring the number of kilometers of new water supply network installed under the project. The supervision consultants for each sub-project will collect the information of pipeline installed monthly and report it to the FCMU-WB.								
No Change	**Name:** Increased capacity of water treatment (production)		Cubic Meter(m3)	0.00	48,000.00	FCMU-WB	Reports	Semi-annual
Description: This intermediary indicator tracks progress through monitoring the amount of additional water which can be treated (produced) as a result of rehabilitation and expansion works implemented under the project.								
No Change	**Name:** Number of studies carried out to confirm the availability of water resources with adequate quality		Number	0.00	2.00	FCMU-WB	Reports	Annual

Description: This indicator will reflect the progress of studies on hydro-geological, geophysical investigations as well as on saline intrusion in selected cities. These studies shall be carried out during the first part of the project to inform follow-up investments.								
No Change	**Name:** Number of sanitation master plans updated		Number	0.00	8.00	FCMU-WB	Reports	Annual
Description: This indicator will provide information on the completion of sanitation master plans for eight of the cities supported by the project.								
No Change	**Name:** Systems to receive and respond to customer complaints at the PWSU level in place		Number	0.00	9.00	PWSUs/FCMU-WB	Reports	Annual
Description: This indicator will provide information on the development of systems within the PWSUs that enable customers to inform the relevant PWSU of service-related issues and for the PWSUs to respond to and follow-up with such complaints.								
No Change	**Name:** Percentage of registered grievances related to service delivery that are resolved		Percentage	0.00	60.00	PWSUs/FCMU-WB	Reports	Annual
Description: This indicator will provide information on the percentage of customer complaints received through the customer complaint systems established by the PWSUs that are successfully resolved.								
No Change	**Name:** Percentage of network expansion contracts that carry out information and consultation sessions		Percentage	0.00	100.00	FCMU-WB	Reports	Annual
Description: This indicator will track information and consultation sessions carried out by contractors (with the participation of the relevant PWSU) carrying out civil works related to water supply network extension and customer connections to the network. The sessions will work to ensure the consideration of neighborhood and customer preferences in the design and implementation of networks and that all potential customers understand								

their rights and responsibilities with respect to water service, including the expectation of customer payment for services received. All contracts for network expansion and customer connections will include the requirement that such information and consultation sessions be carried out in the areas of expansion.

No Change	**Name:** Percentage of network expansion contracts that carry out information and consultation sessions specifically for women		Percentage	0.00	100.00	FCMU-WB	Reports	Annual
Description: This indicator will track information and consultation sessions specifically for women carried out by contractors (with the participation of the relevant PWSU) carrying out civil works related to water supply network extension and customer connections to the network. As women (and girls) are expected to be key beneficiaries of the extension of water services, their participation in information and consultation sessions is especially important to promote the design of networks and location of connections that meet their needs. All contracts for network expansion and customer connections will include a requirement that a women-specific information and consultation session be carried out in each area of expansion, and therefore it is expected that 50 percent of all sessions will be for women.								
New	**Name:** Number of people provided with safely managed sanitation service delivery under the project		Number	0.00	35,000.00	Every 6 months	Reports from wrks contracts building sanitation facilities.	FCMU WB/AFD
Description: Based on estimate of 5 people per household. Safely managed sanitation service delivery includes improved (per JMP definition) toilet/latrine connected to a safely managed sewer network or fecal sludge management service chain that takes waste to a treatment facility.								
New	**Name:** Approval of guidelines for participatory urban sanitation master planning		Yes/No	No	Yes	Annually	MINEA	FCMU WB/AFD
Description: The indicator will be fulfilled once the GoA approves the guidelines to prepare and/or update the Sanitation Master Plans, which should								

bein line with the City Wide Inclusive Sanitation approach

New	**Name:** Development of a national strategy for scaling up the piloted approach to urban sanitation		Yes/No	No	Yes	Annually	MINEA	FCMU WB/AFD
Description: Based on the implementation of the pilot sanitation project(s)the Government will develop an strategy to expand access to the sanitation services incorporating the lessons learnt through the project and considering technical, financial, institutional, and social elements.								

Target Values

Project Development Objective Indicators

Action	Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6	End Target
No Change	Number of people in urban areas provided with access to Improved Water Sources under the project	0.00	0.00	0.00	150,000.00	410,000.00	690,000.00	951,150.00	951,150.00
No Change	Direct project beneficiaries	0.00	0.00	0.00	150,000.00	410,000.00	690,000.00	951,150.00	951,150.00
No Change	Female beneficiaries	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
No Change	Number of independent audits of PWSU financial statements documenting financial performance	0.00	2.00	4.00	4.00	4.00	8.00	9.00	9.00
No Change	Percentage of hydrometric stations supported by the project, providing information to INRH	0.00	0.00	50.00	50.00	60.00	70.00	80.00	80.00
No Change	Regulatory framework for water and sanitation services in place	No	N	N	N	N	N	Y	Y

Intermediate Results Indicators

Action	Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6	End Target
No Change	Number of water utilities that the project is supporting	0.00	0.00	2.00	4.00	9.00	9.00	9.00	9.00
No Change	Average audited cost-recovery ratio for the 5 PWSUs supported by WSDIP I	0.00	40.00	60.00	80.00	80.00	80.00	80.00	80.00
No Change	Average audited cost-recovery ratio for 2 PWSUs to be supported by WSDIP II	0.00	0.00	20.00	35.00	50.00	70.00	80.00	80.00
No Change	Average audited cost-recovery ratio for 2 PWSUs to be supported by WSDIP II after year 3	0.00	0.00	0.00	10.00	35.00	50.00	70.00	70.00
No Change	Integrated River Basin Management Plans supported by the Project	0.00	0.00	0.00	1.00	1.00	2.00	2.00	2.00
No Change	Assessment of the safety status of prioritized dam carried out by a panel of experts	0.00	0.00	0.00	2.00	4.00	6.00	6.00	6.00
No Change	New piped household water connections that are resulting from the project intervention	0.00	0.00	0.00	30,000.00	80,000.00	135,000.00	186,500.00	186,500.00

