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INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 118.8 MILLION
(US\$178 MILLION EQUIVALENT)

TO THE

REPUBLIC OF MOZAMBIQUE

FOR A

GREATER MAPUTO WATER SUPPLY EXPANSION PROJECT

June 27, 2013

Urban and Water Unit (AFTU1)
Country Department AFCS2
Africa Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective May 31, 2013)

Currency Unit = New Meticaís (MT)
30.15 MT = US\$1
US\$1.499 = SDR 1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AdeM	Maputo Regional Water (<i>Águas da Região de Maputo</i>)
AFD	French Development Agency (<i>Agence Française de Développement</i>)
AfDB	African Development Bank
ARA-SUL	South Regional Water Management (<i>Administração Regional de Águas do Sul</i>)
CPS	Country Partnership Strategy
CRA	Water Regulatory Council (<i>Conselho de Regulação de Águas</i>)
CREE	Foreign Economic Relations Commission (<i>Comissão das Relações Económicas Exteriores</i>)
DA	Designated Accounts
EC	European Commission
EIB	European Investment Bank
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
e-SISTAFE	Electronic State Financial Administration System
FIPAG	Water Supply Asset Holding and Investment Fund (<i>Fundo de Investimento e Património do Abastecimento de Água</i>)
FMS	Financial Management System
GDP	Gross Domestic Product
GMA	Greater Maputo Area
GoM	Government of Mozambique
IBNET	International Benchmarking Network Methodology
IBRD	International Bank for Construction and Development
ICB	International Competitive Bidding
IDA	International Development Association
IFAC	International Federation of Accountants
IFC	International Finance Corporation
IFP	Investment Project Financing
IFR	Interim Financial Reports
IPSAS	International Public Sector Accounting Standard
IRR	Internal Rate of Return
ISP	Implementation Support Plan
MDG	Millennium Development Goals
MOF	Ministry of Finance

MWSD	Maputo Water Supply Department
NCB	National Competitive Bidding
NPV	Net Present Value
NWRDP	National Water Resources Development Project
O&M	Operation and Maintenance
ORET	Netherlands Development-related Export Transactions Programme (<i>Ontwikkelingsrelevante Exporttransacties</i>)
ORIO	Netherlands Facility for Infrastructure Development
PDO	Project Development Objective
RAP	Resettlement Action Plan
SDR	Special Drawing Rights
SIL	Specific Investment Loan
SOE	Statement of Expenditures
UFW	Unaccounted for Water
WASIS	Water Services Institutional Support Project
WHO	World Health Organization
WRDP	Water Resources Development Project

Regional Vice President:	Makhtar Diop
Country Director:	Laurence C. Clarke
Sector Director:	Jamal Saghir
Sector Manager:	Rosemary Mukami Kariuki
Task Team Leader:	Luiz Claudio Martins Tavares

**MOZAMBIQUE
GREATER MAPUTO WATER SUPPLY EXPANSION PROJECT**

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PAD DATA SHEET

Mozambique

Greater Maputo Water Supply Expansion Project (P125120)

PROJECT APPRAISAL DOCUMENT

AFRICA

AFTUI

Report No.: PAD509

Basic Information					
Project ID	Lending Instrument	EA Category	Team Leader		
P125120	Investment Project Financing	A - Full Assessment	Luiz Claudio Martins Tavares		
Project Implementation Start Date		Project Implementation End Date			
25-Jul-2013		31-Mar-2019			
Expected Effectiveness Date		Expected Closing Date			
13-Jan-2014		30-Sep-2019			
Joint IFC					
No					
Sector Manager	Sector Director	Country Director	Regional Vice President		
Rosemary Mukami Kariuki	Jamal Saghir	Laurence C. Clarke	Makhtar Diop		
Borrower: Republic of Mozambique (Recipient)					
Responsible Agency:					
FIPAG (Water Supply Asset Holding and Investment Fund) Av. Filipe Samuel Magaia, Nr. 1291 R/C PO Box 91 Maputo, Mozambique www.fipag.co.mz					
CRA (Water Regulatory Council) Avenida Amilcar Cabral, Nr. 757 PO Box 235 Maputo, Mozambique www.cra.org.mz					
Project Financing Data(US\$M)					
<input type="checkbox"/>	Loan	<input type="checkbox"/>	Grant	<input type="checkbox"/>	Other
<input checked="" type="checkbox"/>	Credit	<input type="checkbox"/>	Guarantee		

For Loans/Credits/Others									
Total Project Cost (US\$M): 178.00									
Total Bank Financing (US\$M): 178.00									
Financing Source					Amount(US\$M)				
BORROWER/RECIPIENT					0.00				
International Development Association (IDA)					178.00				
Total					178.00				
Expected Disbursements (in US\$ million)									
Fiscal Year	2014	2015	2016	2017	2018	2019	2020		
Annual	1.00	10.00	33.00	40.00	33.00	41.00	20.00		
Cumulative	1.00	11.00	44.00	84.00	117.00	158.00	178.00		
Project Development Objective(s)									
Proposed Development Objective(s)									
The project development objective (PDO) is to increase access to clean water for residents in the Greater Maputo Area.									
Components									
Component Name							Cost (US\$ millions)		
Component A: Investment in Water Supply Network System							133.00		
Component B: Investment in Water Supply Distribution System							27.00		
Component C: Technical Assistance to FIPAG							13.00		
Component D: Capacity Building and Operational Support to CRA							5.00		
Compliance									
Policy									
Does the project depart from the CAS in content or in other significant respects?							Yes []		No [X]
Explanation:									
Does the project require any waivers of Bank policies?							Yes []		No [X]
Have these been approved by Bank management?							Yes []		No [X]
Is approval for any policy waiver sought from the Board?							Yes []		No [X]

Explanation:			
Does the project meet the Regional criteria for readiness for implementation? Yes [X] No []			
Safeguard Policies Triggered by the Project		Yes	No
Environmental Assessment OP/BP 4.01		X	
Natural Habitats OP/BP 4.04			X
Forests OP/BP 4.36			X
Pest Management OP 4.09			X
Physical Cultural Resources OP/BP 4.11			X
Indigenous Peoples OP/BP 4.10			X
Involuntary Resettlement OP/BP 4.12		X	
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50		X	
Projects in Disputed Areas OP/BP 7.60			X
Legal Covenants			
Name	Recurrent	Due Date	Frequency
Maintenance of Adequacy of Water Tariffs	Yes	Ongoing	Annually
Description of Covenant			
No later than twenty-four (24) months after the Effective Date, the Recipient shall ensure that the tariffs for the water systems under the direct and indirect responsibility of FIPAG shall reflect the principles of full cost recovery and be sufficient to cover operating expenses, depreciation, and cost of capital in a reasonable time horizon for all said water systems. The tariffs will be assessed annually.			
Name	Recurrent	Due Date	Frequency
Legal Arrangements for the Utility to Operate the Maputo Water Supply System	Yes	Ongoing	Annually
Description of Covenant			
<p>1. The Recipient shall cause FIPAG to maintain at all times during the life of the Project service contract(s) with utility operator(s) to operate the water supply assets supported under the Project.</p> <p>2. The Recipient shall ensure that: (a) the utility operator(s) selected to operate the water supply assets supported under the Project has (have) been incorporated as a Corporation under Mozambican law; and (b) the contract(s) between FIPAG and the utility operator(s) address the financial obligations undertaken by FIPAG under various loans and credits extended to FIPAG and the sustainability of the future investments in the water supply system, through defining clearly the parties' respective contractual obligations, including lease fee charges payable to FIPAG and the tariffs payable to the utility operator(s).</p>			

Conditions			
Name			Type
FIPAG Subsidiary Agreement			Effectiveness
Description of Condition			
Subsidiary has been executed on behalf of the Recipient and of the Project Implementing Entity.			
Name			Type
CRA Subsidiary Agreement			Effectiveness
Description of Condition			
Subsidiary has been executed on behalf of the Recipient and of the Project Implementing Entity.			
Name			Type
Project Implementation Manual			Effectiveness
Description of Condition			
The Recipient has adopted the Project Manual, in form and substance satisfactory to the Association.			
Team Composition			
Bank Staff			
Name	Title	Specialization	Unit
Alexander A. McPhail	Lead Water and Sanitation Specialist	Water and Sanitation	TWIWA
Aldo Baietti	Lead Infrastructure Specialist	Infrastructure	EASWE
Luiz Claudio Martins Tavares	Lead Water and Sanitation Specialist	Team Lead	AFTU1
Harvey D. Van Veldhuizen	Lead Environmental Specialist	Environmental	OPSOR
Caroline van den Berg	Lead Water and Sanitation Specialist	Water and Sanitation	MNSWA
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Arlete Nkamate	Program Assistant	Assistant	AFCS2
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Joao Tinga	Financial Management Analyst	Financial Management	AFTME
Antonio L. Chamuco	Senior Procurement Specialist	Procurement	AFTPE

Marcus J. Wishart	Sr Water Resources Spec.	Water Resources	AFTN2		
David Malcolm Lord	Young Professional	Water and Sanitation	AFTU1		
Non Bank Staff					
Name	Title	Office Phone	City		
David Weston	Engineer – Consultant				
Elisabeth Sherwood	Financial Analyst – Consultant				
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
Mozambique	Maputo Province				
Institutional Data					
Sector Board					
Water					
Sectors / Climate Change					
Sector (Maximum 5 and total % must equal 100)					
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %	
Water, sanitation and flood protection	Water supply	100			
Total		100			
I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.					
Themes					
Theme (Maximum 5 and total % must equal 100)					
Major theme	Theme	%			
Urban development	Urban services and housing for the poor	100			
Total		100			

REPUBLIC OF MOZAMBIQUE

GREATER MAPUTO WATER SUPPLY EXPANSION PROJECT (GMWSP)

I. STRATEGIC CONTEXT

A. Country Context

1. Mozambique has seen substantial economic growth since the end of its devastating 15-year-long civil war in 1992. On average between 1993 and 2010, real Gross Domestic Product (GDP) has grown eight percent annually, and real GDP has nearly doubled since the end of the war. The early years of this growth was the result of post-conflict investment in infrastructure and agriculture. More recently, this growth has been the result of high foreign direct investments in large, rapidly expanding extractive industries and related infrastructure investments.¹

2. Despite this strong economic growth, Mozambique remains one of the poorest countries in the world, ranking 184th out of 187 countries in the 2011 Human Development Index.² In terms of per capita GDP, at US\$441 in 2010, it ranks 197th out of 210 countries. The overall poverty rate is estimated at 54 percent of the population and has not changed over the last decade, an indication that recent economic growth has not contributed to poverty alleviation. The relative poverty of the country is also reflected in child mortality rates – in 2010, the under-five child mortality rate was 108 per 1000 live births, slightly better than the sub-Saharan African average of 112 but significantly higher than the global average under-five mortality rate of 54.³ The World Health Organization (WHO) estimates that approximately 17 percent of under-five deaths in Mozambique were the result of diarrheal diseases, the largest single cause of childhood deaths, and primarily caused by poor water and sanitation.⁴

B. Sectoral and Institutional Context

3. Urban water supply in Mozambique has improved dramatically over the past ten years. The Government began to undertake serious water policy reforms in 1998, when it first set out its policy of a delegated management framework. Under the policy, water supply assets remain the property of the government, to be managed by a state-owned asset holding company, while water supply systems are operated under contract by independent providers operating on a commercial basis. Under the first phase of these reforms, the Government established an asset holding company – the Water Supply Asset Holding and Investment Fund (*Fundo de Investimento e Patrimônio do Abastecimento de Água*, FIPAG) – for the water supply assets of large urban areas, and established an independent water regulator, the Water Regulatory Council (*Conselho de Regulação de Águas*, CRA). Under the delegated management framework policy, operations of water supply systems of urban areas are intended to be contracted out to private-sector operators. In the case of Maputo, operations were leased to Maputo Regional Waters

¹ Country Partnership Strategy FY 2012-2015, World Bank, 2012.

² Human Development Report 2011. Sustainability and Equity: A Better Future for All (UNDP, 2011), cited in the Country Partnership Strategy, 2012-2015, the World Bank.

³ data.worldbank.org/indicator/SH.DYN.MORT/

⁴ www.who.int/healthinfo/statistics/mortality_child_cause/en/index.html

(*Águas da Região de Maputo*, AdeM), the regional water service provider and a joint-venture of domestic and foreign investors.

4. The Government recently updated the water supply policy and strategy with the National Urban Water Supply and Sanitation Strategy (2011 – 2025), which was approved by the Council of Ministers in November 2011. The strategy reaffirms the delegated management framework, while promoting commercial sustainability in the operational regions of FIPAG, local private sector involvement in water supply, and capacity building. Towards those objectives, the policy supports the grouping of water supply assets in secondary and tertiary cities into operational regions, with operations on a commercial basis, and gradually transforming operators into public-private companies. The policy encompasses the professionalization of operations in the secondary systems and support to operators through technical and financial assistance. Finally, the policy envisions service coverage of 80 percent of the population by 2025.

5. The institutions and reforms outlined above have contributed to service expansion and improvements in the four largest secondary cities and, more recently, in the nine strategic tertiary cities, where the number of hours of service and population served has increased and the percentage of unaccounted-for water (UFW) has decreased. For example, between 2000 and 2012, connections in the secondary city of Beira grew from less than 11,000 to nearly 47,000, a 427 percent increase. Connections in Nampula increased from 6,300 to nearly 27,000, a similar increase. Between 2010 and 2011, UFW in those cities decreased from highs of 60 and 44 percent to 32 and 29 percent, and hours of supply increased from less than 10 hours per day to between 21 and 24 hours per day, respectively.

6. The situation is more problematic in Mozambique's largest urban area – Greater Maputo – where the infrastructure suffers from decades of lack of repairs and investments. The water system faces challenges in meeting the needs of this metropolitan area of more than 2 million people, growing at a rate of 2.7 percent per year. However, investments in the existing system and expansion to peri-urban areas, in particular since 2010, have resulted in a significant increase in service coverage for the Greater Maputo Area (GMA). Active connections from the water service provider – AdeM – have increased from 98,000 in 2010 to 173,000 in 2012, a 75 percent increase, and the system now serves over 1 million people. In addition to AdeM, FIPAG has invested in core infrastructure for 16 small, privately operated systems in GMA. These systems use water from wells and serve 59,000 connections. The present gap of households not served by either AdeM or the small providers is estimated to be about 152,000 households.

7. The focus of FIPAG and AdeM over the last several years has been on filling the gap in service by increasing household connections and production capacity. As a result, connections have rapidly increased over the last several years, with over 30,000 new domestic connections per year in 2011 and 2012. However, production capacity has not improved to the same degree, and the increase in connections has therefore come at a cost of a reduction in hours supplied, from 14 hours a day in 2005 to only 9 hours a day in 2011. Supply in some areas had been limited to only 5 hours per day. These stresses on the system have recently been alleviated, however, by an expansion of treatment capacity and rehabilitation works on the treatment plant, and the number of daily service hours has improved to 15 hours per day. AdeM's financial results have shown improvement over the last several years, with operating revenues increasing with the addition of new customers, while operating expenses have been held relatively constant. AdeM currently generates an operating surplus, and is able to cover its financing and

depreciation costs. Current consumption is constrained by supply and the ability to treat and deliver additional water is expected to further improve financial performance, as customers will be able to consume water above the base tariff rates. Additional information is provided in Annex 2.

8. Diversification of water sources, as well as an increase in total water supplied, has become a key priority of FIPAG in order to reduce the risks to water supply caused by weather variations that are increasingly affected by global climate change. Water for the formal (FIPAG/AdeM) water supply system comes from a single source, the Umbeluzi River, 25 kilometers south of Maputo. The sole water treatment plant serving Maputo is located on the riverbank at the same location. The river and the treatment plant are subject to the variable climatic conditions of the southern coast of Mozambique, in particular, to periodic tropical cyclones during the summer months. The intake and treatment plant are regularly flooded, sometimes resulting in a breakdown of the systems and lack of access to the plant. In 2000, devastating flooding throughout southern Mozambique resulted in a complete closure of the plant for one day, damage to the pumps, and limited site access for 14 days thereafter. In 2006, severe damage to the treatment plant was caused by flooding, and the water treatment works could not be accessed for five days, and the pumps were again damaged and had to be replaced a second time. In addition to flooding, periodic droughts affect the southern region, causing saltwater intrusions into the river. While these have not yet affected the quality of water entering the Umbeluzi works, they may affect water quality in future.

9. International donors and agencies have supported the Mozambican water sector over the last two decades and are actively working with FIPAG to expand and improve piped delivery of water. Recently, the European Investment Bank (EIB), the European Commission (EC), the French Development Agency (*Agence Française de Développement*, AFD), and the Netherlands Development-related Export Transactions Programme (*Ontwikkelingsrelevante Exporttransacties* - ORET) provided financing to rehabilitate and expand the water treatment works and intake at the Umbeluzi River as well as the expansion to new areas of GMA. The African Development Bank (AfDB) is currently financing improvements and expansions in two secondary cities. The AFD is also providing financing for reductions in physical water losses in the system through the rehabilitation of existing water supply and network assets in GMA. Vitens, a Dutch water utility, is providing technical assistance to AdeM to reduce commercial losses. In late 2010, FIPAG received support from the International Finance Corporation (IFC) to acquire the shares of *Águas de Portugal* in AdeM. Continuing the engagement, IFC Advisory Services will provide technical and transactional advice to FIPAG in the identification of a new private sector partner to operate the regional water system in the GMA.

10. AdeM currently produces approximately 200,000 cubic meters (m³) of treated water per day; AdeM estimates that approximately half of that amount is lost – half to leakage, and half to commercial losses. As the network continues to be repaired, and as new connections are made, AdeM estimates that non-revenue water will be reduced to around 35 percent by 2018-2019. The Umbeluzi treatment works should be able to operate at its full capacity and full river abstraction license quantity of 240,000 m³/day in 2015-2016. That level of production is expected to be fully absorbed by demand from existing connections and additional connections expected to be made between 2012 and 2015, and additional supply will be needed at that time. In the long term,

demand is expected to continue to grow due to population increases to an estimated 560,000 m³/day by 2035.⁵

11. As mentioned above, FIPAG and AdeM are investing in measures to identify and reduce the sources of UFW with the assistance of AFD and Vitens. However, this is a complex and time-consuming process, and needs to be complemented by investments in new water sources and treatment. The Master Plan for the Greater Maputo Water Supply System, completed in April 2011, identified the Corumana Dam as the first choice for augmentation of water supply for Maputo.⁶ A memorandum of agreement between the South Regional Water Management authority – the South Regional Water Management (*Administração Regional de Águas do Sul, ARA-Sul*) – and FIPAG was signed in early 2011, guaranteeing the near-term supply of 60,000 m³/day of raw water from the Corumana Dam. This amount is to be increased to 120,000 m³/day in 2015. The dam – located approximately 93 kilometers northwest of Maputo – currently has a designed storage volume of 1,240 Mm³, but has been operating below the designed full supply level due to incomplete installation of spillway gates. A separate World Bank-financed project – the SDR 43.8 million (US\$70 million equivalent) National Water Resources Development Project (NWRDP), approved by the Board of Executive Directors on September 15, 2011, includes financing for the completion of the spillway gates and raising of the maximum operational water level to the original design criteria. This will allow for the full abstraction of 120,000 m³/day for treatment and domestic use.

12. The proposed project has been prepared in coordination with the investments of the above donors. The proposed project activities either complement ongoing investments or are a pre-requisite to the successful implementation of planned investments financed by other donors, in particular, those of the Government of the Netherlands via the Agency for Infrastructure Development (ORIO) starting in April 2013, which will finance parallel investments of Euro 23 million in water network expansions, the AFD, which has committed Euro 40 million for complementary investments beginning in 2015, and the AfDB, which has also committed to support the project. These investments are dependent upon the availability of water in the northern area of Maputo to be provided under the proposed project.

C. Higher Level Objectives to which the Project Contributes

13. The proposed project will contribute to the achievement of higher level objectives of the Government of Mozambique and the World Bank, as well as to the Millennium Development Goals (MDGs). The Government's third Poverty Reduction Action Plan (*Plano de Acção para a Redução da Pobreza Absoluta, PARPA III*) (2011-1014) is the operational strategy for the Government's five-year program, and is built on three pillars: (i) increased agricultural and fishery production and productivity, (ii) employment promotion, and (iii) human and social development. Within the third pillar, a key objective is to increase access to and use of water and safe sanitation, to which the project will contribute directly.

14. The World Bank's recently completed Country Partnership Strategy (CPS) (2012 – 2015) for Mozambique is fully aligned with PARPA III. The project contribution to the CPS that has

⁵ Master Plan for the Greater Maputo Water Supply System, C. Lotti/SIM Spa., April, 2011.

⁶ *Ibid.*

two cross-cutting pillars: (i) supporting competitiveness and employment; and (ii) reducing vulnerability and increasing resilience. It also has as a foundational objective of strengthening governance and public sector capacity. Support for key infrastructure investments is a core part of the CPS's support for competitiveness and employment, in particular the provision of water services, and increased access to potable water is included as a CPS outcome indicator. In addition, the project contributes to Pillar 2, as it equips the GMA with a second source of water supply and treatment that is climate-change resilient, as the main assets are strategically located inland about 93 kilometers northwest of Maputo and 110 meters above sea level, and therefore well-protected from the serious and destructive flooding that periodically occurs downstream and that affects the main existing water intake on the Umbeluzi River.

15. This project also contributes to the World Bank's Strategy for Africa,⁷ which similarly targets the cross-cutting pillars and foundation supported by the Mozambique CPS. Assistance to key domestic sectors and utilities is a core aspect of support to competitiveness and employment. This strategy encourages the closing of the deep infrastructure deficit, including in urban water supply, which affects both private-sector competitiveness and the health and welfare of the population. The Bank's Strategy for Africa explicitly refers to lost time and productivity spent by women who have to fetch water.

16. The proposed project will contribute to the safe drinking water and sanitation MDG. The proposed project will increase the quantity of water available, helping to meet the unmet demand in the GMA. The additional water supplied to the GMA from the proposed project will be used primarily to provide water coverage to currently unserved and underserved areas, mostly low-income, peri-urban areas.

II. PROJECT DEVELOPMENT OBJECTIVES

A. Project Development Objectives (PDO)

17. The project development objective (PDO) is to increase access to clean water for residents in the Greater Maputo Area.

B. Project Beneficiaries

18. The project is expected to directly benefit approximately 100,000 households in the GMA who will be directly connected to the formal water supply system in Greater Maputo and will be able to receive treated, piped water. The benefits of the project will accrue to the population living in the project area.⁸ Women and girls will also benefit from reduced time spent collecting water.

⁷ *Africa's Future and the World Bank's Support to It*. The World Bank, February 2011.

⁸ The project will not target particular income groups for connections, in particular due to recent experience in an output-based connection scheme whose results highlighted the difficulty of targeting poorer households for the receipt of connection subsidies in an environment where nearly all residents can be defined as poor. While there will be no constraints placed on the location of new connections or networks, the geographic areas primarily expected to benefit from the project are located in peri-urban areas of Greater Maputo, i.e., in underserved, largely poor neighborhoods.

C. PDO-Level Results Indicators

19. The achievement of the PDO will be measured in terms of the following indicators:
- (i) Direct project beneficiaries, percentage of whom are female;
 - (ii) People in urban areas provided with access to an improved water source under the project;
 - (iii) Increased capacity of the water system.

III. PROJECT DESCRIPTION

A. Project Components

20. The proposed project finances investments defined as part of the overall GMA Master Plan for Water Supply. A detailed feasibility and preliminary design study was undertaken in 2012 to determine the appropriate sites and specifications of the water treatment works and related infrastructure.⁹ It was ultimately determined that the optimum first phase of infrastructure investments – taking into account the up-front costs of major works and the slower development of revenues resulting from new connections – involved the laying of main pipelines capable of transmitting 120,000 m³ of treated water per day and the construction of a 60,000 m³/day treatment plant. Such phasing allows for the later construction of an additional 60,000 m³/day treatment plant during a second phase of the investment program. The second phase will take advantage of significant savings in the cost of works and a substantial reduction of social and environmental impacts for the laying of the entire transmission pipeline during the first phase. Additional information is provided in Section VI.B (Technical Appraisal) and Annex 2.¹⁰

21. The project has four components, for a total cost of US\$178 million, as follows:

Component A: Investment in Water Supply Network System (US\$133 million)

22. This component includes goods and civil works to: (i) construct the abstraction works for 120,000 m³/day of raw water from the Corumana Dam; (ii) piping to transmit 120,000 m³/day raw water from the abstraction point to the water treatment plant; (iii) a water treatment plant with a treatment capacity of 60,000 m³/day; (iv) approximately 93 kilometers of transmission pipeline, with a transmission capacity of 120,000 m³/day; and (v) reservoirs, pumping stations, and ancillary works. These investments will enable the abstraction, treatment, and transport of water to the Machava distribution center, at the Maputo water supply network's northwestern point. Offtakes built into the main pipeline during construction would enable the future provision of water to settlements located close to the pipeline between the treatment plant and Machava. The main offtake will be to supply treated water to the northern part of Greater Maputo and Matola, to be financed by the Government of the Netherlands (ORIO) and AFD.

⁹ *Technical Feasibility Studies for Greater Maputo Water Supply Scheme – Draft Options Report*, COBA/Consultec, June 2012 and final Option Report July 2012. *Technical Feasibility Studies for Greater Maputo Water Supply Scheme – Draft Final Design*, COBA/Consultec, December, 2012.

¹⁰ Note that references to a first phase and second phase here and elsewhere in the document refer to investments related to the hydraulic capacity of the water system.

Component B: Investment in Water Supply Distribution System (US\$27 million)

23. This component includes goods and civil works to install approximately 100,000 new connections and associated meters in Greater Maputo. In addition, the component will install up to 300 kilometers of network to serve the new connections. This component is complemented by a parallel Dutch-financed program to install distribution centers and primary networks in new service areas and approximately 20,000 connections and associated household meters, at a cost of approximately Euro 23 million.

Component C: Technical Assistance to FIPAG (US\$13 million)

24. This component will provide technical assistance to FIPAG, including: (i) supervision of project works as well as implementation of Environmental Management Plans (EMPs) and Resettlement Action Plans (RAPs); (ii) preparation of Phase II of the program to increase the amount of water available to the GMA to meet residential demand to 2025, including technical assistance for engineering, dam safety, and safeguards and economic analyses; (iii) consulting services to support the preparation of a follow-on project to cover other select cities; (iv) consulting services to FIPAG to support project implementation, including support for AdeM's transition in 2014; (v) financial and technical audits; and (vi) capacity building and training.

Component D: Capacity Building and Operational Support to CRA (US\$5 million)

25. This component will provide resources for operating expenses and technical assistance to CRA with the intent to support implementation of existing regulations in all water and sanitation systems in the country. This includes support for the expansion of the regulatory framework and oversight, particularly in peri-urban areas, and reviews of the structure and form of subsidies for low-income customers and of financing means to extend water and sanitation services to the urban poor. The component will also provide goods, operational support, capacity building and training, and technical assistance to CRA.

B. Project Financing

26. **Lending instrument:** The proposed lending instrument is an Investment Project Financing (IPF) comprising an International Development Association (IDA) Credit of US\$178 million Special Drawing Rights (SDR) equivalent, to be implemented over six years. Selection of the IPF was based on its flexibility and suitability to incorporate financing for a broad range of activities, including a number of specific investments, technical assistance and capacity enhancement measures.

27. Consideration was given, though ultimately rejected, to presenting the project as the first in a "Series of Operations (SOP)" given the likely additional, later investment in treatment capacity. While the team is highly confident of bridging the water supply gap and meeting overall demand for water, the timing of the effective demand for connections and of resulting water sales is less predictable. For that reason, the time by which installation of additional capacity (60,000 m³/day) will be required is uncertain. Neither is it certain that the Government will request financing from the World Bank for such an investment. If the Government requests World Bank assistance for a later investment, a separate project or Additional Financing may be

considered by the Bank. Milestones would be the realization of 80,000 new connections or a reduction in the number of hours of supply to 9 hours per day.

28. The IDA credit is being made to the Government of Mozambique and will be on-lent to FIPAG on the same terms and conditions, converted to meticals at disbursement rates.

29. Parallel financing of up to Euro 23 million is being provided through a grant from the financing facility of the Government of the Netherlands (ORIO) to finance distribution mains, reservoirs, and networks, and approximately 20,000 household connections. The IDA-financed project is necessary for the full operation of the ORIO-funded assets. The preparation of the parallel financing from AFD for the new project may only start after the Bank project is approved. Also, IFC secured about US\$1.1 million for the preparatory work as the transaction advisor from donors' trust funds, a parallel activity for the project.

30. Project Costs and Financing

Table 1: Project Costs and Financing

Project Components	Total Project Cost (US\$m)	IDA (US\$m)	% Financing
Component A: Investments in Water Supply Production	133.0	133.0	100%
Component B: Investments in Water Supply Distribution	27.0	27.0	100%
Component C: Technical Assistance to FIPAG	13.0	13.0	100%
Component D: Capacity Building and Operational Support to CRA	5.0	5.0	100%
Total Project Costs	178.0	178.0	100%

C. Lessons Learned and Reflected in the Project Design

31. *Cofinancing has proven to be impractical for this type of project.* While other international cooperating partners have expressed interest in financing related investments, it was decided not to pursue cofinancing for this project. Instead, the project effectively provides a backbone against which other agencies can pursue complementary investments. While multiple international agencies currently provide financial assistance to FIPAG for a range of expansion and rehabilitation investments, only IDA is able to provide sufficient financing at an affordable cost for an investment of the size proposed under this project. While cofinancing with other donors was considered, past experience indicates that unless investments can be designed and constructed independently, with procurement, contract management, reporting, and disbursement procedures followed on a per-investment basis, the difficulties inherent in cofinancing make the option impractical.

32. *Restrictions or eligibility criteria for connections limit progress towards development objectives and will thus not be applied in this project.* Experience from an ongoing Government of the Netherlands-financed project administered by the World Bank and recent CRA- and Stanford University-led research on project impacts have helped to define the design parameters of the distribution network and household connection aspects of the project. In the Netherlands-financed project, which financed household connections on an output basis (i.e., financed post connection and water delivery); neighborhoods eligible for investment were rigidly defined, in part based on what were perceived to be target demographics. Limiting the neighborhoods where connections could be financed, however, significantly reduced the connections that could be

made, despite the overwhelming demand throughout the city, and the project ultimately had to be restructured to allow financing of connections for eligible households regardless of location in Greater Maputo. Based on that experience, the project will finance the goods and civil works for household connections throughout AdeM's service area. It is expected that nearly all connections will be in GMA's peri-urban neighborhoods, where the population is nearly universally considered to be poor.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

33. Components A, B, and C of the project will be implemented by FIPAG, the asset holding agency responsible for investments in urban water supply in the largest cities in the country; Component D will be implemented by CRA, the water regulator.

34. Since its establishment in 1998, FIPAG has been directly involved with the implementation of numerous projects financed by the World Bank and other development partners. There will be a specific Project Agreement between IDA and FIPAG and a subsidiary agreement signed between FIPAG and Ministry of Finance (MOF). The fiduciary, safeguards, and monitoring and evaluation systems used by FIPAG are integral parts of the agency and are acceptable to the World Bank. The project will be implemented by the Maputo Water Supply Department (MWSD), a unit of FIPAG established in 2007 and which includes eight professional FIPAG employees supported by two international technical advisors. This department has major project experience, including the EU-financed Maputo Water Supply Project (Euro 95 million). FIPAG is the implementing agency of the project being financed by ORIO and the projects financed by AFD, under subsidiary loan arrangements.

35. It should be noted that FIPAG is the asset holding company for the urban water supply sector, responsible for investments in and major rehabilitation of water supply assets. In Maputo, those assets are operated and maintained by AdeM, which leases the assets from FIPAG to provide services. The assets built under the GMWSP will be owned by FIPAG and operated and maintained by AdeM or its successor. FIPAG has worked closely with AdeM during the planning and design stages of the project and will continue to do so during implementation and commissioning.

36. Component D will be implemented by CRA, the water regulator. CRA currently implements two components under the World Bank-supported Water Services Institutional Support Project (WASIS) and, as is the case with FIPAG, is highly familiar with World Bank rules and requirements. There will be a specific Project Agreement between IDA and CRA and a subsidiary agreement signed between CRA and MOF. For the purposes of progress reporting and monitoring and evaluation, CRA will submit progress reports separately to the World Bank.

37. Two designated accounts will be established for the project, one managed by FIPAG, the other by CRA.

B. Results Monitoring and Evaluation

38. Results monitoring and evaluation will be carried out by FIPAG and CRA for the components under their responsibility – Components A, B, and C in the case of FIPAG, and Component D in the case of CRA. Both FIPAG and CRA have staff members capable of monitoring results in their respective areas of responsibility. Indicators identified for project results monitoring are consistent with sector monitoring already undertaken on a regular basis and embedded in the works and consultant contracts to be financed under the project. Monitoring of specific activities is the responsibility of project officers within each agency.

C. Sustainability

39. The project has been identified and prepared through a multi-year process of demand projection and resource availability analysis. The proposed project supports necessary investment in water supply and distribution infrastructure that have been identified through (i) the water supply master plan, (ii) a detailed feasibility study, and (iii) a design study. The master plan assessed regional water source options and recommended the Corumana Dam as the most appropriate source of water for Maputo. The feasibility and design studies reviewed multiple design scenarios – involving two abstraction sites and various technologies and different potential sites for the water treatment plant, alignments of transmission pipelines, placements of pump stations, and capacities of the infrastructure. The recommended design is considered the optimal choice, having taken into consideration technical, environmental, social, financial, and sustainability considerations.

40. The project is expected to provide a financial benefit to AdeM, which will operate the assets and receive operating revenues from new households connected to the expanded network. AdeM's operating revenues are sufficient to cover its operating expenses (which include its lease fees to AdeM), financing costs, and depreciation, and the addition of treated water is expected to relieve capacity constraints that currently keep average household consumption within lower tariff bands. The project investments are also expected to contribute to ongoing positive financial results for FIPAG, which will borrow the project funds from the Government of Mozambique and will be responsible for repayment to the Government. Funds for repayment of the credit are provided through AdeM's lease fees.

41. The technical design of the project contributes to improved robustness of infrastructure against climate-change vulnerabilities. The placement of the water treatment plant close to the Corumana Dam protects it and its electricity source from major flooding vulnerabilities closer to Maputo. It also diversifies Maputo's water system from a single major water source.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk	Rating
Stakeholder Risk	Low
Implementing Agency Risk	
- Capacity	Low
- Governance	Low
Project Risk	
- Design	Low
- Social and Environmental	Low
- Program and Donor	Low
- Delivery Monitoring and Sustainability	Moderate
- Other: Financial	Moderate
Overall Implementation Risk	Low

B. Overall Risk Rating Explanation

42. The overall implementation risk for the proposed project is **Low**. The implementing agencies are experienced with World Bank and similar projects from other donors. The capacity of the agencies to improve the quality of water supply services has steadily improved with experience and with the strengthening of various management systems. Commitment to the project is strong and coordination with other development partners – investing in the sector is good. The project design follows a series of studies – Master Plan, Study of Alternatives, Technical Design, Environmental and Social Impact Assessment, and RAP. Most contracts will be procured on a prior-review basis. There is a low risk that the flow from rivers leading into Corumana dam may drop, affecting the water available in the second phase of the program. Existing cross-border arrangements and the implementation of the NWRDP should mitigate this risk.

43. Two key risks – both rated as Moderate – have been identified with respect to the proposed project. The first is uncertainty regarding the operator of the Maputo water system after 2014, when the present lease contract expires. At that time, the existing lease may be extended or different arrangements undertaken. The second is the availability of funding for the second phase investment in water treatment capacity and tertiary networks and household connections.

44. Regarding the risk related to the operator, the Maputo water system had been operated since 1999 under a 15-year contract by AdeM, originally a joint venture between *Águas de Portugal* and Saur International, a French water utility, which left the joint venture in 2002. For a variety of reasons, necessary investments and repairs to the water supply system were not made as expected, operating revenues were lower than projected. After the Periodic Review of the contract in 2009, the relationship between AdeM and FIPAG rapidly deteriorated. In late 2010, with support from IFC to negotiate the terms and conditions, FIPAG acquired the shares of *Águas de Portugal* in AdeM, taking on the responsibility for outstanding debt accrued by AdeM. FIPAG became the majority shareholder of AdeM, owning 73 percent of the shares of the company. The company was re-established as *Águas da Região de Maputo* (also AdeM); it operates under commercial principles, governed by Mozambican law, company statutes, and internal regulations. AdeM will continue to fulfill all the conditions of the original lease contract

with FIPAG until November 30, 2014. The Government's longer-term intention is for the company to partner again with a private-sector operator in order to bring in additional expertise, improve client services, improve water supply, and reduce water losses. FIPAG is currently working with the IFC to sign a new transaction advisor "Mandate" to identify and sign a contract with a private-sector operator.

45. Regarding the risk related to the financing for the second phase, as detailed in Annex 2 (Detailed Project Description), the proposed project finances a 60,000 m³/day water treatment plant, using raw water from the Corumana dam, for water supply in the Greater Maputo Area. However, additional water will be needed in Maputo, most likely within the next ten years, and a large part of the associated investment costs will come from the infrastructure costs of the conveyance system (i.e., the excavation costs to lay the pipeline to Maputo). These costs can be significantly reduced by taking advantage of the efficiencies of scale of laying a single pipeline at the outset, rather than laying a second pipeline when additional treated water is made available. Toward that end, the project will finance the laying of pipeline sufficient to transport 120,000 m³/day of water, rather than pipeline capable only of transporting 60,000 m³/day. This has the added advantage of reducing pumping costs in the period prior to the construction of the second 60,000m³/day treatment capacity.

46. This strategy of reducing both total and up-front costs by front-loading pipeline construction, while postponing construction of half of the water treatment capacity, poses the second moderate risk to the project: financing for the expansion of water treatment capacity is not yet confirmed. The estimated cost at appraisal of the water treatment expansion is about US\$39.5 million, while tertiary networks and household connections to deliver water to an additional 100,000 households are budgeted at US\$30 million, plus an estimated US\$3.2 million for the engineering/supervision services for the expansion works. Such investments would double the delivery of water enabled by the initial project, at 30 percent of the cost of the first phase. The anticipated investment is likely to be needed within ten (10) years, and therefore too far out to arrange for concessional (or commercial) financing at this time. However, given the continuous engagement of international partners and the Bank, the likely economic, social, and financial returns on the investment, and the demonstrated demand and need for treated water in the GMA, the possibility of not being able to access financing for the expansion is considered moderate.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

47. *Economic Analysis.* A cost-benefit analysis was undertaken to assess whether the project is economically justifiable. A full description of the analysis is provided in Annex 6. Benefits were measured as (i) revenues generated by the project, using the current tariff schedule and current consumption patterns, and (ii) consumer surplus, defined as the difference between the maximum price a consumer is willing to pay and the actual price they pay. In the case of households depending on neighbors' taps and standpipes, the consumer surplus is significant, as households depending on these types of alternative supplies are confronted with high costs per cubic meter for water supplied, and with significant time costs to haul the water to the home. Project costs include initial investment costs as well as ongoing operations and maintenance

costs related to the expansion of water supply – staffing, electricity and chemicals, maintenance costs – and necessary replacement costs over the evaluation period.