No Change	Length of water supply network laid under the project	0.00	0.00	200.00	500.00	900.00	1,300.00	1,675.00	1,675.00
No Change	Increased capacity of water treatment (production)	0.00	0.00	0.00	6,000.00	6,000.00	36,000.00	48,000.00	48,000.00
No Change	Number of studies carried out to confirm the availability of water resources with adequate quality	0.00	0.00	1.00	1.00	1.00	2.00	2.00	2.00
No Change	Number of sanitation master plans updated	0.00	0.00	0.00	8.00	8.00	8.00	8.00	8.00
No Change	Systems to receive and respond to customer complaints at the PWSU level in place	0.00	0.00	0.00	2.00	4.00	7.00	9.00	9.00
No Change	Percentage of registered grievances related to service delivery that are resolved	0.00	0.00	0.00	30.00	50.00	60.00	60.00	60.00
No Change	Percentage of network expansion contracts that carry out information and consultation sessions	0.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00
No Change	Percentage of network expansion contracts that carry out information and	0.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00

	consultation sessions specifically for women								
New	Number of people provided with safely managed sanitation service delivery under the project	0.00	0.00	0.00	0.00	0.00	10,000.00	35,000.00	35,000.00
New	Approval of guidelines for participatory urban sanitation master planning	No	N	N	Y	Y	Y	Y	Y
New	Development of a national strategy for scaling up the piloted approach to urban sanitation	No	N	N	N	N	N	Y	Y

Annex 1: Description of Component 5

1. **Component 5: Piloting Small-Scale Sanitation Service Delivery in Peri-Urban Areas (IBRD financing US$55 million).** The project will approach sanitation as a service to be delivered, and as such, will include activities to support national and provincial institutions in carrying out their mandates for sanitation service delivery, policy implementation and regulation as well as pilot activities to increase access (through infrastructure improvements). In line with this approach, technical solutions will consider the full sanitation service chain – i.e., household containment, collection, conveyance, treatment and safe disposal. The project will use the Citywide Inclusive Sanitation approach, which focuses on: (i) embedding sanitation within the framework of urban governance and municipal services provision; (ii) establishing clear roles and responsibilities, with accountability and transparency, and robust service delivery management; (iii) delivering 'safe management' through the sanitation chain – for both onsite sanitation and sewers – to ensure separation of fecal contamination from people across the whole city; (iv) outcomes rather than technologies – allowing for diversity of solutions and approaches; (v) basing decisions on secure operational budgets being available (always planning for operation and maintenance); (vi) facilitating progressive realization, building on what is already in place; and (vii) committing resources to training city leaders and technicians of the future to solve complex problems rather than deliver fixed solutions. Two sub-components are proposed under this component.

2. *Component 5a: Citywide Inclusive Sanitation Planning and Institutional Development (IBRD financing US$2 million).* This sub-component will support the national and provincial agencies in planning for the necessary institutional, policy and regulatory changes that will be required in order to carry out their mandates for sanitation, through:

a) The provision of TA to (i) prepare the guidelines and create an action plan for capacity development and institutional support to DNA for updating and drafting necessary policies and instruments for overseeing sanitation service delivery; and (ii) prepare the guidelines and create an action plan for capacity development and institutional support to IRSEA for drafting and implementing economic regulation for sanitation services, likely including a framework for setting tariffs/fees for sanitation (that reflect the costs of providing services, the payment capacity of users, and explores different alternatives for financing capital investments). The actual capacity development activities will be funded by the TA activities under WSIDP2[4].

b) Development of the proposed approach and guidelines for the preparation of the Participatory Sanitation Master Plans, which will be prepared and used under the project, ensuring (i) the master plan process includes gathering more detailed baseline information on existing sanitation service provision – and related complementary urban services – in different parts of the cities; (ii) the master plans are developed in a participatory manner, incorporating inputs from households, the PWSUs, provincial government, and other relevant local stakeholders; and (iii)

[4] Through the support to IRSEA for setting cost-recovery tariffs and developing sound policies for the sanitation sector, the project will continue the work undertaken through the parent project towards enabling Maximizing Finance for Development (MFD) so as to set a clear strategy of ensuring that the underlying funding of the sector is sustainable.

as is the case under WSIDP2, ensuring community engagement activities will also include separate, targeted engagement with women to ensure their voices are heard and their preferences are taken into account during the different phases of the project. This TA will be informed by the initial master planning undertaken for the first cluster of three cities, which will serve as a pilot of the proposed approach. (Note: The parent project will finance the updating of sanitation master plans, for each of the nine cities, in line with the Citywide Inclusive Sanitation approach, which will consider a range of technical solution for providing services to the whole city, as compared to the existing plans that focus on sewered sanitation only in the central part of the city.)

c) The provision of TA to develop an action plan for the PWSU(s) where small-scale sanitation infrastructure investments are made, in order to strengthen their ability to (i) incorporate sanitation customers into their existing customer management systems, in line with TA provided under WSIDP2 on customer management and billing and collection efficiency; (ii) operate and maintain the fecal sludge management system and other sanitation service facilities; and (iii) operate and maintain the fecal sludge treatment facility. This support will be provided through the management contract(s) funded by WSIDP2. The contracts will be amended to include provision for a sanitation specialist to provide the necessary TA and capacity development on an ongoing basis.

d) The provision of TA to undertake a study exploring the possible role of private sector service providers for urban sanitation service provision, with a focus on possibilities for private sector pit/tank emptying.

e) Consultancy services to develop and undertake behavior change/information education campaigns in the pilot communities to educate households on the importance of proper sanitation and hygiene behaviors, including handwashing and toilet/latrine maintenance.

f) The provision of TA to develop a national strategy for scaling up the approach to urban sanitation, which will be informed by the piloting activities (under Component 5b) and the associated monitoring and evaluation of the pilot(s).