48. The analysis calculated the net benefit of the project – the difference between the incremental benefits and the incremental costs of the “with-project” scenario and the “without-project” scenario over a 40-year lifetime of the project. Costs and benefits were expressed in constant prices as of 2012¹¹. The discount rate corresponded to the opportunity cost of capital, estimated to be 10 percent, as used in other projects in Mozambique.

49. The analysis indicates that the project should have substantial positive economic returns: at the discount rate of 10 percent, the net economic benefits are calculated to be US\$69 million. The internal rate of return was calculated to be 20 percent.

Table 2: Results of Economic Analysis

<i>Result</i>	<i>Investment Activity</i>	<i>Net Present Value (US\$ million)</i>			<i>Internal Rate of Return (%)</i>
		<i>Benefits</i>	<i>Costs</i>	<i>Net Benefits</i>	
<i>Expansion of Water Supply</i>	Investment in Expansion of Production, Treatment and Distribution	218	149	69	20%

50. Sensitivity analyses indicate that these results are robust, with positive returns generated even when investment costs increase, operation and maintenance costs increase, and consumer benefits decrease. Investment costs can increase as much as 55 percent and the project will still generate positive economic benefits. Furthermore, operating costs could increase by 200 percent and the project would still be financially viable. Connection uptake is a moderate risk factor. If the connection uptake rate is only 55 percent of the original estimates, the project will switch to economically unviable rates. Delays in connection uptake are less serious. Only if connections are delayed by four years or more does the project become unviable. Changes in the opportunity cost of labor can have a significant effect on the viability. If the opportunity costs drop to zero, the project will still be able to generate economically viable solutions, mainly because the cost of alternative supplies is high – even without the additional effort to transport this water to the residence.

Table 3: Sensitivity Analysis Results

Variable	Switch Values
Investment Cost Overrun	57%
Operation and Maintenance Cost Overrun	200%
Delays in the Uptake of Connections	< 4 years
Reductions in the Uptake of Connections	55%
Opportunity Cost of Labor (US\$ per day)	0

¹¹ The exchange rate used was US\$1 equivalent to MZM 28.

51. **Financial Analysis.** A separate financial analysis of the project was undertaken to determine the financial impact of the project investments on the implementing agency (FIPAG), which bears the costs of the investments. The analysis was based on all capital investment costs, all estimated operating and maintenance costs over the project period, and revenues generated by the investments. Two investment scenarios were evaluated. The first scenario analyzed the returns to the investments envisaged only under this proposed project – i.e., which will result in an ability to treat and deliver 60,000 m³ of water per day, although several investment components will be sized for a capacity of 120,000 m³/day. The second scenario analyzes the returns associated with this project, as well as with the likely future investments (whose financing has not yet been identified) that will enable the treatment and delivery of 120,000 m³ of water per day.

52. The Net Present Value (NPV) of total investments, operating expenditures, and revenues were calculated over a 30-year time horizon for Scenario 1, and a 40-year time horizon for Scenario 2 (due to the later investment period for the second phase investments) based on a 10 percent discount rate. The internal rate of return (IRR) was also calculated.

53. The analysis indicates that both Scenario 1 and 2 provide sufficient rates of return to cover the cost of financing – an IRR of 7.5 percent and 8.1 percent, respectively, which are well above the cost of IDA concessional financing. However, at a discount rate of 10 percent, both scenarios show negative NPVs, US\$20 million and US\$19.8 million, respectively. As these analyses exclude the evaluation of consumer surplus that was included in the above economic analyses, the lower rate of return than the economic analysis indicates that more than half of the project benefits accrue to water consumers in the Greater Maputo Area.

54. A simple cash flow analysis was undertaken to determine whether project-generated revenues were sufficient to cover debt service requirements. In both scenarios, operational revenues generated from project investments are sufficient to cover debt service (equal to, or greater than 1) during all years of the project.

Table 4: Debt Service Coverage Ratio

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>14</i>	<i>15</i>
Scenario 1	62	43	15.3	10.9	8.2	1.0	1.3	1.3	1.3	1.4	1.3	1.3	1.3	1.3	1.3
Scenario 2	62	43	15.3	10.9	8.2	1.0	1.3	1.4	1.3	1.2	1.2	1.2	1.8	1.8	1.8

B. Technical

55. A detailed combined feasibility and design study was undertaken to review alternative sites for the intake and water treatment plant, capacities, and designs for the abstraction, treatment, and conveyance of additional water to Maputo. Final design decisions were made based on, among other factors, topography, energy use, expected growth in demand, social and environmental impacts, and financial and economic concerns. The feasibility study confirms the following key design decisions:

56. **Source of raw water:** A previous hydrological study confirmed the availability from the Corumana dam of the envisaged maximum design flow (120,000 m³/day), taking into account other planned demands, particularly for irrigation use.

57. **Anticipated demand:** A previous water balance study projected water demand and confirmed that existing treated water from the Umbeluzi River will be fully utilized by 2015. Under a base demand scenario, the production capacity of 60,000 m³/day from the project would be fully utilized by 2024, while production of 120,000 m³/day would be fully utilized by 2030. Under a high-demand scenario, the production capacity of 60,000 m³/day would be fully utilized by 2020, while the production of 120,000 m³/day would be fully utilized by 2024. Even with successful implementation of AdeM's program to reduce UFW, which may reduce UFW by 10 percentage points over the next five years, these projections remain valid. More recent use data and investments under construction and financed by the People's Republic of China in expanding the urban transportation network of GMA – the north Maputo ring road – indicate that the high-demand scenario is more likely.

58. As discussed previously, approximately 152,000 households, or about 850,000 people, do not have access to formal water systems. In addition, the population of the GMA increases by nearly 2.7 percent per year. At current consumption levels of 80-88 liters/person/day (for households served by yard taps), serving all of them would require production of about 130,000 m³/day, given the current loss rates of the system. In recent years, AdeM has been able to install new connections at an average rate of approximately 20,000 connections per year, although as many as 36,000 in 2012; effectively, new connections are constrained not by demand, but by the speed in which AdeM can make connections and the availability of water.

59. **Intake site:** The feasibility study analyzed two alternatives for the raw water intake: (i) existing intake works at the Corumana Dam; and (ii) construction of a new weir, downstream of the dam on the Incomati River. The study confirmed that, while the two options have similar investment costs, the Incomati weir option would have significant environmental impacts, considerably higher risks with respect to flooding and silting, and higher operational costs. In addition, the site of the proposed Incomati weir option lies on a wide flood plain, and there are consequently much higher engineering risks associated with this alternative.

60. **Connection to the Existing Water Distribution System:** The feasibility study reviewed the existing distribution system, determining that (i) additional water was most needed at the Machava distribution reservoir, and (ii) transmission to and from the Machava reservoir minimized operational costs relative to other distribution centers. Furthermore, there is considerable water distribution infrastructure in the vicinity of the Machava distribution reservoir that can be extended to additional un-served properties. The Machava distribution reservoir site includes available land already owned by FIPAG, which will enable the future construction of additional storage and pumping facilities without major social or environmental impacts. Machava, like the rest of GMA, is currently supplied with water from the Umbeluzi treatment works; when water becomes available from Corumana, the water currently supplied from Umbeluzi will be made available for distribution elsewhere into the GMA.

61. **Location of the water treatment works and pipeline route:** The feasibility study conducted an in-depth review of three possible locations for the water treatment works and, where applicable, whether pumping to the Machava distribution reservoir should be in one or two stages. A financial analysis narrowed the options down to two. A subsequent multi-criteria evaluation led to the recommendation to place the water treatment works at Sabie village, which would allow treated water offtakes to be built into the transmission pipeline to serve nearby communities with minimum pumping capacity necessary.

62. **Phasing of construction of water treatment works:** The decision to phase the construction of the water treatment works was made in order to (i) better match the availability of new distribution infrastructure with the installation of new connections, and (ii) implement the leakage control program financed by AFD, so as to reduce losses and further increase the available water prior to full availability of new treated water. Given some uncertainties related to future demand and the timing of the effects of the leakage control program, the preferred capacity of the water treatment works financed under the project is 60,000 m³/day, but with flexibility in commissioning a second phase reasonably quickly.

63. Financial considerations also influenced the decision to limit the initial investment to 60,000 m³/day. Building the water treatment plant at full capacity of 120,000 m³/day would impose considerable cash flow pressures on FIPAG due to the need to begin paying off financing for a larger investment well before sufficient connections can be made, which would bring in revenue from the newly available water. FIPAG/AdeM's capacity to install household connections is estimated to be about 20,000 connection/year, on average, meaning they would not be able to begin to take full advantage of the increased water production capacity until at least five or six years into the program.

64. **Water treatment technology:** The proposed technology for the water treatment works will be conventional, incorporating pre-oxidation by ozone, coagulation, flocculation, sedimentation, filtration and disinfection. The chemicals employed in the process will be lime (or sodium bicarbonate for pH correction), aluminum sulfate and polymer for coagulation, and chlorine for disinfection. Sludge from the process will be dried on site and disposed of safely. The planned treatment technology is used widely in Mozambique, and engineers are familiar with the operations of the water treatment process.

C. Financial Management

65. A Financial Management Assessment was carried out in accordance with the Financial Management Manual for World Bank-Financed Investment Operations issued by the Financial Management Sector Board on March 1, 2010. The objective of the assessment was to determine whether the implementing agencies, FIPAG and CRA, continue to maintain acceptable financial management arrangements that will ensure that (i) funds are used only for the intended purposes in an efficient and economical way, (ii) accurate, reliable and timely periodic financial reports are prepared, and (iii) agency assets are safeguarded.

66. The overall conclusion of the Financial Management Assessment is that the project's financial management arrangements satisfy IDA's minimum requirements under OP/BP 10.00. The project financial management arrangements have an overall residual risk rating of **Moderate**.

67. The latest financial management supervision mission of the ongoing WASIS project rated the performance of the project implementing agencies as **satisfactory**. Both implementing agencies submitted acceptable project and entity audit reports for the fiscal year ended 31 December 2011. The auditors expressed unqualified opinions on the project financial statements of CRA and FIPAG. No major financial management issues were raised in the project audit reports and management letters. The auditors also expressed an unqualified opinion on the CRA

continuing entity audit report. However, they expressed a qualified opinion on the FIPAG consolidated financial statements because they: (i) noted shortcomings of the billing module of the accounting software package used by FIPAG in the cities, which resulted in errors in the calculation of output VAT and sales summary statements; and (ii) were unable to take part in the stock-taking and validate inventory balances of some FIPAG cities, as auditors were appointed too late to do so. The two issues mentioned above do not jeopardize the preparation of financial reports or to effectively manage and monitor project implementation by this entity, and FIPAG prepared an action plan to address the audit findings and management letter. This includes (i) engaging with the supplier of the accounting software to provide the required technical assistance with the billing modulo and (ii) ensuring that the auditors attend the stock-taking based on their audit plan.

D. Procurement

68. Procurement for the proposed operation will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-consulting Services under International Bank for Reconstruction and Development (IBRD) Loans and IDA Credits and Grants by World Bank Borrowers" published by the World Bank in January 2011 ("Procurement Guidelines"), in the case of goods, works and non-consulting services; and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" published by the World Bank in January 2011 ("Consultant Guidelines") in the case of consultants' services, and the provisions stipulated in the Financing Agreement. Further, the "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006, and revised in January 2011 will apply. The proposed procurement activities for the project will be managed by FIPAG for Components A, B, and C and by CRA for Component D. Both FIPAG and CRA are currently managing their respective components under the Bank-financed WASIS Project. These two institutions also have recent experience with other donors, including the European Investment Bank (EIB), AFD, the Australian Agency for International Development (AusAid), the Government of the Netherlands, and AfDB. The capacity of both FIPAG and CRA was reviewed during preparation and found to be adequate for managing the procurement activities for the project in their respective components, as both are staffed with qualified and experienced personnel. Nevertheless, the assessment also highlights the risk of the two high-value contracts – for the pipeline and the water treatment works – and the need for FIPAG to secure highly specialized technical assistance for the procurement of these contracts.

69. The procurement risk associated with the project is rated as **Moderate**, provided that FIPAG can effectively manage the risks associated with high-value contracts.

70. The procurement plan for the project has been prepared by FIPAG and CRA during Project Appraisal. It will be updated at least annually (or as required) to reflect project implementation needs.

E. Social and Environmental (including Safeguards)

71. The project is classified as Category A. The set of investments for the project, including the new water treatment plant, construction and routing of the new transmission pipeline and location of the connection to the existing water distribution system have been deemed likely to

generate significant, irreversible environmental and social impacts, though the project includes several mitigation measures to minimize impacts. Extensive feasibility studies have already been conducted to examine alternative water supply options for Maputo. The preferred source of water supply is from the completed Corumana Dam on the Sabie River. Completion of the Corumana Dam, which began operations in 1989, requires installing spillway gates for which the dam was originally designed and constructed, as well as some other minor works. As part of the design of the Water Resources Development Project (WRDP, P107350), a number of safeguards compliance instruments were prepared and cleared by the Bank. This work also included compliance with the Dam Safety policy (OP/ BP 4.37) by establishing a Dam Safety Panel to provide advice on safety and other critical issues regarding the dam, its appurtenant structures, the catchment area, the area surrounding the reservoir, and downstream areas. The WRDP has been effective since January 31, 2012 and its objective is “to strengthen the development and management of national water resources and increase the yield of the Corumana Dam to augment water supply for the greater Maputo metropolitan area.” This objective is complementary to the GMWSP. As such, safeguards-related work undertaken for the WRDP is relevant and applicable to the GMWSP. Nevertheless, with specific regard to compliance with the Dam Safety Policy, the Recipient will be required to extend the tenure of the Dam Safety Panel of Experts instituted under WRDP to align it with the implementation period of this project. As agreed under WRDP, the Panel will conduct at least two visits per year until six months after the date of impoundment of the Corumana Dam. The Recipient will ensure that the Association is provided with a copy of each report and all technical documents prepared by the Panel. In line with OP/BP 7.50, *Projects on International Waterways*, notification of other riparians was undertaken in the context of the WRDP. As was noted during the design of the WRDP, cooperation among the riparians is governed by the “Tripartite Interim Agreement for Cooperation on the Protection and Sustainable Utilization of the Incomati and Maputo Watercourses (IIMA)” signed by Mozambique, South Africa and Swaziland in August 2002. The notifications to South Africa and Swaziland were undertaken within the cooperative framework of the IIMA and the SADC Protocol on Shared Watercourses. The notifications specifically contemplated completion of the Corumana Dam and the associated infrastructure, including the water treatment works, conveyance system and measures to address distribution and water demand management in Maputo and the metropolitan area. Given the comprehensive scope of the activities described for purposes of the notification, an additional round of notifications is unnecessary for the GMWSP.

72. An Environmental and Social Impact Assessment (ESIA) and a RAP for the GMWSP have been prepared by qualified and experienced consultants. Key project aspects examined as part of the ESIA were (i) the location of the abstraction point and water treatment plant, and (ii) alternative routes for the main water transmission line linking with the existing distribution system in the GMA. The proposed investments under the GMWSP do not overlap with sensitive environmental areas or resources, nor do they cross densely populated areas, with the exceptions and mitigation measures noted below.

73. As the locations for the water treatment plant and main water transmission line have been chosen, a RAP has been prepared. The RAP covers the raw water trunk line between the Corumana Dam and the water treatment plant, the area required for construction of the water treatment plant, and the treated water transmission line leading from the water treatment plant to the existing Machava Water Distribution Center.

74. The site chosen for the water treatment plant is a vacant area consisting of scrub brush and grasses. The site chosen, approximately 10 kilometers from the dam, presents an opportunity to provide treated water to a greater number of communities along the main transmission line. At various points, off-take tees with valves will be installed so that the Government of Mozambique can develop rural water supply systems in nearby communities at a future point in time.

75. Most of the landscape between the Corumana Dam and the urbanized area north of Maputo is sparsely occupied brush or open savannah with scattered farm plots (*machamba*). It needs to be noted that the transmission line will cross the Incomati River, which has a wetlands-like environment during low river levels and can therefore be considered more sensitive. However, given that the pipe would be fully buried and the natural land reinstated, and given the temporary nature of the wetlands conditions, the impact of the transmission line is considered to be minimal and temporary, and the area would easily recover to pre-project conditions.

76. The raw water trunk line will travel along a road right-of-way which does not have any encroachment along the route. The selected final route has been chosen in part based on minimizing impacts on communities and required land acquisition. To this end, a major portion of the treated water transmission line will follow along road rights-of-way, electric line rights-of-way, and a railroad right-of-way. However, the transmission line will pass near the communities of Moamba and Sabie. In an effort to reduce negative impacts and land acquisition, engineers have selected a route that would pass along the outer edges of each community rather than follow the road right-of-way, which has been encroached upon.

77. As the transmission line approaches the existing Machava Distribution Center, population density dramatically increases, as this becomes a peri-urban area of Greater Maputo. As a result, land acquisition, impact on assets, and impact on economic livelihoods becomes unavoidable. The most affected area involves a short distance of small kiosks that have been established along the road, between existing electricity poles. These businesses may need to be relocated to a site set further back from their current location, away from the electric poles and out of the right-of-way. Alternatively, the pipeline will be laid at the center of the roadway, rather than along the side.

78. As a part of the RAP, these businesses will be assisted with relocation and compensated for any lost income during the transition. The area identified for possible relocation is near to their current site and therefore the customer base will be maintained. No civil works will impact affected persons until proper compensation has been provided.

79. Adequate staffing capacity and procedures exist within FIPAG to manage the environmental and social risks of the GMWSP. A strong record of experience exists with respect to the safeguard standards of the World Bank and other international and bilateral donors, as well as host-country environmental regulations. An ESIA and a RAP were prepared for the GMWSP by qualified and experienced consultants. FIPAG has already prepared an ESMF and developed and implemented EMPs for construction of pipelines and distribution lines and construction and operation of water treatment plants, and these will be of use in the GMWSP as well. FIPAG has experience with implementation of RAPs, and should have no difficulty in overseeing their preparation and implementation. (See Annex 3).

Annex 1: Results Framework and Monitoring
Greater Maputo Water Supply Expansion Project

Project Development Objective (PDO):													
To increase access to clean water for residents in the Greater Maputo Area.													
PDO-Level Results Indicators	Core	Unit of Measure	Baseline	Cumulative Target Values*						Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
				YR 1	YR 2	YR 3	YR 4	YR 5	YR 6				
Direct project beneficiaries (number), of which female (percent)	<input checked="" type="checkbox"/>	Number % female	0 ¹² 50%	0	112,000 50%	224,000 50%	336,000 50%	448,000 50%	560,000 50%	Semi-annually	Reports	AdeM/ FIPAG	
People in urban areas provided with access to “Improved Water Sources” under the project (number)	<input checked="" type="checkbox"/>	Number	0	0	112,000	224,000	336,000	448,000	560,000	Semi-annually	Reports	AdeM/ FIPAG	
Increased capacity of the water system		Number (m ³ /day)	0	0	0	0	0	0	60,000	Final Construction Report	Reports	FIPAG	
INTERMEDIATE RESULTS													
Intermediate Result (Component A): Investments in Water Supply													
Installation of conveyance pipelines from Corumana Dam to Maputo		Number (km)	0	Pre-qualification completed	Contract approved by Government	Pipes contracted	20	60	93	Semi-annually	Reports	FIPAG	
Installation of water treatment plant with 60,000 m ³ /day capacity		Percent of plant completed	0	0	Pre-qualification completed	Contract approved by Government	20	50	100	Semi-annually	Reports	FIPAG	

¹² Estimate of the number of people served by the project is based on the number of new connections planned each year multiplied by the average household size (5.6). Note that, as of year end 2012, there are approximately 181,800 connections served by FIPAG, for a total population served by FIPAG of 1,018,000.