3. *Component 5b: Piloting Delivery of Small-Scale Sanitation Services in Peri-Urban Areas (IBRD financing US$53 million).* Under this sub-component, infrastructure improvements will be implemented in select peri-urban areas to provide the PWSU(s), who are responsible for both water supply and sanitation, with an opportunity to pilot onsite sanitation service delivery. The piloting will take place in one or more of the nine provincial capitals (additional information on each city is provided in Annex 2). The specific city (or cities) will be chosen through a competitive process, based on completion of the updated sanitation master plans, PWSU readiness and performance, and PWSU and provincial government support; the details of these criteria will be specified in the Project Implementation Manual. The updated master plans will consider solutions for the entire city, likely using a mix of sewered and onsite solutions, based on which technologies are technically feasible, cost effective (in terms of both capital and operational expenditures), and culturally appropriate. However, for the purposes of piloting, areas will be chosen where the master plans have identified onsite sanitation as the optimal solution. Within the city (or cities), the small-scale sanitation piloting will be undertaken in peri-urban areas where the majority of houses

are constructed of less permanent materials and informal housing is common, in order to target low-income households. A clear mechanism/process will be developed to help in selecting peri-urban areas with a high concentration of low-income households. Targeting will not take place at the household level given the economies of scale needed to make the sanitation service model financially viable.

4. For the pilot(s), peri-urban areas will be chosen where onsite sanitation is identified as an appropriate solution, based on the updated sanitation master plan. The types of technical solutions will include household toilets/latrines, with septic tanks for each household or cluster of households. Vacuum trucks will then provide emptying of the tanks and take the waste to a small septage/fecal sludge treatment facility. These solutions will provide safe management of the waste generated, while causing low environmental impacts to the surrounding areas. Financing for related urban services (especially drainage and solid waste management) may also be considered, if it is deemed necessary to ensure proper sanitation service delivery and sanitation system management.

5. Wherever possible, in lieu of building new infrastructure, existing infrastructure – including existing household toilets, latrines, septic tanks, etc. – will be rehabilitated. A potential framework to improve sanitation services (shown in Table A1) was developed and refined with support from the FCMU, who agree that it will be important to update the city sanitation master plans so as to select proper interventions that target low-income peri-urban communities, provide high quality service in a cost-effective manner, and results in minimal adverse environmental impacts.

Table 1.1: Menu of Possible Technical Solutions for Containment[1]

Type of Area	Proposed Sanitation Solution
where there is sufficient space to dig new pits as needed	Individual household (HH) pit latrines
where there is sufficient space for individual septic tanks and soakaways and/or areas with existing HH septic tanks	Shared/clustered (<=5 HHs) household septic tanks, serviced by vacuum truck emptying services and septage treatment plants
where there is insufficient space for individual septic tanks and soakaways	Households (e.g., 5-50 HHs) connected by small simplified sewer networks to neighborhood-level septic tanks, with vacuum truck emptying services and septage treatment plants
that are densely populated and lack sufficient household water supply and/or in areas without sufficient space for soakaways	Shared/clustered (<=5 HHs) household septic tanks connected to solids-free sewers, with liquid treatment at decentralized facilities and vacuum truck emptying services for the septic tanks

[1]Wherever possible, in lieu of building new infrastructure, existing infrastructure – including household toilets/latrines, septic tanks, etc. – will be rehabilitated.

6. Pit/tank emptying and conveyance will either be handled by the PWSU itself or by local private sector actors, who are overseen by the PWSU. The exact model will be determined based on existing private sector interest and capacity in the selected areas. This decision will also be linked to the study on private sector involvement under component 5a.

7. The specific treatment plant technology and sizing of the facility will be based on: the quantity and quality of incoming waste streams, capital and operating costs, sophistication of technology, ability to meet Angolan effluent discharge standards, the energy requirements for operation, and other similar criteria. Given previous GoA experiences and space availability outside of most cities, the types of technologies that will likely be chosen include: settling thickening tanks and/or gravity thickeners for solid-liquid separation; waste stabilization ponds, constructed wetlands, and/or anaerobic baffled reactors for liquid treatment; and drying beds and/or composting for final sludge dewatering. Based on current estimates, the size of the plants will likely be small, providing treatment for 150-250 m^3 of waste per day. This facility will need to be carefully sited to ensure it is close enough to the city and accessible to vacuum trucks, but it also causes minimal environmental impact. Thus, the site will need to: avoid areas with fragile receiving waters; avoid residential and agricultural areas; and avoid fragile ecosystems and flood prone environments (both due to groundwater and fluvial flooding).

8. During the pilot, a clear monitoring framework will be in place to assess the success and challenges of the piloted service delivery models and technologies. This information will be critical for informing future interventions and policies for the sector, including the strategy for scaling up the approach to urban sanitation (financing under component 5a).

Annex 2: Description of Potential Project Cities

A. Lubango

1. The city of Lubango, the capital of Huila Province, with a population of approximately 585,260 inhabitants, is one of the most important in Angola. It is the economic and population center of southern Angola, and has significant education, health, and tourist assets. Its water supply assets lag significantly behind the development of the city, suffering from lack of investment and maintenance since independence. In addition, water access is still considerably low, even compared to other Angolan cities. Water resources are constrained by poor investments, and the distribution network suffers from both poor conditions, incomplete and/or un-connected networks within the core area, and lack of extension to large and otherwise well-developed peri-urban neighborhoods. The existing water supply system has an installed capacity of up to 14,400 m^3 per day. There is no formal sanitation system, and its implementation is crucial, especially in peri-urban areas supplied by networked water, due to the topography of the area and the population density.