Project Development Objective (PDO):													
To increase access to clean water for residents in the Greater Maputo Area.													
PDO-Level Results Indicators	Core	Unit of Measure	Baseline	Cumulative Target Values*						Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
				YR 1	YR 2	YR 3	YR 4	YR 5	YR 6				
Intermediate Result (Component B): Connections to water Supply System for Peri-urban areas and Rehabilitation of Water Distribution Network													
New piped household water connections resulting from the project intervention	<input checked="" type="checkbox"/>	Number	0	0	20,000	40,000	60,000	80,000	100,000	Semi-annually	Reports	AdeM/ FIPAG	
Kilometers of water supply network laid under the project and operational (cumulative)		Number (km)	0	0	0	50	100	200	300	Semi-annually	Reports	FIPAG	
Intermediate Result (Component C): Technical Assistance to FIPAG													
Water utilities supported by the project (number)	<input checked="" type="checkbox"/>	Unit	1	1	1	1	1	1	1	Semi-annually	Reports	FIPAG	
Supervision of implementation of EMPs and RAPs				Shortlists and RFPs completed	Contract approved by Government	First payment made	1 ongoing contract	1 ongoing contract	1 ongoing contract	Semi-annually	Reports	FIPAG	
Supervision of works				Shortlists and RFPs completed	Contracts approved by Government	First payments made	2 ongoing contracts	2 ongoing contracts	2 ongoing contracts	Semi-annually	Reports	FIPAG	

Annex 2: Detailed Project Description

Greater Maputo Water Supply Expansion Project

Project Background

1. Urban water supply in Mozambique has improved dramatically over the last ten years. The Government began to undertake serious water policy reforms in 1998, when it first set out its policy of a delegated management framework. Under the policy, water supply assets remain the property of the government, to be managed by a state-owned asset holding company, while water supply systems are operated under contract by independent providers operating on a commercial basis. Under the first phase of these reforms, the Government established an asset holding company – FIPAG – for the water supply assets of large urban areas, and established an independent water regulatory council, the CRA.

2. The Government recently updated the water supply policy and strategy with the National Urban Water Supply and Sanitation Strategy (2011 – 2025), which was approved by the Council of Ministers in November, 2011. The strategy reaffirms the delegated management framework, while promoting commercial sustainability in the operational regions of FIPAG, local private sector involvement in water supply, and capacity building. Towards those objectives, the policy supports the grouping of water supply assets in secondary and tertiary cities into operational regions, with operations on a commercial basis, and gradually transforming operators into public-private companies. The policy encompasses the professionalization of operations in the secondary systems and support to local operators through technical and financial assistance. Finally, the policy envisions service coverage of 80 percent of the population by 2025.

3. The institutions and reforms outlined above have contributed to service expansion and improvements in the four secondary cities and, more recently, in the nine tertiary cities, where the number of hours of service and population served have increased, and UFW has decreased. For example, between 2000 and 2012, connections in the secondary city of Beira grew from less than 11,000 to nearly 47,000, a 427 percent increase. Connections in Nampula increased from 6,300 to nearly 27,000, a similar increase. Between 2010 and 2011, UFW in Beira and Nampula have decreased from highs of 60 and 44 percent to 32 and 29 percent, respectively, and hours of supply increased from less than 10 hours per day to between 21 and 24 hours per day.

4. The picture is more problematic in Mozambique's largest urban area – Greater Maputo – which suffers from decades of neglected maintenance and inadequate investment. The water system, in particular, will continue to face significant challenges in meeting the needs of the greater metropolitan area, which now has numerous commercial and industrial customers, and a population of more than 2 million people, growing at a rate of 2.7 percent per year. Investments in the original system and expansion to peri-urban areas, in particular since 2010, have resulted in a significant increase in service coverage. Active connections have increased from 98,000 in 2010 to 173,000 in 2012, a 75 percent increase, and the system now serves over 1 million people. In addition to investments in the system operated by AdeM, FIPAG has invested in core infrastructure for small, privately operated systems in GMA. These systems use water from wells and serve 59,000 connections. The present gap of households not served by either AdeM or the

small providers is estimated to be about 152,000 households. The table below summarizes core operational information for the system operated by AdeM for the previous several years.

Table 2.1: Core Operational Information, AdeM, 2008 - 2012

	2008	2009	2010	2011	2012
Water Produced annually (m3)	55,719,346	56,869,290	56,575,230	63,264,596	73,110,000
Average Daily Production (m3)	152,656	155,806	155,001	173,328	200,301
Water Billed annually (m3)	29,456,366*	30,864,887*	27,934,413	30,491,000	37,000,000
UFW	47%*	46%*	51%	52%	49%
Active Customers	93,086	95,106	98,819	138,580	172,913
Active Domestic Customers	87,222	89,224	92,925	131,749	165,237
Population Served (% of estimated population of Maputo of 2 million)	24%	25%	26%	37%	46%
Hours of daily service				9	15

* Note that, because of the structure of the tariff prior to 2010, water billed for low-consuming customers was generally higher than actual delivery. Records of water delivery for that period are not available, and therefore figures for water billed overstate water delivery, and figures for UFW are understated. FIPAG staff estimate an underestimate of UFW of approximately 3-5 percent.

5. As observed in the information above, the focus of FIPAG and AdeM over the last several years has been on filling the gap in service by increasing household connections and production capacity. As a result, connections have rapidly increased, with over 30,000 new domestic connections per year in 2011 and 2012. However, production capacity has not improved to the same degree, and the increase in connections has therefore come at a cost of a reduction in hours supplied, from 14 hours a day in 2005 to only 9 hours a day in 2011; supply in some areas had been limited to only 5 hours per day. These stresses on the system have, however, been alleviated by the expansion of treatment capacity and rehabilitation works on the treatment plant in 2012, described below in paragraph 8, and the number of service hours per day has improved to 15.

6. The table below provides some information with respect to AdeM's financial performance, although due to changes in management and financial management practices over the years, information is not necessarily comparable from year to year. That said, financial results show gradual improvement, with operating revenues increasing with the addition of new customers, while operating expenses have held relatively constant. As current consumption is constrained by supply, the ability to treat and deliver additional water is expected to further improve performance.

Table 2.2: AdeM Core Financial Information, 2008 – 2011
Meticals ‘000, except where noted

	2008	2009	2010	2011
Operating Revenues	479,559	526,832	634,768	644,198
Operating Expenses	501,183	491,544	483,298	514,873
Operating Profit (Loss), before depreciation	-12,549	49,030	151,470	129,325
Operating Profit per m3 sold	-0.43	1.59	5.42	4.24
Depreciation	9,074	13,742	17,037	34,832
Operating Profit (Loss), after depreciation	-21,623	35,289	134,433	94,493
Provisions for Doubtful Debt	n/a	n/a	109,806	98,634
Net Interest Expense	40,091	29,094	48,826	(4,961)
Net Profit (Loss)	n/a	n/a	(24,199)	820
Collection Ratio	85%	81%	81%	91%

Note: Figures for 2012 not yet audited

7. Water for the formal (FIPAG/AdeM) water supply system comes from a single source, the Umbeluzi River, 25 kilometers south of Maputo. The sole water treatment plant serving Maputo is located on the riverbank at the same location. The river and the treatment plant are subject to the variable climatic conditions of the southern coast of Mozambique, in particular, to periodic tropical cyclones during the summer months. The intake and treatment plant are regularly flooded, sometimes resulting in a breakdown of the systems and lack of access to the plant. In 2000, devastating flooding throughout southern Mozambique resulted in a complete closure of the plant for one day, damage to the pumps, and limited site access for 14 days thereafter. In 2006, severe damage to the treatment plant was caused by flooding, and the water treatment works could not be accessed for five days, and the pumps were again damaged and had to be replaced a second time. In addition, periodic drought affects the southern region, causing saltwater intrusions into the river. While these have not yet affected the quality of water entering the Umbeluzi works, they may affect water quality in the future. Diversification of water sources, as well as an increase in total water supplied, is therefore a key priority of FIPAG to reduce the risks to water supply caused by weather variations that are increasingly affected by global climate change.

8. International donors and agencies have supported the Mozambican water sector over the last two decades and are actively working with FIPAG to expand and improve piped delivery of water. Recently, the EIB, the EC, AFD, and the ORET program of the Government of the Netherlands provided financing to rehabilitate and expand the water treatment works and intake at the Umbeluzi River, the main source of raw water for the GMA, as well as the expansion to new areas of GMA. The AfDB is currently financing improvements and expansions in two secondary cities. AFD is also providing financing for the additional rehabilitation of existing water supply and network assets in GMA. This GMWSP has been prepared in coordination with investments by the above-mentioned donors, with proposed project activities either complementing ongoing investments or serving as a pre-requisite to the successful implementation of other donors' planned investments. This applies, in particular, to the Netherlands' ORIO starting in April, 2013, which will finance parallel investments of Euro 23 million in water network expansions, the AFD's commitment of Euro 40 million for

complementary investments beginning in 2015, and the AfDB's commitment to support the project. These investments are dependent upon the availability of water in the northern area of Maputo to be provided under the proposed project.

9. The Umbeluzi water treatment rehabilitation and expansion works were commissioned in 2012, improving distribution capacity to supply about 15 hours per day to the 173,000 connections served by AdeM. AdeM currently produces about 204,000 cubic meters (m³) per day; AdeM estimates that nearly half that amount is lost – half to leakage and half to commercial losses. As the network continues to be repaired, AdeM estimates that non-revenue water will be reduced to around 35 percent by 2018-2019 (a reduction of 15 percentage points). As these repairs and new connections are made, the Umbeluzi treatment works will be able to operate at its full capacity and full river abstraction license quantity of 240,000 m³/day in 2015-2016. That level of production is expected to be fully absorbed by demand from existing connections and additional connections expected to be made between 2012 and 2015, at which time additional supply will be needed. Demand is expected to continue to grow, due to population increases, to an estimated 560,000 m³/day by 2035.¹³

10. Given the concentration of the country's population in Maputo, its ongoing expansion, the city's contribution to overall economic growth, and the demands on existing water supplies, ensuring the long-term supply of water to the Maputo area is a priority. FIPAG and AdeM are investing in measures to identify and reduce the sources of UFW with the assistance of AFD and Vitens, a Dutch water utility. Such measures include:

- Implementation of an asset database and hydraulic model of the system, including installation of GIS, which records all burst pipes;
- Development of an asset maintenance plan, including identification of defective sections of the network and prioritization of network replacement and rehabilitation;
- Establishment of an active leakage control program, including decentralization of repair teams, in order to reduce response times and provide a focus on specific sections of the network;
- Reduction of commercial losses through:
 - Correcting illegal connections;
 - Installing meters on un-metered connections;
 - Calibration of meters; and
 - Repair and re-installation of meters
- Staff training and establishment of leakage control procedures, as a step towards promoting a culture of leakage reporting, location, and repair;
- Installation of underground leak detection equipment, and leakage control equipment, including bulk meters, meters and valves in the supply zones, under the establishment of district metering zones and areas.

11. However, this is a complex and time-consuming process, and even if it could result in a halving of water losses in a short period of time, demand would still outstrip available water. At present, physical water losses are approximately 25 percent of production, or 50,000 m³ per day; successful implementation of steps to halve losses would result in the availability of an

¹³ *Master Plan for the Greater Maputo Water Supply System*, C. Lotti/SIM Spa., April, 2011.

additional 25,000 m³ per day. Assuming an additional 20,000 new connections per year, and daily demand from those new connections of 8,800 m³ per day, within nearly three years all recovered water would be fully in use. As it is, even diligent efforts against both technical and commercial losses are estimated to bring total losses down only to 35 percent by 2018-2019. The measures to reduce losses therefore need to be complemented by investments in new water sources and treatment.

12. The Master Plan for the Greater Maputo Water Supply System, completed in April 2011, identified the Corumana Dam as the first choice for augmentation of water supply for Maputo.¹⁴ A memorandum of agreement between the regional water authority – the ARA-Sul – and FIPAG was signed in early 2011, guaranteeing the near-term supply of 60,000 m³/day of raw water from the Corumana Dam. This amount is to be increased to 120,000 m³/day in 2015. The dam – located approximately 93 kilometers northwest of Maputo – currently has a designed storage volume of 1,240 Mm³, but has been operating below the designed full supply level due to incomplete installation of spillway gates. A separate World Bank-financed project – the SDR 43.8 million (US\$70 million equivalent) National Water Resources Development Project (NWRDP), approved by the Board of Executive Directors on September 15, 2011, includes financing for the completion of the spillway gates and raising of the maximum operational water level to the original design criteria. This will allow for the full abstraction of 120,000 m³/day for treatment and domestic use.

Proposed Project

13. ***Project Development Objective:*** The PDO is to increase access to clean water for residents in the Greater Maputo Area. In addition, the project will support the expansion of water supply services to unserved peri-urban areas by financing distribution networks and household connections, increasing total connections in GMA by 55 percent. This will enable the operator to expand the customer and revenue bases, enhancing the financial sustainability of the Maputo water supply system. The additional water supplied to the GMA from the proposed project will be used primarily to provide water coverage to currently unserved and underserved areas, mostly low-income, peri-urban areas.

14. ***Component A: Investment in Water Supply Network System (US\$133 million).*** This component includes goods and civil works to construct the abstraction point for 120,000 m³/day of raw water from the Corumana Dam, piping to transmit 120,000 m³/day raw water from the abstraction point to the water treatment plant, a water treatment plant with a treatment capacity of 60,000 m³/day, and approximately 93 kilometers of transmission pipeline, with a transmission capacity of 120,000 m³/day, distribution reservoirs, pump stations, and ancillary work. These investments will enable the abstraction, treatment, and transport of water to existing water supply distribution reservoirs at the Maputo water supply network's northwestern point.

15. The water available at Corumana Dam for domestic consumption in Maputo is 60,000 m³/day, but will yield an additional 60,000 m³/day when the reservoir level has been raised under a separate, on-going IDA financed project. Component A of the project has therefore been designed to abstract and treat 60,000 m³/day of water from Corumana dam, while the pipeline

¹⁴ *Ibid.*

infrastructure has been designed to provide a flow capacity for 120,000 m³/day. This will allow the infrastructure to take advantage of the additional water available from Corumana dam once the reservoir level is raised. The early construction of pipeline adequate for the full production capacity of the infrastructure will obviate the need for costly duplication of 93 kilometers of pipeline when the additional water becomes available.

16. The principal outputs of Component A are provided below, with additional information following.

- Abstraction point at Corumana Dam: The dam supplies water to a 16 MW hydropower station on the downstream embankment. During construction of the dam, a 1800mm-diameter pipe branch was constructed, crossing under the dam spillway, for potential irrigation use but never commissioned. The project will connect to this branch.
- Pumping Station 1: Raw water pumping station, including power supply, transformers and switchgear with all pipe work and control equipment and security fencing. Capacity 60,000m³/day.
- Water pipeline from Corumana to Machava: The pipeline includes connections between the abstraction branch, Pumping Station 1, the water treatment plant, Pumping Station 2, the control tank, and the Machava distribution center. Pipeline diameters range from 1200mm to 800mm. The ultimate design capacity is 120,000 m³/day, including all accessories (valves, air valves, washouts, control meter) and all support structures.
- Water treatment plant: Design capacity of 60,000 m³/day. Includes power supply, transformers, switchgear, mechanical and electrical plant, a treated water reservoir, sludge drying facilities, storage and additional facilities, and security fencing around the site.
- Pumping Station 2: Treated water pumping station on site of the Water Treatment Plant including switchgear, pipe-work and control equipment. Capacity 60,000 m³/day.
- Control tank: Pressure control tank along the main pipeline with a nominal capacity 5,000 m³, including all electrical and mechanical operation and control equipment and security fencing.
- Miscellaneous works: Special crossings for roads, rivers, etc., off-takes for supplies en-route, and connections at the terminal at Machava distribution center, related auxiliary structures, etc. These will include crossing the Incomati and Maputo rivers, two railways and a large-diameter gas pipeline.

17. The intake from the dam at Corumana is relatively simple, using an existing 1800mm-diameter steel pipe branch which was originally designed to provide water for a possible future irrigation project. The pipe passes under the spillway of the dam, so is ideal as a connection for the pipeline. The branch is already fitted with an isolating valve, so no shut-down works will be necessary. The design of the intake structure is a connection to the existing pipe, a reduction in size to a 1200mm diameter pipeline, and an isolating valve.

18. Pumping Station 1 comprises the pumping station building with 3 pump-sets, a stand-by generator, a guard-house, and ancillary equipment. The pumping station design has provided for pumps and electrical equipment for Phase 1 outputs, but the building is provisioned for installing

additional pumps and electrical equipment for Phase 2. The site chosen for Pumping Station 1 is close to the main road to Corumana dam in open land with low bush vegetation. The site was selected for several reasons, including the elevation and ground conditions.

19. The proposed water treatment plant and Pumping Station 2 will be located together. The area is located approximately 10 kilometers southeast from the dam, close to the road from Corumana in an area of low bush vegetation. The ground conditions appear to be suitable for the construction of the water treatment works. The design of the works provides for a largely traditional treatment plant comprising pre-treatment, flocculation, sedimentation, filtration and disinfection. There will be intermediate stages of pH correction to assist in the sedimentation and pre-treatment processes. The works will be equipped with full standby-generation capacity capable of sustaining the output of the works for three days.

20. Pumping Station 2 will be equipped with three pumps (two duty, one standby) of Phase 1 capacity (60,000 m³/day) together with associated electrical equipment. The pump-house structure will be sufficient to house the pumps and associated equipment required for Phase 2 (120,000 m³/day).

21. The route of the pipeline largely follows the line of the road northwest from Maputo to Corumana, generally in low lying bush with some limited farming activity. Some sections divert away from the roadway to avoid localized poor ground conditions or obstructions in the roadway. In general these diversions are in areas of open bush country with little or no agriculture. The diameter of the pipeline will be approximately 1200mm from the intake to Pumping Station 1, and approximately 1000mm from Pumping Station 1 to the water treatment plant. From the water treatment plant to the control tank south of the town of Pessene the diameter will be approximately 1100mm. From the control tank to the outskirts of Maputo the diameter reduces progressively from around 1000mm to 800mm. The pipeline is designed to be constructed in ductile iron pipe.

22. The control tank will be located near the small town of Pessene and will have a capacity of 5000 m³ for Phase 1. It will receive water from Pumping Station 2 and discharge to the Machava distribution center. The profile of the pipeline falls away rapidly after the control tank. The tank is designed to control pressures in the downstream section of the pipeline by breaking the upstream pressure and setting a lower downstream pressure. The control tank will be located in open land.

23. At the Machava distribution center, the water from the project will be transferred into the ground-level reservoirs via new vertical inlet pipes that will be constructed on the outer walls of the tanks and discharged via a new inlet through the reservoir roofs. Flow will be monitored and controlled from the water treatment plant control room. Reservoir levels will be monitored and the flow into the reservoirs adjusted by a flow control valve.

24. There will be a total of six major crossings along the length of the pipeline – two rail crossings, two river crossings, one crossing of a major gas pipeline, and the crossing of a new ring road currently under construction in northern Maputo. FIPAG is already liaising with all the relevant authorities with respect to the various crossings.

25. With respect to the rail crossings, one is across a single rail track; the second is across double tracks. The rail authority already has procedures in place to manage rail crossings by closing the railway for a short time to allow crossings by pipelines in open-cut trenches.

26. There are two river crossings – the Incomati and the Maputo. Two options for crossing the Incomati are being considered. One option is to lay the pipeline in a trench down the river bank, which has a gradual slope, and cross the river in an open-cut trench, using coffer dams to divert the river during construction. A second alternative could be to attach the pipe to the side of a recently constructed bridge. This would avoid the need to work in the river. The second crossing will cross the much smaller Maputo River, which is virtually dry during the dry season. A pipe trench will be constructed for the river crossing.