B. N'Dalatando

2. The city of N'Dalatando is the capital of Cuanza Norte Province, in the north of Angola, with a population of approximately 132,670. Agriculture is the main economic activity, including production of corn, peanuts, coffee, cotton, peas, beans, citrus fruits, cassava, sisal, palm, and sorghum. The city is along the main road between Luanda and economic centers further east. N'Dalatando's water supply system is faced with several challenges. First, the water supply is insufficient during the dry season—both in terms of meeting the operating capacity of the treatment system and the demands of the population. Water supply constraints during the dry season regularly result in the operation of only one or two of the four sand filters of the water treatment plant, leading to significant restrictions in consumption and low pressure in the distribution network. Second, the system effectively has no meters in the production or distribution systems, nor on customer connections. The installed capacity of the current system is around 7,776 m^3 per day. After completion of the works under WSIDP and WSIDP2, it is estimated that 44,800 inhabitants will have access to the network. There is no existing formal sanitation system, but its implementation is crucial, especially in peri-urban areas supplied by networked water, due to the high population density and topography of the area

C. Dundo

3. Dundo is the capital of Lunda Norte province, with a population of approximately 156,530 inhabitants. The province is a primary center of mining activities. Dundo is served by a water supply system built prior to independence, although several investments have been made in recent years, including construction of a new ground reservoir and elevated tank, replacement of some of the network with PVC pipes, and the construction of public standposts. The oldest pipes are ductile iron and were, similar to most of the system, out of service for several years, leading to significant damage. The system, with an existing capacity of 5,400 m^3 per day, includes very few connections—only an estimated 464, most of them yard taps. Several neighborhoods have no network and are served only by public standposts. The entire system suffers from insufficient pressure, and water quality testing indicates source contamination.

4. A "new centrality" (Nova Centralidade) has been constructed in Dundo and includes a water treatment plant, with production capacity of 20,000 m^3 per day, as well as a wastewater treatment facility (including tertiary treatment, connected to a central sewer network serving 40,000 population equivalents). In addition, the GoA is currently making investments in (a) a 300 m^3 elevated tank; (b) 35

kilometers of tertiary network, 1,050 associated residential connections and 21 public standposts; and (c) rehabilitation of two springs.

D. Luena

5. Luena is the capital city of the province of Moxico, in east-central Angola, with a population of approximately 280,640, the majority of whom reside in peri-urban areas. Water is supplied through a relatively recently constructed intake and treatment plant with a capacity of 11,000 m^3 per day. The original distribution network was built prior to independence but has recently been entirely rebuilt. The distribution network is served from two elevated storage tanks—Cidade and Sangondo. There is no existing formal sanitation system. As in other cities, the need for sanitation is especially crucial in peri-urban areas due to high population density and the topography of the area.

E. Moçamedes

6. Moçamedes is the capital city of Namibe province, in the southwest of Angola, with a population of approximately 225,645. The province and the city have a desert climate, and are dry throughout most of the year. The city's water system, with an installed capacity of 14,400 m^3 per day, is supplied by boreholes along the left bank of the Bero river. Water is pumped to reservoir tanks that serve the distribution network. The distribution network dates from before independence and has been poorly maintained; it serves the core urban area but suffers from frequent breakages. Significant improvements to the existing distribution system are currently being financed by the GoA, including construction of a new water treatment plant for removal of iron and manganese and chlorine treatment. In addition, the Moçamedes water utility is receiving institutional strengthening from the African Development Bank's ongoing water project.

7. There is an existing sewer network in the urban center, including a lift station with 8,000 m^3 per day capacity and a treatment plant, which includes tertiary treatment and sludge management (with a capacity of 200,000 population equivalents). However, the system serves only a small fraction of the city's population.

F. Kuito-Kunje

8. Kuito city is the capital of Bié province, in the center of Angola and extending through the plateau region of the Upper Zambeze massif. Kuito (and its neighboring city, Kunje) received significant population inflows during the civil war, and the city is now estimated to have a total population of around 340,500. Works financed under WSIDP to improve the city's water supply were completed in 2015. The current water supply system has a capacity of 5,832 m^3 per day. There is an existing sewer network that serves the central part of the city. The network is connected to a wastewater treatment plant (sized for 36,000 population equivalents) and designed to provide tertiary treatment, including sludge management.

G. Huambo

9. Huambo is the capital city of Huambo province, a largely agricultural province located in the center-west of Angola. It is the second-largest city in Angola, with an estimated population of 532,500. The city and its economy were significantly affected by the civil war and are still in the process of rebuilding. Significant portions of the population—many of whom fled to the city during the war—live in unplanned peri-urban areas, some of which are prone to flooding. Huambo has a single source of water—a diversion of the Kulimahala river, with an intake at a small weir that is often obstructed by vegetation and refuse.

The source is subject to biological and agricultural pollution. The water treatment plant was built prior to independence. The existing water supply system has an installed capacity of 15,840 m^3 per day. The existing sewer network serves the central portion of the city and connects to a wastewater treatment plant (for 14,000 population equivalents) designed with tertiary treatment, including sludge management.

H. Malanje

10. Malanje is the capital city of Malanje province with a population of approximately 400,000 inhabitants. The traditional city is located southeast of the Guiné River, which flows through the city. New residential areas of the city—some formal, some peri-urban—have expanded around the original city on the southeast side of the river, as well as across the river, north-west of the original city. The city's sole water source is the spring feeding the Guiné river.

11. Malanje's treatment capacity is an estimated 11,300 m^3 per day, and the utility has approximately 8,000 customer connections. There is no existing formal sanitation service provision. High population density and the city's topography make sanitation a particularly pressing need in many of the newly inhabited peri-urban areas.

I. Uíge

12. The city of Uige is located in north-eastern Angola and is the provincial capital of Uige province. The province is largely agricultural. The city has an estimated population of 394,820 inhabitants.

13. Uige's water supply is treated in two water treatment plants, with a combined built capacity of 14,400 m^3 per day. There are an estimated 5,880 connections, but the utility is currently undertaking a cadastral survey of connections and has confirmed, so far, 2,132 connections. However, only 1,366 of those connections have signed water supply contracts with the utility. There is no existing formal sanitation service provision. The sanitation needs are particularly pressing in densely populated peri-urban areas.

Annex 3: Economic and Financial Analysis

ERR: 14.4 percent
NPV: US$201 million

1. For the Economic and Financial Analysis, the analyses used for WSIDP2 have been updated to include the new activities. The analysis considers both the original activities (focusing primarily on water supply) as well as the new activities (focusing on sanitation).

Project Overview

2. The objective of both the Angola WSIDP2 and the proposed AF are to strengthen the institutional capacity and efficiency of the recipient's agencies in the water sector to improve access and reliability of water service delivery. The objective of its components focuses on (i) capacity development; (ii) institutional support; and on (iii) investments into targeted public water sector utilities (PWSUs) that serve provincial capitals through development of priority infrastructure to expand the water supply system capacity, increase service coverage and service quality, and improve the operating efficiency of the production and distribution systems). The first two components will bring transparency to the sector through improved performance monitoring, fact-based investments and performance improvement programs. Through component 3, selected PWSUs will expand their customer base to achieve a critical mass required to manage and operate their water supply systems. Component 5, under the AF, will pilot sanitation services. The project will build new connections, rehabilitate existing connections, install water meters, construct/rehabilitate latrines/toilets, and construct a fecal sludge treatment facility. The water meters will equip the PWSUs with a tool to measure customers' water consumption and bill them accordingly. It is important to notice that the proposed investments' focus on the expansion of water and sanitation systems, including an expansion into the poor peri-urban communities. These investments will help reduce the coping costs for currently unserved populations and generate a flow of economic benefits that then can be invested into improving living conditions and other preferred actions.

3. The objective of the project, including the proposed AF, is to call for improved national capacity to monitor, plan and implement water and sanitation agenda, and increase access to water and sanitation services in selected cities of Angola. The sanitation infrastructure improvements will be implemented in select peri-urban areas to provide the PWSUs with an opportunity to pilot onsite sanitation service delivery. The piloting will take place in one or more of the nine provincial capitals. The specific city (or cities) will be chosen through a competitive process, based on completion of the updated sanitation master plans, PWSU readiness and performance, and PWSU and provincial government support. Within the city (or cities), the small-scale sanitation piloting will be undertaken in peri-urban areas, to target low-income households. In practical terms, selected provinces and their water and sanitation companies will be supported in beginning to manage sanitation infrastructure, manage latrines and a septage treatment facility, establish and expand their customer base for water and sanitation to achieve a critical mass required to manage and operate their water supply and sanitation systems. These investments will similarly help reduce the coping cost of the currently unserved population and reduce the burden of excreta-related diseases associated with poor water and sanitation.

4. Angola has the fifth highest rates of morbidity and mortality from water-related diseases, including malaria, cholera and diarrheal diseases in the region. Nearly 10 percent of Angolans reported malaria infections in 2015[5]; more than 30 percent of the population gets acute diarrhea annually; and more than 50,000 cases of cholera were reported in 2015 (or 0.21 percent)[6]. Angola has one of the highest rates of morbidity and mortality from diarrheal diseases in Africa. The incidence of acute diarrhea resulting in death is 489 per 100,000 children under five[7] (2011). Improved water supply and sanitation, associated with handwashing may result in 88 percent reduction of mortality of children under five years of age[8]. Both interventions – in water and sanitation – will also generate significant health benefits to all other population groups reducing the hazard of epidemics, morbidity and mortality from diarrheal and other water- and excreta-related diseases, which will subsequently result in increased labor productivity of the Angolan society.

5. Angola did not meet its MDG targets for water and sanitation. Water coverage from public utilities is relatively low. Sanitation service development outside of Luanda is in its rudimentary stage. While water companies are expanding piped-water services in parallel with urbanization, this service expansion is not enough to improve coverage. Average water coverage with piped connections in secondary cities is only around 34 percent[9]. In addition, there are wide disparities in access to improved water sources among urban areas, in particular provincial capital cities: in the cities included as part of the proposed project, access to an improved drinking water source ranges from five to 60 percent, except N'dalatando, where piped water coverage[10] exceeds 82 percent. The remaining households, i.e., the unserved population, relies on local sources and gets water from private vendors. The latter usually sell potable water in 20-liter jerry cans charging about 100 Angolan kwanza (or US$0.45) per jerry can. An average family of five[11] must buy two to three jerry cans per day and will spend up to 7,500 kwanza (US$37) per month to meet basic drinking needs[12] and minimum sanitary activities.

6. Sanitation services outside of the capital Luanda are not developed. The coping cost per family is around 11,000 kwanza (US$50) per year. These costs include maintaining a clean environment, and removing human waste, and protecting families from diarrhea and some incidences of cholera.

7. Fully financed WSIDP2 component 3 of the project will provide 122,500 connections during the first phase of implementation, and an additional 45,000 connections during the second phase. Additionally, the project funds will finance rehabilitation of another 19,000 connections. The total number of beneficiaries is about 1.2 million people in nine regional cities of the country to get in-house and in-yard connection to public water services. In addition, three water treatment plants will be constructed, with an additional capacity of 54,000 m^3 per day, to cover the demand of the growing population. It is

[5] http://clubofmozambique.com/news/malaria-cases-fall-world-mozambique-angola-account-7/
[6] http://www.ifrc.org/ar/news-and-media/news-stories/africa/angola/angola-cholera-cases-rising-again/
[7] https://www.path.org/publications/files/VAD_rotavirus_angola_fs.pdf
[8] http://www.cdc.gov/healthywater/global/diarrhea-burden.html
[9] http://www.unwater.org/fileadmin/user_upload/unwater_new/docs/jmp.2014_eng.pdf
[10] This includes service with standpipes.
[11] The average family size is 5.1 people per household. Angola census results, 2015.
[12] http://www.nap.edu/read/10925/chapter/6#158

expected that connected residents will start consuming at least 50 lpcd of water, to meet basic personal and food hygiene including laundry and bathing. The additional benefits also include increased value of the housing with piped water on premises. These benefits, while very important, are not accounted for in the analysis.

8. Under the proposed AF, component 5 will initiate development of onsite sanitation service delivery, developing local and national capacity on sanitation (including treatment capacity) for at least 7,000 families living in peri-urban areas of one of the selected cities. The types of technical solutions will include household toilets/latrines, with septic tanks for each household or cluster of households. Vacuum trucks will then provide emptying of the tanks and take the waste to a small septage/fecal sludge treatment facility. These solutions will provide safe management of the waste generated, while causing low environmental impacts to the surrounding areas. Wherever possible, in lieu of building new infrastructure, existing infrastructure – including existing household toilets, latrines, septic tanks, etc. – will be rehabilitated.