27. The pipeline will need to cross a major gas pipeline that transfers gas from Mozambique to South Africa. The gas pipeline is of considerable economic importance and the crossing underneath the pipeline will need to be carefully constructed. The gas authority will be responsible for the construction activities related to the crossing. Finally, a ring road is being constructed in the northern section of Maputo, under which the pipeline will cross. No details of the road are available at this time; FIPAG is in discussion with the Road Authorities to ensure that an appropriate design is incorporated into the construction contract for the pipeline.

28. There will be four major off-takes to towns or villages along the length of the pipeline. These are at the towns of Sabie, Moambe, and Pessene, as well as a provision for a connection to a future Dutch-funded project in Northern Maputo. However, detailed studies along the pipeline have identified smaller settlements which might benefit from a potable water supply. The off-take design is simply a branch and an isolating valve; the costs for these items are included in Component A.

29. The water treatment operations and conveyance will be run from the control room in the water treatment plant. The control center will monitor the water levels in the control tank and the Machava reservoirs. The flow into the Machava reservoirs is controlled by a flow control valve situated at Machava on the inlets to the reservoirs. The flow valve can operate automatically and will begin to close when the reservoir levels reach 67 percent. This will be monitored from the water treatment plant control center. When the flow to Machava reduces due to the closure of the valves, the flow through Pumping Stations 1 and 2 will be reduced – by adjusting the pump speed – by the control room operator; the flow through the works will be similarly adjusted.

Component B: Investment in Water Supply Distribution System (US\$27 million)

30. This component includes goods and civil works to install approximately 100,000 new connections and associated meters in Greater Maputo. In addition, the component will install up to 300 kilometers of network to serve the new connections. Including:

- Distribution and tertiary pipelines in peri-urban areas: DI, PVC or MDPE pipes ranging in diameter from around 50mm to 400mm, including all accessories and equipment.
- New service connections: Approximately 100,000 service connections to individual properties.
- Domestic meters: Approximately 100,000 domestic meters will be procured and installed.

31. At present, water supplied to the Machava distribution center can be distributed in the local network as well as to the Tsalada distribution center for the Tsalada network. The distribution networks in Tsalada and Machava have been extended, and there is likely to be significant demand for new service connections in both networks. However, service connections financed under Component B may be made at any location in the Greater Maputo network.

32. Water in the Machava distribution center is currently supplied from the Umbeluzi treatment works. When the Corumana treatment works are commissioned, the demand from Machava and Tsalada will be able to be met from Corumana, freeing up water from Umbeluzi for use elsewhere in the Greater Maputo network as needed.

Component C: Technical Assistance to FIPAG (US\$13 million)

33. This component will provide technical assistance to FIPAG, including: (i) supervision of project works and implementation of EMPs and RAPs; (ii) preparation of Phase II of the program to increase the amount of water available to the GMA to meet residential demand to 2025, including technical assistance for engineering, dam safety, safeguards, and economic analyses; (iii) consulting services to support the preparation of a follow-on project to cover other select cities; (iv) consulting services to FIPAG to support project implementation, including support to the AdeM transition in 2014; (v) financial and technical audits; and (vi) capacity building and training.

Component D: Capacity Building and Operational Support to CRA (US\$5 million)

34. This component will provide resources for operating expenses and technical assistance to CRA with the intent, among others, to support the implementation of existing regulations in all water and sanitation systems in the country. This includes support for the expansion of the regulatory framework and oversight, particularly in peri-urban areas, and reviews of the structure and form of subsidies for low-income customers and of financing means to extend water and sanitation services to the urban poor. The component will also provide goods, operational support, capacity building and training, and technical assistance to CRA.

35. As part of the review of the structure and form of subsidies for low-income customers, CRA will monitor the gender and poverty effects of the project. This exercise is likely to be associated with the update of service quality mapping and beneficiary assessments in the Greater Maputo Area. Studies will also be carried out in other systems to support tariff adjustments and/or review. The Tariff Structure would be reviewed to better target subsidies to the poor, and to address effects on the utility of any changes in consumption patterns.

36. As part of its expansion of regulatory oversight, CRA will improve the regional companies' key performance indicator data management system and establish procedures to provide information to the IBNET database.

37. As water supply coverage increases, CRA will undertake studies on sustainable options for managing and supporting sanitation reforms and define appropriate regulatory frameworks for sanitation services, including drainage systems and fecal sludge management.

Annex 3: Implementation Arrangements

Greater Maputo Water Supply Expansion Project

Project Institutional and Implementation Arrangements

1. Institutional and implementation arrangements under the project have been informed by IDA's experience working with FIPAG and CRA over the previous 12 years. During that period, and through the implementation of several large infrastructure and capacity-building projects, FIPAG and CRA have developed significant implementation capacity. Their ongoing capacity to manage all aspects of the GMWSP has been confirmed during project preparation and appraisal.
2. Components A, B, and C of the project will be implemented by FIPAG, the water supply asset holding agency, also responsible for investments in urban water supply. IDA and FIPAG will enter into a Project Agreement, and MOF and FIPAG will enter into a subsidiary agreement for the purpose of implementation of Components A, B, and C. The terms and conditions of the Subsidiary Agreement (SA) are described in paragraph 42 below. Since its establishment in 1998, FIPAG has been directly involved with the implementation of a large number of projects financed by the World Bank and other development partners. The fiduciary, safeguard, and monitoring and evaluation systems used by FIPAG are integral parts of the agency and are acceptable to the World Bank. FIPAG shall implement the above mentioned components through its Maputo Water Supply Department (MWSD), established in 2007. This department has experience implementing projects financed by AfDB, AFD, among others, and including the EU-financed Maputo Water Supply Project (Euro 95 million).
3. The MWSD is led by a Department Manager who reports directly to the Project and Investment Director of FIPAG. Reporting to the Department Manager are three project coordinators, two international technical advisors, an environmental specialist, a financial officer, and an assistant project coordinator. The procurement officer is currently being recruited.
4. Component D will be implemented by CRA, which currently implements two components under WASIS. As is the case with FIPAG, CRA is familiar with World Bank policies and requirements. IDA and CRA will enter into a Project Agreement and MOF and CRA will enter into a subsidiary agreement for the purpose of the implementation of Component D by CRA. The Subsidiary Agreement (SA) will pass the IDA funds to CRA at no cost.

Financial Management and Disbursements

5. A Financial Management Assessment was carried out in accordance with the Financial Management Manual for World Bank-Financed Investment Operations issued by the Financial Management Sector Board on March 1, 2010. The objective of the assessment was to determine whether the implementing agencies, FIPAG and CRA, continue to maintain acceptable financial management arrangements, which will ensure that (i) funds are used only for their intended purposes in an efficient and economical way, (ii) accurate, reliable and timely periodic financial reports are prepared, and (iii) agency assets are safeguarded.
6. The overall conclusion of the Financial Management Assessment is that the project's financial management arrangements satisfy IDA's minimum requirements under OP/BP 10.00.

The project financial management arrangements have an overall residual risk rating of **Moderate**.

7. Financial management of the proposed project will be the responsibility of FIPAG and CRA through their departments of administration and finance. Both implementing agencies have finance staff experienced in handling financial management issues of Bank-financed operations and capable of performing their duties and responsibilities. Both implementing entities are currently handling financial management matters of the ongoing WASIS, and no financial management issues of serious nature were raised in the last supervision mission or audit reports.

8. **Accounting:** The project accounting system will be based on a conventional accounting package already in use at FIPAG and CRA. The package is capable of producing the financial information required to monitor and effectively manage the project. FIPAG and CRA finance staff are conversant with the accounting package in use by both implementing entities.

9. **Financial reporting:** FIPAG and CRA will produce required financial reports on a regular basis to monitor and effectively manage the project. Interim unaudited financial reports (IFRs) will be produced on a quarterly basis and submitted to the Bank within 45 days after the end of the calendar quarter. The reports will consist of financial reports, including sources and uses of funds reports by disbursement categories, and statement of uses of funds by project components and activities, comparing planned and actual expenditures. These financial reports will be accompanied by a brief discussion report on the project progress.

10. Both agencies will also produce annual project financial statements in accordance with the International Public Sector Accounting Standard (IPSAS) of Financial Reporting Under the Cash Basis of Accounting, which will include, at a minimum: (i) a statement of cash receipts and payments which recognizes all cash receipts, cash payments and cash balances for this project; (ii) comparison of budget and actual project expenditures; and (iii) the accounting policies adopted and explanatory notes. The explanatory notes should be presented in a systematic manner, with items on statement of cash receipts and payments being cross referenced to any related information in the notes. Examples of this information include a summary of fixed assets by category of assets.

11. **Funds flow:** To facilitate implementation of project activities, FIPAG and CRA will each establish and maintain a segregated Designated Account (DA) in US dollars at commercial banks under terms and conditions acceptable to IDA. Funds deposited in the Designated Accounts would finance all project expenditures of components managed by each implementing entity.

12. **Disbursement Arrangements:** Disbursements from IDA would be made on the basis of incurred eligible expenditures (transaction-based disbursements). IDA would then make advance disbursements from the proceeds of the Credit by making deposits into the implementing agencies' Designated Accounts to expedite project implementation. The advance to DAs would be used by the implementing agencies to finance project expenditures under the proposed Credit.

13. Upon Credit effectiveness, the implementing agencies would submit withdrawal applications for initial advances to the DAs, drawn from the IDA Credit, in amounts agreed to in the Disbursement Letters. Additional advances of funds from IDA to the DAs will be made upon evidence of satisfactory utilization of the previous advances, reflected in Statements of

Expenditure (SOE) and/or on full documentation for payments above SOE thresholds. Withdrawal applications documenting expenditures would be required to be submitted monthly.

14. The option of disbursing funds through direct payments for payments above the threshold indicated in the Disbursement Letter will be available. Withdrawal applications for such payments will be accompanied by relevant supporting documents such as copies of the contract, contractors' invoices and appropriate certifications. Options for use of special commitments and reimbursements will also be available. The *Disbursement Handbook for World Bank Clients* issued in May 2006 provides guidance on disbursement arrangement for financing provided or administered by the Bank. The Bank will issue the Disbursement Letter that will specify additional instructions for withdrawal of the proceeds of the Credit.

15. **Project Cost Estimates:** The following table summarizes estimated costs by component and implementing agency.

Table 3.1: Amounts financed (US\$ million)

	FIPAG	CRA
Works, Goods, and Services under Components A, B, and C	173.00	
Goods and Services under Component D		5.00

16. **Auditing:** The project financial statements will be audited by an independent audit firm in accordance with International Standards on Auditing, as promulgated by the International Federation of Accountants (IFAC). The borrower will be required to furnish to the Association only audited continuing entity financial statements (FIPAG and CRA). These should disclose sufficient information on sources and uses of funds associated with the Bank-financed operation.

17. The continuing entity audit report together with a management letter and management response will be submitted to the World Bank within six months after the financial year-end (i.e. June 30 each year). As mentioned above, the auditors will be required to express a single opinion on the implementing agencies' continuing entity financial statements, which would clearly disclose information on the activities supported by the credit. In addition, a detailed management letter containing the auditor's assessment of the internal controls, accounting system and compliance with financial covenants in the IDA Financing Agreement, suggestions for improvement, and management's response to the auditor's management letter will be prepared and submitted to management for follow-up actions as well as to the Bank along with the audit report.

18. **Supervision Plan:** In line with the project's moderate risk rating, financial management supervision will be carried out by the World Bank Financial Management System (FMS) once a year. In addition to annual supervision, the FMS will also review quarterly IFRs and audit reports and management letters from the external auditors. The FMS will follow up on material accountability issues by engaging with the task team, the client, and auditors.

19. The FMS will review the project financial management (FM) arrangements during the first supervision mission to ensure that agreements made during appraisal have been put in place.

Procurement

20. **Procurement provisions and review thresholds.** Procurement for the proposed project would be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" published by the Bank in January 2011 and the World Bank's "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers," published by the Bank in January 2011.

21. For National Competitive Bidding (NCB), Mozambican-issued bidding documents may apply. All bidding documents will need to be satisfactory to the Bank and subject to the additional procedures and modifications stipulated below and as reflected in the Agreements.

(a) **General.** The procedures to be followed for NCB shall be those set forth in the Regulation, with the modifications described in the following paragraphs:

(b) **Eligibility.** No restriction based on nationality of bidders and/or origin of goods shall apply. Foreign bidders shall be allowed to participate in NCB without restriction and shall not be subject to any unjustified requirement which will affect their ability to participate in the bidding process such as, but not limited to proof that they are not under bankruptcy proceedings in the Recipient's territory; have a local representative; have an attorney resident and domiciled in the Recipient's territory; or form a joint venture with a local firm. In cases of joint ventures, they shall confirm joint and several liability.

Prior registration or obtaining a license or agreement shall not be a requirement for any bidder to participate in the bidding process.

Enterprises or institutions owned by the Mozambican Government shall be eligible to participate in the bidding process only if they can establish that they are legally and financially autonomous, operate under commercial law, and are not dependent agencies of the government.

(c) **Bidding Documents.** Standard bidding documents acceptable to the Association shall be used for any procurement process under NCB.

(d) **Preferences.** No domestic preference shall be given for domestic bidders and/or for domestically manufactured goods.

(e) **Applicable Procurement Method under the Regulation.** Subject to these NCB exceptions, procurement under NCB shall be carried out in accordance with the Regulation's public competition (*Concurso Público*) method.

(f) **Bid Preparation Time.** Bidders shall be given at least twenty eight (28) days from the date of the invitation to bid or the date of availability of bidding documents, whichever is later, to prepare and submit bids.

(g) **Bid Opening.** Bids shall be opened in public, immediately after the deadline for their submission in accordance with the procedures stated in the bidding documents.

(h) **Bid Evaluation.** Qualification criteria shall be clearly specified in the bidding documents, and all criteria so specified, and only such criteria so specified shall be used to determine

whether a bidder is qualified; the evaluation of the bidder's qualifications should be conducted separately from the technical and commercial evaluation of the bid. Qualification criteria shall be applied on a pass or fail basis.

Evaluation of bids shall be made in strict adherence to the criteria declared in the bidding documents; criteria other than price shall be quantified in monetary terms.

A contract shall be awarded to the qualified bidder offering the lowest-evaluated and substantially responsive bid.

Bidders shall not be eliminated on the basis of minor, non-substantial deviations.

(i) **Rejection of All Bids and Re-bidding.** All bids shall not be rejected and new bids solicited without the Association's prior concurrence.

(j) **Complaints by Bidders and Handling of Complaints.** The Recipient shall establish an effective and independent complaint mechanism allowing bidders to complain and to have their complaint handled in a timely manner.

(k) **Right to Inspect/Audit.** In accordance with paragraph 1.16(e) of the Procurement Guidelines, each bidding document and contract financed from the proceeds of the Financing shall provide that: (i) the bidders, suppliers, and contractors and their subcontractors, agents, personnel, consultants, service providers or suppliers, shall permit the Association, at its request, to inspect their accounts, records and other documents related to the submission of bids and contract performance, and to have them audited by auditors appointed by the Association; and (ii) the deliberate and material violation by the bidder, supplier, contractor or subcontractor of such provision may amount to obstructive practice as defined in paragraph 1.16(a)(v) of the Procurement Guidelines.

(l) **Fraud and Corruption.** Each bidding document and contract financed from the proceeds of the Financing shall include provisions on matters pertaining to fraud and corruption as defined in paragraph 1.16(a) of the Procurement Guidelines. The Association may sanction a firm or individual, at any time, in accordance with prevailing Association sanctions procedures, including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded an Association-financed contract; and (ii) to be a nominated sub-contractor, consultant, supplier or service provider of an otherwise eligible firm being awarded an Association-financed contract.

(m) **Debarment under National System.** The Association may recognize, if requested by the Recipient, exclusion from participation as a result of debarment under the national system, provided that the debarment is for offenses involving fraud, corruption or similar misconduct, and further provided that the Association confirms that the particular debarment procedure afforded due process and the debarment decision is final.

22. Implementation of the procurement activities for the proposed project will be managed by FIPAG for Components A, B, and C and by CRA for Component D of the project. Both FIPAG and CRA are currently managing their respective components under the Bank-financed WASIS Project. These two institutions also have recent experience with other donors, including the EIB, AusAid, the Netherlands, and AfDB. The capacity of both FIPAG and CRA was reviewed during project preparation and found to be adequate for managing the procurement activities for the project in their respective components, as they are staffed with qualified and experienced

personnel. However, the assessment also highlights the high risk with the two high-value contracts – for the pipeline and the water treatment works – and the need for FIPAG to strengthen its capacity through the hiring of highly specialized technical assistance for the procurement of these contracts. This Technical Assistance would be for a period of two years. Terms of Reference for the position have been discussed with FIPAG and a selection process is underway.

23. While the capacity of the implementing agencies is generally satisfactory, there may be challenges associated with the implementation of the project due to delays caused by the Government’s own review process prior to contract signature, including the approvals from the Administrative Court (*Tribunal Administrativo*).

24. To ensure acceptable project implementation satisfying minimum Bank fiduciary requirements, mitigation measures were discussed with FIPAG and CRA. These are reflected in the table below and include the need for the procurement planning process to take into account the steps and associated timeframe for the Government’s own review processes and approvals.

Table 3.2: Fiduciary Risk Mitigation Measures

Issues	Risks	Mitigation measures	By when
Limited or no capacity in high-value contracts	High	Selection of a Procurement TA Consultant	Complete
Delays in governmental approval processes	High	Take into account in the Procurement Plan the required timeframes for approval and agencies to follow up with (the Foreign Economic Relations Commission – CREE, , the <i>Departamento de Divisas do MoF</i> , and the <i>Tribunal Administrativo</i>)	Negotiations and continuous

25. In view of the overall experience and capacity of FIPAG and CRA to carry out procurement activities related to the proposed project, and taking into account full implementation of the above mitigation measures, the procurement risk associated with the project is rated as Moderate.

26. **Prior-Review Thresholds.** Prior-review and procurement method thresholds for the project are indicated in Table 3.3 below.

Table 3.3: Procurement Methods and Review Thresholds

		Procurement Method and Prior Review Thresholds Proposed (US\$ million)							
		ICB	NCB	Shopping	QCBS	CQS	LCS	DC / SSS	ICS
Works		≥5.0	<5.0	<0.10				All	
Goods		≥0.50	<0.50	<0.075				All	
Consulting Services	Firms				≥0.20	<0.20	<0.20	All	
	Individuals							All	≥0.10

These thresholds are indicative and may be revised in the procurement plans from time to time

27. **Procurement Plan and Procurement Arrangements.** The Procurement Plan for the project was prepared by FIPAG and CRA during Appraisal and accepted by the Bank. This plan will be updated annually or as required to reflect project implementation. Works contracts to be procured under the project include a transmission main (approximately 93 kms), and a water treatment plant with a capacity of 60,000 m³/day and ancillary works. These two works will be subject to Pre-qualification in accordance with World Bank Procurement Guidelines. Other works contracts will include the installation of house connections and distribution water networks, to be procured under International Competitive Bidding (ICB) and NCB. Goods to be procured will include water meters, pipes and associated fittings. Consultant's services to be financed will include supervision of project works as well as implementation of Environmental Management Plans and Resettlement Action Plans, revision of the Corumana Dam firm yield by updating available models for Phase II of the project, and preparation of Phase II of the program to increase the amount of water available to the GMA.

28. Generally, the World Bank Standard Bidding Document for Works and Goods, pre-qualification documents, the Standard Request for Proposals, as well as NCB documents satisfactory to the Bank will be used for contracts to be procured. These documents will be presented in the procurement section of the Project Implementation Manual that will be prepared by the Borrower prior to Effectiveness.