9. The project will provide significant economic benefits through the associated TA components: Component 1: Water Supply Institutional Strengthening and Capacity Development and Component (US$74 million) and 2: Water Resources Management. Both components are focused on development of institutional capacity within the sector.

10. Additional benefits are expected under component 5a: bringing performance assessment and fact-based investment decision processes to the Angolan urban sanitation sector. These changes will also reduce risk of mishandling the scarce financial resources and provide additional technical expertise. These institutional strengthening components will also bring transparency to the water sector and improve sector performance. Institutional support in water resource management will additionally help ensure rational use of available water resources and long-term planning. These benefits will not be counted as part of the economic analysis.

11. The selected utilities and their customers will benefit from these TA components; however, it is impossible to quantify such stream of benefits for a specific utility and its customers. The project team conducted a stress test to assess the effect of the two infrastructure-investment components on the project's economic rate of return and its stream of benefits.

Rationale for Public Sector Investment

12. Proper development of the country institutional structure for water and sanitation requires public finances and close attention from the GoA. Also in Angola, municipalities and their public companies traditionally provide municipal water services. Although the benefits of improved water supply and sanitation will accrue to the society, the benefits of such investments are not sufficient to induce private sector investments, especially for sanitation. This is especially true for Angola, where the municipal sector has suffered from decades of civil war that has resulted in underinvestment and poor maintenance.

Rationale for World Bank Involvement

13. The World Bank has been involved in the municipal service sector in Angola since 2008, supporting investments in the water sector with the WSIDP that provided a first set of necessary investments into a troubled sector. These investments provided emergency infrastructure and compensated for the decades of underinvestment in the sector due to the civil war and neglect of water infrastructure in the early years after the civil war. The WSIDP2 will continue to support and enhance the benefits from WSIDP. With this follow-up project, the World Bank, with its global experience, will be able to combine a focus on funding the most cost-effective investments that will assist the utilities in improving their efficiency in service delivery and support cost recovery in the participating utilities. This area has not garnered that much attention yet, but it is a critical element in the Angola CPS, as it is critical to put the sector on more sustainable footing while providing essential services to the population.

14. The focus of the WSIDP2 is provincial capital cities. Most of the existing water supply systems in these cities date from colonial times and are therefore in need of significant expansion and rehabilitation. The World Bank has contributed to the expansion and/or rehabilitation of water supply systems under the Emergency Multisector Recovery Project I and II (P083333 and P095229) and the WSIDP, P096360. However, water distribution systems in these cities are still inadequate to meet increasing demand stemming from rapid population growth and developing industrial and commercial sectors. Currently, the GoA and donor allocations fall short of the funds needed by these provincial capitals. Thus, the World Bank intervention is timely and needed. WSIDP2 will also develop institutions for proper monitoring of water and sanitation services at the national level.

15. The specific World Bank value added is in:

(i) Use of transparent procurement, international experience in new technologies and approaches that are not yet introduced in the Angolan water and sanitation sector; and
(ii) In helping utilities and the recently established regulator with the transition to becoming a more financially viable sector, while ensuring that the service remains affordable and accessible to all, including the urban poor.

Methodology of the economic analysis

16. *Cost-Benefit Analysis.* The economic analysis uses a cost-benefit analysis methodology and compares the results of the scenarios with project and without project. These calculations use most of the assumptions and parameters included in the economic models used in WSIDP2 to calculate the economic benefits, as included in the PAD and Project Concept Note. The economic feasibility analysis of WSIDP2 compares estimated economic benefits of the project with its economic costs. As the project costs are given, the primary analytical challenge of this analysis is to estimate the expected benefits that occurred or are likely to occur because of project implementation. In the cost-benefit analysis, benefits were assessed at financial prices due to a lack of data on economic prices.

17. *With* and *without scenarios.* The net benefit of the project was estimated as the incremental benefit of two scenarios: *with* and *without* project scenarios. The *with project* scenario includes the

proposed investment program under components 3 and 5b and their associated number of connections, latrines/toilets, and septage treatment facility. The *without project* scenario assumes the investments are not done and therefore the proposed expansion in the number of connections and latrines would not happen in the absence of available government funding.

Benefits

18. The proposed investment will give a boost to nine water companies located in different regions of Angola and help them to achieve coverage, for water supply, to 70 percent and above. It is expected that utilities will take over operation of the infrastructure, and continue expanding water and sanitation systems according to the urbanization rate, maintaining coverage rate that was achieved during the project implementation.

19. For the water component, the benefit flow comes from the reduction of the water services costs to the currently unserved population of about 1.2 million people. After the installation of the new connections, the water consumption will also grow to at least 50 lpcd. Payment for this water will be according to the current tariff set by each individual company, with consumption of 50 lpcd ranging from AOA 765 to AOA 1,100 per month for the average family. Current consumption for unconnected people is estimated at 10 lpcd, or 51 liters per average family. The cost of this water is assessed at the level of AOA 7,650 per family per month. The reduction in coping costs ranges from AOA 6,000 to 7,000 per family per month depending on location. The benefits will become available to new customers from the third year of implementation onward.

20. Benefits from sanitation investment include reduced burden from morbidity with excreta-related diseases by at least 15 percent, reduced coping costs with handling poor sanitation, and increased value of housing with latrines, equivalent to the amount of investment. The benefit flow comes from the reduction of the sanitation services costs to the currently unserved population, about 7,000 households living in suburban areas. It is conservatively assumed that in the project cities the incidence of diseases and their treatment costs are the same as for all Angola on average. The coping costs of US$20 per family per year is assessed as nuisance due to open defecation and sanitation management at the household level. The AF will also increase the value of the housing it will provide with latrines/toilets. It is assumed that this increase will correspond to the value of latrines. The cost of new pit/septic tank emptying is added as a new cost for households receiving latrines/toilets.

21. Some additional economic benefits associated with improved sanitation, specifically global economic benefits are not accounted in this analysis. These include, but are not limited to, reduction of nutrient and BOD_5 discharges into surface waters, reduced pollution with septage of ground water, and similar benefits.