Environmental and Social (including Safeguards)

29. The significant environmental and social issues of the Greater Maputo Water Supply Expansion Project are primarily social issues associated with the civil works to be built under Component A. This component includes construction of abstraction works from the Corumana Dam, a water treatment plant, and transmission mains carrying initially raw water to the treatment plant, and then treated water to one of several existing distribution centers in the Greater Maputo area. With respect to Component B, previous experience with similar Bank-financed work carried out elsewhere by FIPAG has demonstrated that very minor environmental impacts may arise. Such impacts can be fully mitigated by a Construction Environmental Management Plan, which FIPAG has developed and implemented for such Bank-financed works, and which also will be appropriate for construction management of Component A. The TA provided by Component C is expected to have no significant environmental and social impacts associated with it.

30. The project is classified as Category A because the set of investments for the project, including the new water treatment plant, construction and routing of the new transmission pipeline, and location of the connection to the existing water distribution system were deemed likely to generate significant and irreversible environmental and social impacts. And, as such, each possible alternative location for each structure needed to be carefully assessed so as to select the option with the least adverse impacts. Each alternative was still expected to have some degree of impact on households and livelihoods, ranging from moderate to significant, mostly in urban areas in the last few kilometers at the southern end of the new transmission pipeline. Analytical work and the selection of alternatives carried out as part of the full Environmental Impact Assessment for Component A have been able to avoid significant adverse impacts on the environment.

31. The pump station, water treatment plant, and control tank locations have been selected to avoid significant impacts on natural habitats and the need for resettlement or loss of livelihoods. The trunk pipeline does not cross sensitive natural habitats nor does it cross densely populated areas. It is now designed to successfully avoid and minimize adverse impacts on households except in the village of Matola Gare and in the final two kilometers before reaching the Machava Distribution Center. For most of the distance, the existing road or rail rights-of-way where the pipeline will be laid are sufficiently wide for pipeline installation and are not encroached upon by fences, structures, road-side stands (kiosks), or fields in active production.

32. For initial survey purposes, a pipeline corridor width of up to 30 meters was used in rural areas, and up to 16 meters in urban areas to assess potential social impacts. The RAP is presented as a worst-case scenario, and is stated as such in at least two locations, including the key chapter on estimated costs. This approach is necessary for projects with long and very narrow corridors, such as a new pipeline. The final centerline of the new pipeline will not be known until the project engineers and survey crews from the pipeline construction contractor stake it out, and they will not do so until they are awarded a contract. The contract will not be awarded until the Bank issues a no-objection to FIPAG during project implementation.

33. Preliminary analysis in the RAP indicates that 30 houses are located completely within the initially surveyed pipeline corridor. It is expected, however, that most if not all can be avoided upon final selection of the centerline of the pipeline by the construction contractor. The survey indicates that up to a total of 12 households may require relocation and that 28 other houses may be partially affected (not requiring relocation). Only during the final survey for construction can it be decided whether or not some of these households will have to be physically relocated. It is expected that most of these households will remain in place by minor realignment of the pipeline centerline.

34. A key message during the public consultations on the draft RAP with project-affected people was to explain that the actual impacts on individual properties and households would not be known for certain until the centerline is surveyed. Most impacts on households will occur only during construction, and are limited to structures such as fences and storage sheds. The RAP provides for full replacement cost for loss of structures, and temporary loss of livelihood, if any. Impacts on small road-side kiosks in the final two kilometers of the pipeline corridor will be avoided or minimized by approval by the roads authority to lay the pipeline in the roadway in this part of the pipeline route.

35. An experienced environmental specialist within FIPAG is responsible for overseeing adherence during the project to environmental and social safeguards. In addition, procedures exist within FIPAG to manage environmental and social risks of the project, including demonstrated experience in construction management and operating water treatment plants in an environmentally responsible manner. A strong record of experience exists with respect to safeguard standards of the World Bank and other international and bilateral donors, as well as with host country environmental regulations. An ESIA and a RAP were prepared for the project by qualified and experienced consultants. The ESIA was disclosed on March 12, 2013 and the RAP on March 11, 2013 at the World Bank's Infoshop. FIPAG has already developed and implemented EMPs following a Bank-approved ESMF for the construction of pipelines and distribution lines, and for the operation of water treatment plants, and these will be of use in the

GMWSP as well. FIPAG has experience with implementation of RAPs, and should have no difficulty in overseeing its implementation.

Monitoring and Evaluation

36. FIPAG and CRA monitor and record key sectoral indicators as part of their regular responsibilities as the sector asset holder and regulator, respectively. These indicators include most of the key performance indicators to be monitored as part of the project (connections, treatment capacity, water sales, etc.). Indicators specific to the project will be monitored by the project implementing staff as part of their project management tasks, and included in regular project reporting.

37. Key Performance Indicators to be monitored under the project are described in Annex 1. For Components A, B, and C, as mentioned above, these are largely a sub-set of indicators already tracked by FIPAG and build on an extensive database kept by the agency monitoring the progress of network expansion and service connections. Progress will be assessed against the target indicators and corrective action taken as appropriate to ensure that the project goals are achieved. At the end of each year, the annual performance will be assessed by FIPAG and reported to the World Bank. Performance Indicators related to Component D will be the responsibility of CRA.

38. Monitoring of project implementation will take place as part of overall project management, with project staff regularly reviewing the status of procurement actions, contracts, payments, and safeguard activities, and determining corrective actions as necessary. Staff produces internal monthly management reports that are reviewed by FIPAG and CRA management.

39. For Components A, B, and C, Quarterly Management Reports will be prepared by FIPAG and sent to the World Bank. Information on Component D will be provided by CRA to the World Bank. The Management Reports will cover four main areas and include: (i) progress on the key performance indicators; (ii) the status of contracts; (iii) the status of procurement; and (iv) payments and financial management.

Role of Partners

40. Parallel financing is being provided by the Government of the Netherlands for the construction of distribution mains, reservoirs, networks, household connections and meters. These parallel investments will be managed by FIPAG and by MWSD, which will report on implementation progress and performance indicators in parallel with that for the GMWSP. The Dutch-financed project was developed in coordination with the GMWSP, with ORIO and World Bank staff cooperating closely during preparation and appraisal. Implementation support will similarly be coordinated between the two parties.

41. The IFC is also considered a partner in the GMWSP. As mentioned in the main text, FIPAG is currently a majority owner in AdeM, following their acquisition of the shares of *Agua de Portugal* in 2010. IFC Advisory Services is providing technical and transactional advice to FIPAG in the identification of a private sector partner in the Greater Maputo water system, and is in communications with the World Bank in that respect.

42. *Agence Française de Développement (AFD)* signed a Euro 40 million loan with FIPAG in 2012. The loan finances work related to the rehabilitation of the Umbeluzi treatment plant, new connections, and the rehabilitation of networks and distribution centers in various neighborhoods in GMA, a new distribution center in the North of GMA, as well as related supervision consulting costs and environmental and social management. A new Euro 40 million loan with FIPAG is being discussed for 2015. Implementation support will similarly be coordinated between the two parties.

Financial Conditions and Covenants

43. Project sustainability is heavily dependent on the ongoing financial sustainability of project investments, of FIPAG, as the holding company, and of the utilities operated directly by FIPAG and under the delegated management framework. The following legal and financial covenants have been established with the Government and with FIPAG to ensure long-term sustainability.

- No later than twenty-four (24) months after the Effective Date, the Recipient shall ensure that the tariffs for the water systems under the direct and indirect responsibility of FIPAG shall reflect the principles of full cost recovery and be sufficient to cover operating expenses, depreciation, and cost of capital in a reasonable time horizon for all said water systems. The tariffs will be assessed annually.
- Within 12 months following the mid-term review referred to above, measures would be taken to cover the financing needs referred to as necessary.
- The terms and conditions of the Subsidiary Agreement between FIPAG and the Government shall have the same terms and conditions that are provided by IDA to the Government, converted to meticals at disbursement rates.
- The Recipient shall cause FIPAG to maintain at all times during the life of the Project service contract(s) with utility operator(s) to operate the water supply assets supported under the Project.
- The Recipient shall ensure that: (a) the utility operator(s) selected to operate the water supply assets supported under the Project has (have) been incorporated as a Corporation under Mozambican law; and (b) the contract(s) between FIPAG and the utility operator(s) address the financial obligations undertaken by FIPAG under various loans and credits extended to FIPAG and the sustainability of the future investments in the water supply system, through defining clearly the parties' respective contractual obligations including lease fee charges payable to FIPAG and the tariffs payable to utility operator(s).
- FIPAG would ensure that it: (i) covers 1.2 times its debt service requirements through its net revenues; and (ii) does not incur any additional debt unless a reasonable forecast of its revenues and expenditures show that its projected net revenues for each Fiscal Year during the term of the debt to be incurred shall be at least 1.5 times the projected debt service requirements.

- "Debt" means any indebtedness of FIPAG maturing more than one year after the date on which it is originally incurred. Debt shall be deemed to be incurred under a loan contract or agreement or under a guarantee agreement.
- "Net revenues" means the difference between: (i) the sum of revenues from all sources related to operations and net non-operating income; and (ii) the sum of all expenses related to operations including administration, adequate maintenance, taxes and payments in lieu of taxes, and provisions for uncollected revenue, but excluding provision for depreciation, other non-cash operating charges and interest and other charges on debt.
- "Provisions for uncollected revenue" means the non-cash expense related to uncollected revenue, and shall be a minimum of 50 percent of annual uncollected revenue.
- "Net non-operating income" means the difference between: (i) revenues from all sources other than those related to operations; and (ii) expenses, including taxes and payments in lieu of taxes, incurred in the generation of non-operating revenues.
- "Debt service requirements" means the aggregate amount of repayments of, and interest and other charges on, debt.
- "Reasonable forecast" means a forecast prepared by the Project Implementing Entity not earlier than twelve months prior to the incurrence of the debt in question, which both the Association and the Project Implementing Entity accept as reasonable and as to which the Association has notified the Project Implementing Entity of its acceptability, provided that no event has occurred since such notification which has, or may reasonably be expected in the future to have, a material adverse effect on the financial condition or future operating results of the Project Implementing Entity.
- If debt is valued in another currency, it shall be re-valued based on the relevant, prevailing rate of exchange.

44. The following table provides key financial information used in calculating FIPAG's debt service coverage ratio according to the above guidelines. This information will be followed on an annual basis to confirm compliance with the covenant.

Calculation of FIPAG Debt Service Coverage Ratio, 2011 (US\$ '000)

<i>Key financial inputs</i>	<i>2011</i>
Operating revenues	35,966
Operating expenses	24,792
Net non-operating revenues	Negligible
Less 50% of uncollected revenues	3,270
Net Revenues	7,903
Debt Service Requirements	3,685
Debt Service Coverage Ratio	2.14

45. CRA will collect the performance data and calculate performance indicators for each regional company and then submit them annually to the IBNET database for public disclosure, beginning in calendar year 2015. The performance data and calculated performance indicators are standard and available in the IBNET web page. The IBNET tool kit in Portuguese is available in the IBNET web page.

Annex 4: Operational Risk Assessment Framework (ORAF)

Greater Maputo Water Supply Expansion Project

Stage: Board

Project Stakeholder Risks	Rating	Low			
<p>Description: GoM/Bank relations are aligned regarding the water sector, as are relations with donors active in the sector. The Bank’s involvement in Maputo has been limited, but relationships should be strengthened by the project and its support to the city/sector. As FIPAG has strengthened, the capacity in the water sector and the sector’s ability to interact with the stakeholders has improved significantly.</p> <p>Customers and unconnected customers of the water service provider, AdeM, are also stakeholders. A potential risk is a lower connection uptake in extension areas than expected. However, recent poverty and social impact assessments (PSIA) on water services indicate strongly that: (i) AdeM customers are largely satisfied with services received; (ii) unconnected residents would prefer to have a connection with AdeM; and (iii) residents with connections to smaller operators would prefer to have a connection with AdeM. As the project will enable the delivery of additional water and connections to unserved areas, risks related to customers are considered to be low.</p>					
	Risk Management: FIPAG and AdeM will ensure continuous communications, as new networks are brought into neighborhoods and connections become available, in order to manage expectations as well as to promote new connections on a timely basis.				
	Resp: FIPAG/AdeM	Stage: Implementation	Due Date : n/a	Status: Ongoing	
Implementing Agency Risks (including fiduciary)					
Capacity	Rating:	Low			
<p>Description: Agency is dependent on a few well-qualified senior staff; more junior staff needs more training/experience; standardized systems are in place but not adhered to consistently; weak FM environment at country level affects capacity of the Agency.</p>	Risk Management: FIPAG receives ongoing technical assistance from the Bank and donor community to strengthen and support its technical and safeguards capacity. Component C may support additional capacity building.				
	Resp: FIPAG	Stage: Implementation	Due Date: N/A	Status: Ongoing	

Governance	Rating:	Low			
<p>Description: a. An outdated governance structure of FIPAG could lead to lack of accountability because the scale of the business has grown despite the fact that FIPAG has being successful in implementing projects and has provided services to the households for more than 10 years.</p> <p>b. FIPAG has special arrangements with the Government to implement procurement and approve contracts that reduce the time for processing and signing contracts. There is a risk that these arrangements may change during project implementation and the time for processing contract may increase.</p>	Risk Management: a. Government oversight arrangements for FIPAG have recently been changed, and FIPAG, which formerly reported only to the Ministry of Public Works, will begin reporting also to the Ministry of Finance on financial and audit matters. The oversight by MOF is expected to strengthen the accountability and long-term sustainability of FIPAG, reducing the risk of financial difficulties.				
	b. Not applicable				
Project Risks					
Design	Rating:	Low			
<p>Description: a. Although all contracts will follow Bank guidelines and standards, private contractors may deviate from the Master Plan and Technical Design during project implementation.</p> <p>b. Shareholder composition of AdeM may change during the project, which may temporarily affect its activities on the ground during a transition period. AdeM has been highly successful over the last several years in connecting new customers – 32,000 and 36,000 in 2011 and 2012, respectively. To be conservative, the project is assuming a connection rate of about 20,000 per year. This should not affect the long-term implementation of the project.</p>	Risk Management: a. FIPAG staff is experienced with this type of project; design and implementation risks are minimal; and project support under Component C complements work from other donors.				
	b. IFC has been hired by FIPAG as a transaction advisor to support changes in shareholder composition in AdeM.				
	Resp: FIPAG	Stage: Implementation	Due Date :	Status: Ongoing	
Social & Environmental	Rating:	Low			
<p>Description: Although all contracts will follow Bank guidelines and standards, private contractors may deviate from the ESIA and RAP during project implementation. The EMPs will be inserted in the works contracts obligations.</p> <p>There is always a long term risk to the raw water availability</p>	Risk Management: Adequate staffing capacity and procedures exist within FIPAG, including specialists dedicated to oversight on similar Category A projects. There is a strong record of experience with Safeguard aspects of projects with the World Bank and other international and bilateral donors. A draft ESIA and RAP acceptable to the Bank were prepared and disclosed prior to appraisal.				
	Resp: FIPAG	Stage: Implementation	Due Date :	Status: Ongoing	
	Risk Management: Not applicable.				

<p>related to climate change. These potential impacts are considered to be long term (2046-2065, i.e., beyond the life cycle of project investments, and at a point in time in which the water supply infrastructure to Maputo may have changed significantly), but could have several implications. These include a reduction in the long-term reservoir yield or an increase in demand and consumption from users. Detailed hydrological analyses have been undertaken to determine the long-term sustainable yield of the Corumana Dam as part of the due diligence for the Water Resources Development Project. The results from downscaled regional climate scenarios for the Sabie River catchment indicate higher mean annual precipitation for the intermediate future (\pm 2046-2065), which could lead to increased flow into the reservoir overall but less flow at critical times. Higher temperatures could also lead to higher levels of evaporation at the reservoir and demand from users. However, the analyses confirm that sufficient yield is available to ensure water sufficient water and the level of assurance required for the water supply works.</p>				
<p>Program & Donor</p>	<p>Rating:</p>		<p>Low</p>	
<p>Description:</p> <p>a. Anticipated follow-on investments in treatment capacity will depend on successful implementation of the ongoing Bank-funded Water Resources Development Project.</p> <p>b. Although the project is not dependent on other donors, the Government of the Netherlands will support parallel investments in water network infrastructure and connections, which may experience delays. The scope of new AFD-funded investments to distribute additional water supply to the expanded infrastructure installed by these projects still needs to be defined.</p>	<p>Risk Management: a. Implementation of the Bank-funded Water Resources Development Project is ongoing and the project is on track. The flexibility of the GMWSP and later investments can accommodate any delays in completing the Water Resources Development Project.</p> <p>b. Ongoing coordination and dialogue with other donors through FIPAG.</p> <p>c. The design of the project can accommodate any delays in parallel financing. Sensitivity analyses indicate that connection uptake is a moderate risk factor. Only if the connection uptake rate is only 55 percent of the original estimate, the project's economic returns will be negative. Delays in connection uptake are even less serious; only if connections are delayed by four years or more does the project becomes economically unviable.</p>			
	<p>Resp: WB; FIPAG</p>	<p>Stage: Implementation</p>	<p>Due Date : N/A</p>	<p>Status: Ongoing</p>
<p>Delivery Monitoring & Sustainability</p>	<p>Rating:</p>		<p>Moderate</p>	
<p>Description: a. The Operator of the Maputo water supply system: The lease contract between FIPAG and AdeM ends on November 30, 2014, and decisions should be made regarding the future ownership of AdeM within that timeframe.</p>	<p>Risk Management: a. IFC has been hired by FIPAG as a transaction advisor, but the level of private sector interest is unknown. FIPAG has the capacity to assume more operational responsibility if necessary, according to the present lease agreement, which permits an extension of 5 years. Component C may support the necessary institutional transition in case there is no private interest.</p>			

b. As the level of private sector interest in the operations of the Maputo water supply system is unknown, the existing lease agreement may need to be extended.	b. Operations by a public company may reduce political commitment to cost recovery. Contract management and monitoring capacity is in place and adequate. The project will reinforce CRA's ability to regulate the sector through Component D.			
	Resp: FIPAG	Stage: Implementation	Due Date :	Status: Ongoing
Other: Financial	Rating:	Moderate		
Description: Availability of Funding - FIPAG will be responsible for organizing the financing for the second phase of the water treatment investments. The benefits of the project, however, accrue largely to AdeM, through improved water supply and an expanded customer base. Sufficient financial returns from the project need to be passed back to FIPAG to ensure their ability to service the credit and look for additional funding for follow-up investments in the system.	Risk Management: Financial covenants included in the financing agreement with IDA specify that lease payments to FIPAG from AdeM will cover the relevant debt service. Any necessary changes in the lease payments to FIPAG would be undertaken prior to the project mid-term review.			
	Resp: Bank, FIPAG, MOF	Stage: Implementation	Due Date : Mid-term review	Status:
Overall Risk Following Review				
Implementation Risk Rating: Low				
Comments: The overall implementation risk for the proposed project is Low. The implementing agency is experienced with World Bank projects and similar projects from other donors. The capacity of the agencies to improve the quality of water supply services has steadily improved with experience and with the strengthening of various management systems. Commitment to the project is strong and coordination with other development partners investing in the sector is good. The project design is straightforward. Most contracts will be procured on a prior-review basis. There is a low risk that the flow from international rivers into the Corumana dam may be reduced, affecting the water available to a second phase of investments. Existing cross border arrangements and the NWRDP should mitigate this risk.				

Annex 5: Implementation Support Plan

Greater Maputo Water Supply Expansion Project

Strategy and Approach for Implementation Support

1. The Implementation Support Plan (ISP) provides the framework for the Bank's operational approach to supporting FIPAG and CRA's implementation of the GMWSP and monitoring implementation progress. The ISP has been developed taking into consideration: (i) the relatively low risks identified for the project; (ii) the significant experience of FIPAG and CRA staff with respect to World Bank and internationally-financed projects; (iii) the importance of large civil works contracts in overall implementation and achievement of project development objectives; (iv) the importance of environmental and social safeguards; and (v) the role of FIPAG and AdeM's financial sustainability in the long-term sustainability of project investments and the reliability of water supply. The ISP team reflects these key considerations.

2. Three core activities form the foundation of the ISP: (i) close and ongoing communications with implementing agencies, in particular with respect to procurement and contract implementation issues; (ii) receipt and review of quarterly project management reports prepared by the project implementing agencies; and (iii) semi-annual implementation support missions to Mozambique, involving both headquarters and country office staff and technical consultants. This three-pronged approach will provide comprehensive support and oversight for project implementation and enable quick and responsive interactions between project officials and World Bank staff.

Implementation Support Plan

3. Tables 5.1 and 5.2 outline the implementation support plan and resources required for the GMWSP. Table 5.3 identifies project partners and their role.

Table 5.1: Implementation Support

<i>Time</i>	<i>Focus</i>	<i>Skills needed</i>	<i>Resource Estimate</i>	<i>Partner Role</i>
First twelve months (Year 1)	<ul style="list-style-type: none"> • Contract launch and management • Confirm reporting and M&E formats • Confirm financial reporting • Confirm safeguard monitoring and reporting • TA procurement 	Team Leader Engineer Procurement Financial Management Spec. Financial Analyst Environmental Specialist Social Specialist Utility Institutional Specialist Team Assistant	US\$200,000	
12 – 48 months (Years 2 – 4)	<ul style="list-style-type: none"> • Contract management • Safeguards • Ongoing procurement • Civil works and engineering issues, if any • M&E • FIPAG financial results • Project financial management 	Team Leader Engineer Procurement Financial Management Spec. Financial Analyst Environmental Specialist Social Specialist Team Assistant	US\$170,000 per year	
49 – 72 months (Years 5 – 6)	<ul style="list-style-type: none"> • Contract closings • Safeguards • Civil works and engineering issues, if any • M&E • FIPAG financial results • Project financial management • ICR preparation 	Team Leader Engineer Procurement Financial Management Spec. Financial Analyst Environmental Specialist Social Specialist Monitoring and Evaluation Team Assistant	US\$170,000 per year	
Mid-term review (July 2016)	<ul style="list-style-type: none"> • Contract management • Progress on Civil Works • Safeguards • Project sustainability • FIPAG financial results 	Team Leader Lawyer Engineer Procurement Financial Management Spec. Financial Analyst Environmental Specialist Social Specialist Utility Institutional Specialist Monitoring and Evaluation Team Assistant	US\$120,000	
Implementation Completion Reporting	<ul style="list-style-type: none"> • Project results and evaluation • Financial and economic analyses 	Team Leader Engineer ICR author Financial Analyst Economist Monitoring and Evaluation Team Assistant	US\$80,000	

Table 5.2: Skills Requirements

<i>Skills requirement</i>	<i>Staff Weeks per Year</i>	<i>Trips per Year</i>	<i>Comments</i>
Team Leader	20	2	
Lawyer	2	As required	
Engineer	8	2	
Environmental Specialist	6	2	
Social Specialist	6	2	
Procurement Specialist	8	-	CO based
Financial Management Specialist	4	-	CO based
Utility Institutional Specialist	6	As required	
Financial Analyst	6	1	
Team Assistant	4	As required	HQ based
Team Assistant	4	-	CO based

Table 5.3: Partners

<i>Name</i>	<i>Institution/Country</i>	<i>Role</i>
ORIO	Netherlands	Coordination and implementation support with respect to parallel financing
IFC Advisory Services	IFC	Advisory services and transaction advice with respect to private participation in AdEM
AFD	France	Coordination and implementation support with respect to parallel financing. A new Euro 40 million loan with FIPAG for 2015 is being discussed.

Annex 6: Economic and Financial Analysis

Greater Maputo Water Supply Expansion Project

Economic Analysis

1. The objective of the Greater Maputo Water Supply Expansion Project is to increase access to clean water for residents in the Greater Maputo Area. To reach this objective the project aims to expand water supply production by constructing an abstraction point for 120,000 m³ per day of raw water from the Corumana Dam, a water treatment plant with a capacity of 60,000 m³ per day and a transmission pipeline of a capacity of 120,000 m³ per day. The project will also finance distribution networks and connections, which are partially funded through Dutch grant funding. In addition, the project will finance supervision of works and capacity building of various stakeholders (FIPAG, CRA and AdeM). A cost-benefit analysis was undertaken to determine the economic returns of the project and a sensitivity analysis was undertaken to determine the economic effect of potential changes in project costs and/or benefits.

Methodology

2. The cost-benefit analysis was done from two perspectives: a base-case economic analysis, in which costs and benefits were assessed at current, actual prices; and an economic analysis with prices adjusted to reflect their underlying economic values. The base case benefits were measured as: (i) revenues generated by the project, using the current tariff schedule and current consumption patterns; and (ii) the consumer surplus, defined as the difference between the maximum prices a consumer is willing to pay and the actual price they pay. In the case of households depending on neighbor taps and standpipes, the consumer surplus is significant, as households depending on these types of alternative supplies are confronted with high costs per cubic meter for water supplied, and with significant time costs to haul the water to the home. For the economic analysis, these base case cash flows were converted into economic cash flows through the use of conversion factors to eliminate market distortions.

3. The net benefit is the difference between the incremental benefits and the incremental costs of two scenarios: “with” and “without” the project. The “with” project scenario considers the proposed project and its associated targets. The “without” project scenario considers that water consumers will stay dependent on water provided by alternative providers who compete for increasingly scarce supply sources. It is likely that in the future the increasing scarcity of water will result in either higher prices (or opportunity costs) for this water or increased levels of rationing. Due to increased demand, this new project will be able to reduce the incidence and severity of rationing – though not completely eliminate it – during the lifetime of the project.

4. The activities were appraised, measuring their flow of costs and benefits for the lifetime of the project, estimated as 40 years. Costs and benefits were expressed in constant prices as of 2012¹⁵. The discount rate corresponded to the opportunity cost of capital, estimated to be 10 percent, as used in other projects in Mozambique.

¹⁵ The exchange rate used was US\$1 is equivalent to MZM 28

Estimation of Benefits

5. Benefits from the project include: (i) increase in revenues from piped water; and (ii) consumer surplus.

6. The increase in revenues from piped water is calculated using current consumption multiplied by the current average tariff. Estimates from FIPAG shows that the average water consumption of those that are using piped water is dependent on water availability in the system. Assuming that connection growth will take place due to population growth, the available supply is the result of the available capacity and commercial water losses. Current production is estimated at 204,000 m³ per day, expected to increase to 240,000 m³ per day in 2017; the additional supply from the GMWSP will become available in 2019. This will result in an increase in available water supply once the project is completed; after that it will decline as the population continues to grow in the Greater Maputo Area. It is assumed that newly connected customers will use a similar amount of water as current customers, using current capacity and non-revenue water data to estimate consumption levels in the Maputo area. As real water tariffs are not expected to increase over time, no price effects are expected to take place. Although income growth could give rise to a higher demand for residential water, the effect is expected to be small, even with this expansion, as the supply of safe water remains too constrained for a rapidly growing urban population. It is assumed that virtually all households will switch from alternative sources (standpipes and neighbor taps) to piped water.

7. The consumer surplus is the difference between the maximum price that consumers are willing to pay and the actual price they will pay once they switch to piped water. A recent study undertaken by CRA and Stanford University¹⁶ looked into water behavior for those who depend on alternative water providers, especially neighbor taps and standpipes. The study found that households depending on these water supply sources pay significantly higher prices for water than piped water consumers. In addition, the time spent on transporting water to the home also posed a significant cost to households, especially those using standpipes. On average, a household using water from a standpipe spent 107 minutes per day transporting water. Households that use neighbors' taps spend less time hauling water but still a significant 62 minutes per day. The value of time is assumed to be linked to the minimum wage, which is officially set at US\$130 per month. However, it is likely that the value of time is less than the minimum wage, as not all the time used to haul water could have been used to pursue paid labor. We therefore apply only 50 percent of the minimum wage to the time spent transporting water. Table 6.1 shows the much larger cost for households using alternative supplies.

¹⁶ Valentina Zuin, Maika Nicholson and Jenna Davis, 2012. Water Access, Service Quality, and Consumer Satisfaction in peri-urban Maputo: a beneficiary assessment. CRA, World Bank and Woods Institute for the Environment at Stanford University, and Valentina Zuin.

Table 6.1: Water Consumption and Water Prices for Different Water Users in the Greater Maputo Area in 2012

Indicator	Piped Water	Neighbor Tap	Standpipe
Water Consumption (lcd)	113	31.4	30.2
Water consumption per month per household (m ³)	19	5	5
Average tariff per m ³ (US\$)	0.91	1.53	1.58
Average monetary cost per household per year (US\$)	211	94.71	97.80
Time spent on hauling per day (minutes)	0	62	107
Opportunity cost of labor per day (US\$)	0	2.17	2.17
Time savings per month (US\$)	0	101.98	175.80
Total annual cost of water per household (including time savings) (US\$)	211	196.68	273.87
Cost per m³	0.91	3.18	4.42

Note:

lcd = liters per capita per day

For piped water, calculations are based on actual system capacity and non-revenue water data collected, in line with FIPAG 2011 data. It includes all consumption, residential and non-residential, for piped water.

For neighbor tap and standpipe, reference is made to a study undertaken by Valentina Zuin, Maika Nicholson and Jenna Davis, 2012. Water Access, Service Quality, and Consumer Satisfaction in peri-urban Maputo: a beneficiary assessment. CRA, World Bank and Woods Institute for the Environment at Stanford University

8. In addition to the benefits mentioned above, the project will provide many other potential benefits that are not factored into the cost-benefit analysis. This is mainly because estimating such benefits is impossible due to the lack of available data. Freeing up time otherwise spent hauling water also has an especially positive impact on engaging girls in educational activities that provide long-term benefits in terms of income and health, as the opportunity cost of school absenteeism can be very high. Improved health also generates benefits, although that may be included in the high costs – both in terms of money and time – households are paying to be supplied with safe water.

9. Another benefit may be linked to reduced damages in cases of flood control. The current project builds a transmission line entirely independent of the existing water supply transmission lines from the Umbeluzi treatment works. The resulting two transmission lines for water supply in Maputo provides diversification of supply, and therefore a reduction in the risk of a complete breakdown in water supply in the event of floods. In view of the high cost of flood events, partially linked to the cost of the water supply system, and the subsequent effect on epidemics, the current design may reduce the cost of flooding and hence reduce the cost of damage, interrupted water supplies, and the risk of epidemics. As the data on the cost of floods and their occurrence is still rather anecdotal, these costs have not been included in this analysis.

Cost Estimates

10. *Investment costs.* The investment costs for each subproject were estimated for each component. The only costs not included in the analysis are technical assistance costs that are not directly related to the implementation of the works. These activities are focused on capacity

building of FIPAG, CRA and AdeM. Financial investment costs include: (i) the costs of the GMWSP investment program, including physical contingencies, supervision and taxes; (ii) the cost of new connections; (iii) the cost of complementary investments (i.e., Dutch grant funding for tertiary network investments); and (iv) the replacement costs of equipment such as electromechanical parts.

Table 6.2: Proposed Investment Program (US\$)

Capital Investment		2014	2015	2016	2017	2018
Component A: Investments in water supply	133,000,000					
Preliminaries	3,639,098			3,639,098		
Intake	545,865			272,932	272,932	
Pumping Station 1	4,093,985			2,046,992	2,046,992	
Water Treatment Works	27,293,233			5,458,647	8,187,970	13,646,617
Pumping Station 2	4,548,872			909,774	1,364,662	2,274,436
Conveyance T2	8,642,857		864,286	2,592,857	2,592,857	2,592,857
Conveyance T3	50,947,368		5,094,737	15,284,211	15,284,211	15,284,211
Conveyance T4	17,285,714		1,728,571	5,185,714	5,185,714	5,185,714
Control tank	1,364,662				682,331	682,331
Connections to Machava	545,865					545,865
Miscellaneous	2,092,481			690,519	690,519	711,444
Contingencies	12,000,000		768,759	3,608,074	3,630,819	4,092,347
Component B:						
Consumer connections paid by project	10,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Other connection costs	2,000,000	400,000	400,000	400,000	400,000	400,000
Tertiary Network Development/Extension	17,000,000	3,400,000	3,400,000	3,400,000	3,400,000	3,400,000
Component B1 (financed by donor grants)						
Consumer connections	8,040,000	1,608,000	1,608,000	1,608,000	1,608,000	1,608,000
Distribution mains and reservoirs	23,000,000	4,600,000	4,600,000	4,600,000	4,600,000	4,600,000
Component C:						
Technical Assistance	7,000,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000
Total Capital Expenditures	200,040,000	13,408,000	21,864,353	53,096,819	53,347,007	58,423,821

11. *Operations and Maintenance Costs (O&M)*. The incremental operations and maintenance costs include labor, chemicals, electricity and maintenance. Labor costs were calculated as the number of employees per 1,000 connections (i.e., labor productivity) multiplied by the number of connections and the average cost per employee. Labor productivity was estimated at 4.4 staff per 1,000 connections – similar to current estimates, as this project does not result in major improvements in the operational efficiency of AdeM (other donors have focused activities towards improving efficiencies in their program). It is assumed that both the “with” and “without” project scenarios would benefit from these efficiency programs over time. Electricity and chemical costs were estimated based on their unit costs and the projected volumes of water produced and treated. We have assumed annual operations and maintenance costs to be 0.5 percent of newly acquired civil works and 1.5 percent for newly acquired equipment.

Estimation of Economic Costs

12. The above base costs were converted into economic costs where standard conversion factors were available. A 2009 African Development Bank evaluation estimated the conversion factor for labor at 0.50. The same study used a standard conversion factor for foreign exchange of 0.85. For local materials and equipment, the value added tax is subtracted, resulting in a standard conversion factor of 0.94. These figures will be used for the calculation of the economic costs.

Table 6.3 Cost Composition (US\$)

Capital Investments:	TOTAL	Skilled labour	Unskilled labour	Foreign	Local
Component A: Investments in water supply	92,395,213				
Preliminaries	2,784,748	136,296	272,592	1,737,771	638,089
Intake	417,712	20,444	40,889	260,666	95,713
Pumping Station 1	3,132,841	153,333	306,666	1,954,993	717,850
Water Treatment Works	20,687,960	1,533,328	3,066,655	6,516,643	9,571,334
Pumping Station 2	3,480,935	170,370	340,739	2,172,214	797,611
Conveyance T2	6,613,776	323,703	647,405	4,127,207	1,515,461
Conveyance T3	38,986,468	1,908,141	3,816,282	24,328,800	8,933,245
Conveyance T4	13,227,552	647,405	1,294,810	8,254,414	3,030,922
Control tank	1,044,280	51,111	102,222	651,664	239,283
Connections to Machava	417,712	20,444	40,889	260,666	95,713
Miscellaneous	1,601,230	78,370	156,740	999,219	366,901
Contingencies	9,135,259	449,438	967,390	5,293,565	2,424,867
Component B:					
Consumer connections paid by project	7,652,303	374,532	749,064	4,775,281	1,753,426
Other connection costs	6,152,451	301,124	602,247	3,839,326	1,409,755
Tertiary Network Development/Extension	13,008,914	636,704	1,273,408	8,117,978	2,980,825
Component B1 (financed by donor grants)					
Consumer connections	1,530,461	74,906	149,813	955,056	350,685
Distribution mains and reservoirs	17,600,296	861,423	1,722,846	10,983,146	4,032,880
Component C:					
Technical Assistance	5,816,948	1,638,577	-	4,178,371	-
Total Capital Expenditures	153,291,845	9,379,649	15,550,657	89,406,978	38,954,561

13. The use of standard conversion factors for labor affects both the costs and benefits of the project, and has a very significant effect on the project's net benefits. In particular, time savings are directly linked to the minimum wage and hence directly affect benefits.

Results of the Cost Benefit Analysis

14. *Results of Cost Benefit Analysis without Conversion Factors.* The project is financially viable, as can be seen in Table 6.4. As the investments form an integral package that together will increase water supply, the different project components have not been evaluated separately. Net benefits amount to US\$107 million, and the internal rate of return is 23 percent.

Table 6.4: Economic Analysis without Use of Conversion Factors

Result	Investment Activity	Net Present Value (US\$ million)			Internal Rate of Return (%)
		Benefits	Costs	Net Benefits	
Expansion of Water Supply	Investment in Expansion of Production, Treatment and Distribution	302	195	107	23%

15. *Results of Cost Benefit Analysis Using Conversion Factors.* Analyzing the project using converted (economic) costs, the project is economically viable. The net economic benefits are calculated to be US\$69 million and the internal rate of return is 20 percent. The lower results (than the base analysis) are unusual, but are mainly due to the fact that the consumer surplus is highly dependent on the value of time (as people with alternative suppliers spend not only money on water but also time to transport it). The value of time was estimated to be 50 percent of the minimum wage. Hence, an adjustment of the minimum wage using the standard conversion

factor for unskilled labor reduces the value of time significantly and subsequently reduces the consumer surplus and benefits of the project.

Table 6.5: Results of Economic Analysis

Result	Investment Activity	Net Present Value (US\$ million)			Internal Rate of Return (%)
		Benefits	Costs	Net Benefits	
Expansion of Water Supply	Investment in Expansion of Production, Treatment and Distribution	218	149	69	20%

Sensitivity and Risk Analyses

16. The results obtained so far assume that all variables are certain. The following sensitivity analysis measures the impact on the results when some of the assumed values for critical variables change. The sensitivity analysis measures the outcome if one of the variables changes while all others remain fixed.

17. The variables tested for the sensitivity analysis were: (i) investment cost overrun; (ii) operations and maintenance cost overrun; (iii) delays in the connection uptake; (iv) reduction in connection uptake; and (v) variations in the opportunity cost of labor (which determines the value of time savings).

18. Results of the analysis show that investment costs and operations and maintenance costs convey a low risk to the project. Investment costs can increase as much as 55 percent and the project will still generate positive economic benefits. Operating costs could increase by 200 percent and the project would still be financially viable. Connection uptake is a moderate risk factor. If the connection uptake rate is only 55 percent of the original estimates, the project will switch to economically unviable rates. Delays in connection uptake are less serious. Only if connections uptake are delayed by four years or more does the project become unviable. Changes in the opportunity cost of labor can have a significant effect on the viability. If the opportunity costs drop to zero, the project will still be able to generate economically viable solutions, mainly because the cost of alternative supplies is high – even without the additional effort to transport this water to the residence.

19. In summary, the project is robust, and even large changes in key variables will not easily render the project unviable.

Table 6.6: Sensitivity Analysis Results

Variable	Switch Values	
	Cost Benefit Analysis Using Base Prices	Cost Benefit Analysis Using Economic Prices
Investment Cost Overrun	70%	57%
Operation and Maintenance Cost Overrun	250%	200%
Delays in the Uptake of Connections	4 years	< 4 years
Reductions in the Uptake of Connections	60%	55%
Opportunity Cost of Labor (US\$ per day)	0.38	0

Financial Analysis

20. The proposed Greater Maputo Water Supply Project intends to finance: (i) water treatment capacity for the city of Maputo from the Corumana dam; (ii) household connections in the north of Maputo and associated distribution networks; and (iii) related construction supervision and technical assistance to FIPAG, the asset holding company and ultimate borrower of the loan. Parallel investments will be made in primary and secondary distribution networks, financed by a grant from the Government of the Netherlands, and therefore will not be a financial cost to FIPAG.