22. The improved sanitation benefits will become available to new customers from the fifth year of implementation onward with the full benefits starting from year seven when all construction works will be completed. After the installation of the new latrines and septage treatment facility operations, the coping cost for sanitation management will be reduced along with frequency of excreta-related diseases. It is expected that project interventions will reduce morbidity and associated costs of their treatment by

at least 15 percent, reducing the hazard of epidemics, morbidity and mortality from diarrheal and other excreta-related diseases, which will subsequently result in increased labor productivity of the society.

23. Additional benefits are expected from components 1, 2 and 5a in bringing transparent procurement, performance assessment and fact-based investment decision processed in the Angolan water sector that will reduce risk of mishandling the scarce financial resources and technical expertise.

Costs

24. The total investment cost for component 3 is US$294,525,000 in the nine project cities and component 5 is US$54,625,000 in one or two project cities. Calculations for the economic analysis include cost of construction of new connections, operation and maintenance costs of these connections and associated benefits to newly connected populations with water supply services. For sanitation it includes investment costs into latrines, septage collection and treatment plant and other sanitation related infrastructure, as well as fees for regular emptying for constructed latrines. The fees charged to new customers will offset the part of the operations and maintenance (O&M) costs. Collection rate is set at 100 percent due to project improvements in billings and collections.

25. An additional stress test was conducted to assess the economic impact on the project of including the cost of components 1, 2 and 5a in the economic analysis.

26. Two models are assessed. Model 1: Operation and maintenance cost of the water and sanitation services will grow proportionally to the number of connections. Model 2: newly constructed and rehabilitated connections will be more efficient than the old ones. Similar to the WSIDP, it is expected that the new water connections may use newer and more modern technologies along with meters and proper engineering. We estimate that the new connections will cost at least 30 percent less than the current ones to operate due to economies of scale and mentioned operation improvements, i.e., the utilities will actually save on O&M costs due to the savings made in energy and maintenance and by reducing network losses.

Assumptions

27. The expected investment will take six years, with equal amount of investment from 2017-2024.

Table 3.1: Tentative timeline for investments

Year of implementation	**1**	**2**	**3**	**4**	**5**	**6**
Water investments **295 million**	16.66%	16.66%	16.66%	16.66%	16.66%	16.66%
Sanitation investments **55 million**					35%	65%

28. *Population projection.* The current population is approximated from reports of *Instituto Nacional de Estatística, República de Angola (2015).* The current rate of urbanization is reported as three percent per year on average[13] for the entire length of the project. The current coverage rate was taken as is, except Dunda, Luene and Namibe, for which coverage information was not available at the time of preparation of this analysis. We used an estimated 34 percent for these companies, which is the average for municipalities in Angola.

29. It is expected that the project will be providing benefits for 20 years following its start. The benefits will start coming beginning in the third year of the project. The sanitation benefits will become available in the seventh year of the project. The discount rate is assessed at six percent, per World Bank guidelines.

30. All calculations are in constant AOA with the exchange rate of US$1=AOA 225.

31. Health benefits were assessed by the WHO standard procedure of the year-life loss (YLL) related to mortality of children under five years old due to acute diarrhea.

32. Global benefits are expected from the reduction of the GHG emissions, nutrient discharges with proper septage treatment as well as release of the BOD_5 into surface water and groundwater environments. These benefits, while important, are not accounted for in this economic analysis.

33. The project will not bring an additional financial burden to the beneficiaries, as their service costs will be at least 60 percent lower than the current coping costs.

Results

34. *Model Result*. The economic rate of return (ERR) for the WSIDP2 with AF is 14.4 percent, and the NPV is US$201 million.

35. *Stress Test.* If the costs of components 1, 2, and 5a are also included in the economic assessment, then the ERR becomes 10 percent and the NPV becomes US$111 million.

36. The project will save the lives of at least 15,500 children or 730,000 productive years, considering that life expectancy in Angola will grow from 50 to 60 years between now and 2036. We did not put monetary terms to these health benefits, although they are large.

37. The economic outcomes of the WSIDP2 with AF (including the sanitation component) are slightly less than for the parent program (without sanitation component), for which the ERR was 22 percent and the NPV US$386 million – seven percentage points and US$185 million less, respectively. This difference is caused by the inability to assess some additional economic benefits associated with improved sanitation, especially global economic benefits. In addition, the original WSIDP2 also used an exchange rate of US$1=AOA 167.

[13] The World Fact Book, 2015, Angola.

Risk and sensitivity analysis

38. The project is resilient to the external shocks: if the investment costs grow by 30 percent, then the ERR will be 10.5 percent and the NPV will be US$128 million. The project is resilient to cost increases.

Economic effects due to exchange rate fluctuation

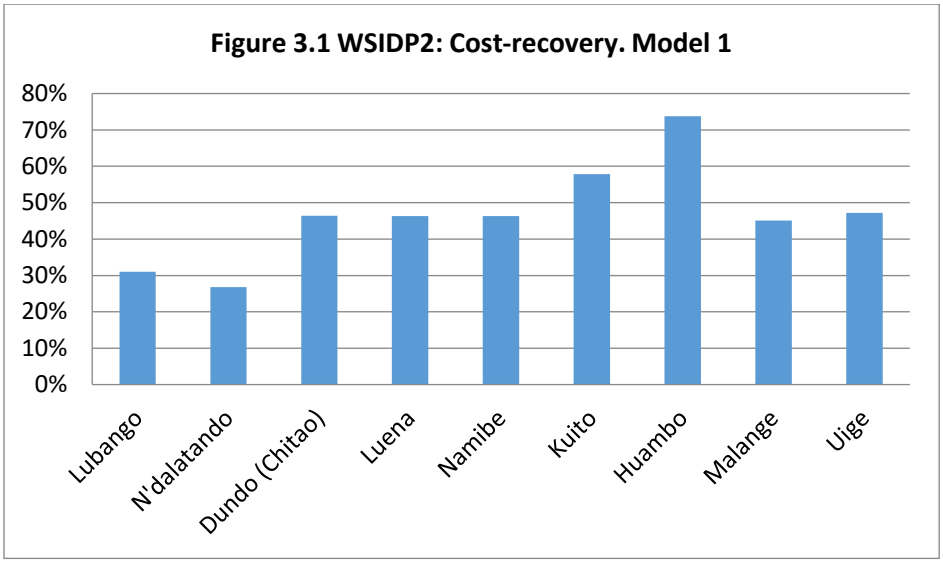
39. For the purposes of the sensitivity analysis, the shadow exchange rate is estimated at the level of US$1=AOA 270 and AOA 400 respectively. The project will be operating within the local financial environment. While all operational and maintenance costs and benefits will be in Angolan Kwanza, the project financing is in US dollars. We estimated the economic effects on the benefits and project costs varying the exchange rate of the local currency to US dollar. The project is sustainable to external shocks related to fluctuation of the exchange rate.

Table 3.2: Economic results considering different exchange rate scenarios

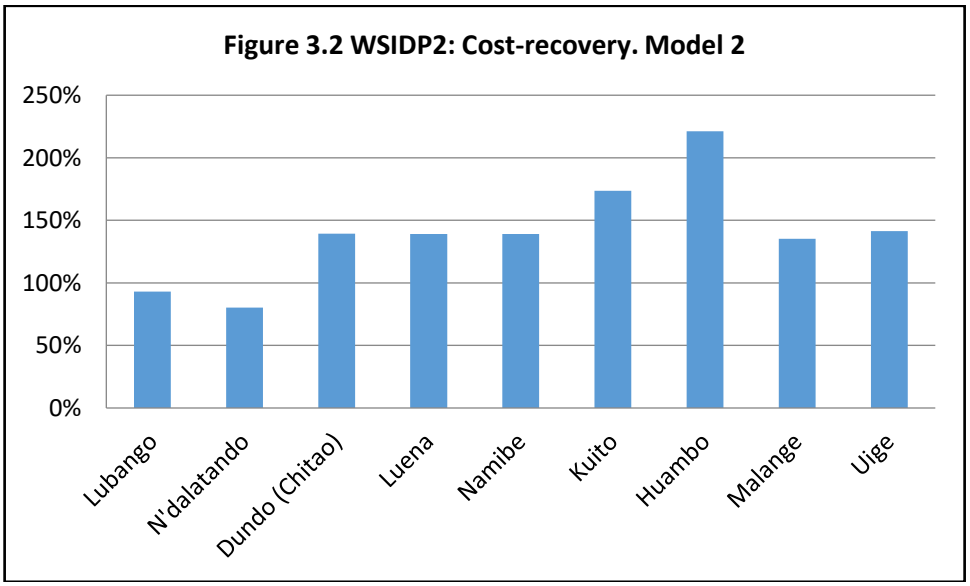
Exchange rate (US$=AOA)	NPV, US$	ERR, %
225	201 million	14.4
270	97 million	8.3
400	27 million	6.6

Fiscal impact

40. The expanded network and operations will result in a fiscal impact for all companies as none of them cover operational and maintenance costs of water service provision. The investment programs need to be accompanied by support to improve the operational and financial performance of the PWSUs: while tariffs, which are decided by provincial governors, have recently been adjusted in some capital cities, they are still too low to cover operational costs. Significant operational subsidies may be required from provincial Governments that are often provided in the form of supplies (e.g., chemicals) and staff paid for by the governor's budget. According to Model 1 below, the fiscal impact for the project would result in the following cost-recovery for each of the utilities.



41. *Model 2.* However, while improvement of services may bring a loss to utilities, as the current operational and maintenance costs do not cover costs of operation, the technical improvements and correction of tariffs will make the utilities sustainable. The municipal governments will need to cover the fiscal deficit to keep services operational and sustainable. Even with 30 percent cost reduction, the O&M cost recovery will be achieved only in Huambo. The 50 lpcd consumption can be considered to be a conservative estimate (at low end of project usage). With the growth of the economy and imminent improvement of the living standard, the water consumption will grow. At the same time, the GoA may start tariff adjustments to align with economic growth. Thus, the desired cost recovery can be achieved for the whole project, on average, and specifically for seven of the nine PWSUs, if consumption grows to at least 70 lpcd and the tariffs are corrected by 50 percent.



*Consumption 70 lpcd, O&M cost reduction 30 percent and tariff adjusted by 50 percent relative to current level

Conclusions

42. The proposed AF under WSIDP2 is resilient with significant benefits. It will withstand cost increases by 30 percent.

43. Stress tests prove that the project is sustainable even if costs of the Component 1, 2 and 5a are included in the economic analysis.

44. The project may require tariff adjustment by 50 percent to become fiscally sustainable for the PWSUs.

45. The project is resilient to external shocks related to currency exchange rate fluctuations:.

Annex 4: Reallocation between disbursement categories Original Loan

Category	Amount of the Original Loan Initial Allocation (expressed in USD)	Amount of the Original Loan Proposed Allocation (expressed in USD)
(1) Goods, non-consulting services, consulting services, Operating Costs, and Training for Part 1(a) of the Project	18,700,000	16,636,000
(2) Goods, non-consulting services, consulting services, Operating Costs, and Training for Parts 1(b) and (c) of the Project	8,600,000	7,651,000
(3) Goods, consulting services, Operating Costs, and Training for Parts 2(a), (b), (c), (e) and (f) of the Project	12,000,000	10,676,000
(4) Goods, Works, consulting services, Operating Costs, and Training for Part 2(d) of the Project	2,000,000	1,779,000
(5) Goods, Works, consulting services, and Operating Costs for Part 3 of the Project	131,000,000	116,542,000
(6) Goods, consulting services (including audits), Training and Operating Costs for Part 4 of the Project	25,000,000	22,241,000
(7) Performance Payments	2,200,000	1,957,000
(8) Front-end Fee	500,000	500,000
(9) Interest Rate Cap or Interest Rate Collar premium	0	0
(10) Goods, Works, non-consulting services, consulting services, Operating Costs, and Training for Part 5 of the Project	0	22,018,000
TOTAL AMOUNT	200,000,000	200,000,000