21. The following analysis evaluates the financial results of the proposed project with respect to the project implementing agency (FIPAG), taking into account all capital investment costs, all estimated operating costs over a 30-year period, including maintenance costs of the project-financed infrastructure and depreciation, and revenues generated by the investments. Generally, the financial analysis for a project of this type would have included an assessment on the financial impacts on AdeM. However, AdeM's recent policy and corporate changes, taking place at the same time that the tariff was restructured significantly (as explained in Annex 2 and other sections of the PAD), make it difficult to assess AdeM at this point. While the recent restructuring of AdeM has resulted in significant increases in water delivery, changes in cost and revenue patterns have not yet been reflected in audited financial statements of 2012. Older information (pre-2011) and a single audited report of 2011 are not considered reliable enough on which to base future projections. For that reason, the analysis undertaken here focuses on the financial projections of the proposed project.

22. Two investment scenarios have been evaluated. The first reflects the project as proposed – investments developed through the project feasibility study in which investments enable a near-term increase in water treatment capacity of 60,000 m³ per day, approximately 120,000 new household connections in the peri-urban areas north of Maputo, and infrastructure investments that will enable easy expansion of treated water capacity in the future. A second scenario analyzes the potential returns in the future if the expected expansions are undertaken. Details are as follows:

- **Scenario 1:**
 - Abstraction point for 120,000 m³/day of water from the Corumana dam;
 - A raw-water transmission pipeline with capacity of 120,000 m³/day;
 - A water treatment plant with capacity to treat 60,000 m³/day close to the Corumana dam;
 - A pipeline and pumping stations to the main storage reservoir at Machava with transmission capacity for 120,000 m³/day;
 - Distribution mains and reservoirs in north Maputo and ancillary works;
 - 120,000 household connections and associated distribution networks in north Maputo.

 - The estimated cost of Scenario 1 is approximately US\$195 million, financed through a US\$170 million equivalent IDA credit and a US\$25 million equivalent grant expected from the Government of the Netherlands.

- **Scenario 2:** In order to estimate the returns and benefits from the expected later-stage investment in additional water treatment capacity and household connections, Scenario 2 analyzes the above investments, as well as the following additional investments beginning approximately six years after the start of Scenario 1:
 - An additional independent pumping facility for 60,000 m³/day of water from the Corumana dam;
 - An additional 60,000 m³/day treatment plant close to Sabie;
 - An additional 100,000 household connections and associated distribution networks in north Maputo.
 - The estimated additional investment cost is approximately US\$73 million, which would be financed through concessional borrowing. While doubling the new water treatment capacity and nearly doubling new household connections, the cost of the second phase investment is significantly less than the first phase due to the cost savings inherent in (i) preparation during the first phase of the land for the intake and treatment plant, and (ii) full installation of the downstream conveyance in the first phase.

23. Capital costs applied to the two investments are presented in Table 6.7. Note that the costs differ from the costs provided in the above economic analysis due to the inclusion, here, of taxes in the total costs.

Table 6.7: Capital Cost Comparisons, Scenarios 1 and 2 (US\$)

<i>Capital Investment</i>	<i>Scenario 1</i>	<i>Scenario 2</i>	
		<i>Phase 1</i>	<i>Phase 2</i>
<i>Water Treatment and Conveyance</i>	133,000,000	133,000,000	39,500,000
<i>Distribution Mains and Reservoirs and Network</i>	45,000,000	45,000,000	30,000,000
<i>Construction Supervision and Technical Assistance</i>	7,000,000	7,000,000	3,200,000
<i>Total</i>	195,000,000	195,000,000	72,700,000
<i>Total non-grant financed:</i>	170,000,000	170,000,000	72,700,000

* Distribution mains and reservoirs are expected to be financed through a grant, and therefore are not included in the costs applied to the financial analysis. The cost of the secondary distribution network is applied, however, to the economic analysis.

24. In Scenario 1, household connections and the associated network will be installed over a period of approximately six years. Limited sales to those households would be made from existing and additional production from the Umbeluzi treatment works during the first five years of the project. Water from the Corumana investments becomes available for sale in year six of the project.

25. In Scenario 2, the second phase would begin in year seven with the installation of new distribution networks and 100,000 household connections, installed over a five-year period. Water from the additional treatment capacity would be availability beginning in year 12.

26. Operational assumptions are as follows:

Table 6.8: Operational Assumptions

<i>Operational Activity</i>	<i>Scenario 1</i>	<i>Scenario 2</i>
<i>Operations and Maintenance, Civil Works</i>	0.5% of investment cost	Same
<i>Operations and Maintenance, Equipment</i>	1.5% of investment cost	Same
<i>Electricity</i>	US\$.074/m ³	US\$.081/m ³ after additional treatment plant is operating
<i>Chemicals</i>	US\$.016/m ³	Same
<i>Personnel</i>	4.4 staff/1,000 connections	Same
	US\$816/person/month	Same
<i>Non-revenue water (technical losses, new network)</i>	Increasing 0.5% per year, reaching 15% losses	Same
<i>Non-revenue water (commercial losses, new network)</i>	Growing from 5% to 10 %	Same

27. In terms of revenues, the following parameters for demand and collections are assumed:

Table 6.9: Demand and Collections Assumptions

<i>Average household size</i>	5.6
<i>Water consumption</i>	88 liters/person/day
<i>Monthly household consumption</i>	15.1 m ³
<i>Collection ratio</i>	95% of billings

28. Inflation is assumed (in US\$ terms) to be 2 percent annually. Tariffs are assumed to increase 8 percent in 2015 (following two years without increases), and 2 percent annually afterwards.

29. The Net Present Value of total investments, operating expenditures, and revenues were calculated over a 30-year time horizon for Scenario 1 and a 40-year time horizon for Scenario 2 based on a 10 percent discount rate. The internal rate of return was also calculated. The results are as follows:

Table 6.10: NPV and IRR

	<i>Scenario 1</i>	<i>Scenario 2</i>
<i>NPV at 10% discount rate</i>	- US\$ 20.0 million	- US\$ 19.8 million
<i>IRR</i>	7.5%	8.1%

30. The analysis indicates that, as a stand-alone US\$170 million investment, Scenario 1 provides adequate financial returns to FIPAG – an internal rate of return of 7.5 percent, which is above the cost of the financing for the project. However, at a discount rate of 10 percent (i.e., assuming that investments could be made elsewhere that would produce a 10 percent rate of return), the project does show a negative net present value.

31. Given the demand for water in the peri-urban areas of Maputo and the existing low coverage rate, it is highly likely that additional water capacity will be necessary in the near future. Scenario 2, which assumes investment in that additional capacity and in new connections, projects a slightly higher IRR of 8.1 percent. Net Present Value at a discount rate of 10 percent is

still negative, at US\$19.8 million. The improved financial performance is due to the lower marginal investment costs of the additional treatment capacity, given the up-front investments made in Scenario 1.

32. A simple cash flow analysis was undertaken to determine whether project-generated revenues were sufficient to cover debt service requirements. In both scenarios, operational revenues generated from project investments are sufficient to cover debt service (equal to or greater than 1) during all years of the project.

Table 6.11: Debt Service Coverage Ratio

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>14</i>	<i>15</i>
<i>Scenario 1</i>	62	43	15.3	10.9	8.2	1.0	1.3	1.3	1.3	1.4	1.3	1.3	1.3	1.3	1.3
<i>Scenario 2</i>	62	43	15.3	10.9	8.2	1.0	1.3	1.4	1.3	1.2	1.2	1.2	1.8	1.8	1.8

Annex 7: Documents Available in files

Greater Maputo Water Supply Expansion Project

Letter re: Greater Maputo Water Supply for the Greater Maputo Metropolitan Area, African Development Bank (AfDB), February 10, 2010

Public Consultation on Master Plan, C. Lotti & Associati S.p.A/SIM/Gico Branch & Consultec, October 28, 2010

Memorandum of Understanding between ARA-SUL and FIPAG, January 14, 2011

Letter re: Water Supply Conveyance Project to Greater Maputo Metropolitan Area, Ministry of Planning and Development, Republic of Mozambique, March 31, 2011

Master Plan Main Report for the Greater Maputo Water Supply System, C. Lotti & Associati S.p.A/SIM/Gico Branch & Consultec, April 2011

Master Plan for Greater Maputo Water Supply System, C. Lotti/SIM Spa., April, 2011

Letter re: Greater Maputo Water Supply Project – Additional Financing, Agence Française de Développement (AFD), July 8, 2011

Concept Review Meeting, World Bank, August 30, 2011

Approved Minutes of Concept Note Review Meeting, World Bank, August 30, 2011

Letter re: ORIO Parallel Financing, World Bank, February 29, 2012

Technical Feasibility Studies for Greater Maputo Water Supply Scheme, Options Report and Final Design, June, 2012

Letter re: Phase 1 – Greater Maputo Water Supply – Corumana System, ORIO, NL Agency, Ministry of Foreign Affairs of Netherlands, August 2, 2012

Letter of Sector Policy, Ministry of Public Works & Housing, September 27, 2012

Letter re: Abastecimento de Água a Área Metropolitana de Maputo – Pedido de Incremento do Financiamento, Ministry of Planning and Development, Republic of Mozambique, October 26, 2012

Delegated Management Framework Commitment Letter, Ministry of Public Works & Housing, Republic of Mozambique – IFC Request for Support, October 17, 2012

Letter re: Abastecimento de Água a Área Metropolitana de Maputo – Solicitação de Fundos Adicionais, World Bank, November 12, 2012

Concept Note, IFC, November 5, 2012

Final Reports for Change in Tariff Structure Policy: Impact in Low-Income Communities in Maputo, CRA/Stanford University, December 28, 2012

Resettlement Action Plan Report, FIPAG, January 2013

General Procurement Notice, FIPAG, January 31, 2013

Terms of Reference for Supervision Services of the Trunk Main, FIPAG, February 27, 2013

Terms of Reference for Supervision Services for the Water Treatment, FIPAG, February 27, 2013

Environmental and Social Impact Assessment Report, FIPAG, March 2013

Email re: Request for DevCo Funds: Mozambique Water \$1.1 m, IFC, March 2, 2013

Prequalification Document for Procurement, Part 1 & Part 2– Transmission Line Works, FIPAG, March 2013

Annex 8: Letter of Sector Policy

Greater Maputo Water Supply Expansion Project



República de Moçambique

Ministro das Obras Públicas e Habitação

Ofício nº 2300 /GM.500A/ 002 /2012

Assunto: *Estratégia de Desenvolvimento do Quadro de Gestão Delegada no Abastecimento de Água Urbano*

Excelência,

Para o conhecimento e consideração de V.Excia, venho por este meio dar o informe abaixo, relativo a evolução do Quadro de Gestão delegada.

O Quadro de Gestão de Delegada (QDG), estabelecido por Decreto nº 72/98, de 23 de Dezembro e o seu alargamento pelo Decreto nº 18/2009, de 13 de Maio, são os instrumentos legais que permitem a delegação da gestão do Abastecimento de Água Urbano ao Sector Privado. Neste processo intervêm quatro entidades, nomeadamente, (i) o Fundo de Investimento e Património do Abastecimento de Águas – FIPAG, que gere o património e investimento público (infra-estruturas) dos sistemas urbanos principais de abastecimento de água, (ii) a Administração de Infra-estrutura de Água e Saneamento – AIAS, responsável pela gestão do património dos sistemas públicos secundários de distribuição de água e aqueles que lhe forem alocados, e pelos sistemas públicos de drenagem de águas residuais, (iii) os Operadores do sector público e privado, a quem, através de contratos, o FIPAG e a AIAS delegam a gestão das infra-estruturas, e (iv), o Conselho de Regulação de Águas - CRA, que é o órgão encarregado de conciliar os interesses dos utentes do serviço público de abastecimento de água e de drenagem de águas residuais e os do operador, assegurando o equilíbrio entre a qualidade do serviço prestado e a sua adequação aos interesses dos utentes e a sustentabilidade económica dos sistemas.

À
SUA EXCELÊNCIA
LORENCE CLARK
DIRECTOR DO BANCO MUNDIAL
ANGOLA, MOÇAMBIQUE E SÃO TOMÉ E PRÍNCIPE
REGIÃO DE ÁFRICA

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1. ESTRATÉGIA DO GOVERNO

A Estratégia Nacional de Água e Saneamento Urbano 2011 – 2025, aprovada na 42ª Sessão Ordinária do Conselho de Ministros, realizada a 22 de Novembro de 2011, enfatiza no concernente ao Desenvolvimento da Função de Prestação de Serviço o seguinte:

- (i) Prestar o serviço de abastecimento de água, nos sistemas principais e secundários, através de instituições autónomas operando com base em princípios comerciais, de modo a garantir a sustentabilidade operacional dos sistemas.
- (ii) Fomentar e consolidar o surgimento de operadores nacionais através de facilidades de assistência técnica e financeira e do desenvolvimento dum mercado de serviços técnicos de apoio aos operadores, assegurando a realização de economias de escala.
- (iii) Consolidar o processo de profissionalização e autonomização dos operadores dos sistemas principais, através de:
 - Agrupamento dos sistemas em regiões operacionais e subsequente autonomização, por via da criação de sociedades de direito privado com crescente participação do sector privado nacional;
 - Desenvolvimento dos serviços em grandes áreas metropolitanas com uma abordagem específica que combine uma participação preponderante do sector privado nacional com a aquisição de capacidades tecnológicas especializadas e, com envolvimento do Estado na garantia do processo. Criação de oportunidades para os pequenos e médios operadores servirem zonas periféricas com recurso a sistemas independentes ou a partir de fornecimento de água em alta dos adutores principais.
- (iv) Fomentar o estabelecimento rápido de capacidade para a gestão profissionalizada e autónoma dos sistemas secundários, adoptando soluções diferenciadas e progressivas, através de:
 - Um programa para o vocacionamento de empreendedores locais, para exploração dos sistemas de abastecimento de água, em gestão delegada;
 - Promoção do empreendedorismo de técnicos nacionais, com capacidade e competência demonstrada, para assumirem a gestão em regime comercial dos serviços, e eventualmente se associar a empresários nacionais interessados;
 - Facilitação da entrada expedita de operadores privados julgados competentes na gestão delegada dos serviços de acordo com a legislação em vigor;
 - Caso não for possível implementar a Gestão Delegada, a gestão pode ser feita transitoriamente pela entidade provincial responsável pela gestão do património, com o apoio da respectiva agência central.
- (v) Proteger a estabilidade dos contratos de Gestão Delegada, mitigando o risco do negócio e assegurando o cumprimento dos termos contratuais, nomeadamente por meio da intervenção do regulador.
- (vi) Assegurar uma cobertura de serviços de abastecimento de água urbana de pelo menos 80% da população.

2. EVOLUÇÃO DO QUADRO DE GESTÃO DELEGADA

Desde a sua criação, o QGD provou ser uma ferramenta poderosa para a melhoria dos serviços de abastecimento de água urbano. Ocorreu durante este período uma considerável expansão dos serviços, sendo que das iniciais 5 cidades em 1998 (Maputo, Beira, Quelimane, Nampula e Pemba) o QGD cresceu para as actuais 21 cidades e vilas principais.

As reformas também contribuíram significativamente para o alcance dos Objectivos de Desenvolvimento do Milénio. Entre 2005 e 2011 foram servidos adicionalmente mais de 2.200.000 pessoas e até 2015 serão servidas um total de 4.100.000 pessoas contra as actuais 3.500.000.

Neste contexto, o Conselho de Ministros apreciou positivamente a evolução do abastecimento de água do Quadro de Gestão Delegada (QGD) e decidiu ampliar as competências do FIPAG através do Decreto nº 7/2012 de 10 de Maio de 2012 para melhor responder as estratégias de consolidação do QGD. À luz deste Decreto, o FIPAG pode participar na gestão dos sistemas de abastecimento de água, quer directamente, quer através de outros mecanismos de natureza comercial, como sejam por exemplo sociedades comerciais. No actual modelo de gestão do sistema de abastecimento de água sob a responsabilidade do FIPAG, as Áreas Operacionais agrupadas em Direcções Regionais e a AdeM (Águas da Região de Maputo), devem ser transformadas e reformuladas em sociedades comerciais, o que se ajusta perfeitamente aos objectivos propostos, cumprindo igualmente o que está estabelecido no QGD e as directivas gerais estabelecidas pelo Conselho de Ministros.

A reformulação das Direcções Regionais e da AdeM em Sociedades Comerciais Regionais de direito privado com a participação do Estado, dada à sua natureza, permitirá o desenvolvimento e implementação das políticas sociais do Estado, ao mesmo tempo que promoverá a participação do sector privado, entre outros incluindo a estabilidade da massa laboral e flexibilidade do programa de ajustamentos de tarifas.

3. OBJECTIVOS

3.1 Objectivos gerais:

1. Consolidar os resultados obtidos, ao longo dos últimos 12 anos, no QGD do Abastecimento de Água Urbano, através da criação de Sociedades Comerciais Regionais de direito privado, dedicadas a operação e gestão dos principais Sistemas de Abastecimento de Água;
2. Preparar as bases para o “serviço universal, sustentando o serviço da dívida e assegurando a atracção de novos investimentos na Área Metropolitana do Maputo, Regiões Sul, Centro e Norte; tendo como metas intermédias 70% de cobertura em 2015 e 80% de cobertura em 2025.
3. Adoptar opções mais consentâneas com o actual quadro de desenvolvimento do QGD, apropriadas à participação do sector privado, como mais-valia em reforço ao papel do Estado.

3.2 Decisões do Governo:

Para o alcance dos objectivos propostos, relativos à criação de Sociedades Comerciais Regionais de direito privado o Governo decidiu prosseguir com os seguintes pressupostos:

1. Manter a natureza do FIPAG, como Fundo. Assim, o FIPAG continuará com o papel de “gestor do património, em nome do Estado, e ainda realizar o investimento público e promover a gestão autónoma dos sistemas de abastecimento de água;
2. Alargar as competências do FIPAG, para poder constituir e/ou participar em sociedades comerciais, consórcios, associações, fundações e outras entidades afins cujo objecto social seja o serviço público de abastecimento de água;
3. Constituir as Sociedades Comerciais Regionais de direito privado, a partir do património de exploração dos actuais agrupamentos regionais, que não inclui as infra-estruturas permanentes de funcionamento dos sistemas, nomeadamente: estações de captação, tratamento e distribuição de água e os respectivos equipamentos, reservatórios e redes de distribuição e os equipamentos que dela fazem parte, infra-estruturas administrativas e comerciais;
4. Participar nas Sociedades Comerciais Regionais de direito privado, inicialmente como accionista exclusivo e transferir ao sector privado, de acordo com o nível de desenvolvimento e sustentabilidade, até um máximo de 49%, assegurando o balanço entre o Estado e o Sector privado no mercado de água;
5. Desenvolver a participação gradual de operadores domésticos suportados por um processo de capacitação. O Governo vai criar um ambiente favorável para motivar a participação do sector privado, oportunidade de negócio, formação e suporte técnico para operadores emergentes e estabelecimento de mecanismos de incentivo e medidas de mitigação de riscos;
6. O Governo vai assegurar que logo que todas as condições sejam criadas as Empresas envolvam uma parceria estratégica para desenvolver e capacita-las em matéria de gestão;
7. Viabilizar investimentos e negócio como resultado de ganho de escala por associação. Os sistemas quando associados permitem a viabilização de investimentos em maior escala, que individualmente não reúnem condições para o efeito nos critérios de financiamento.

4. MEDIDAS A SEREM IMPLEMENTADAS

Com base nas estratégias definidas serão implementadas as seguintes medidas:

- Constituição de Sociedades Regionais Comerciais de direito privadas, dedicadas a operação e gestão dos principais Sistemas de Abastecimento de Água, detidas maioritariamente pelo Estado, representado pelo FIPAG.

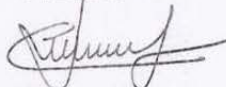
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- Para a Região de Maputo, a extensão da área de jurisdição do serviço para a área Metropolitana, dando continuidade sustentável a operação do sistema até pelo menos 2029, mantendo-se o modelo de sociedade comercial de direito privado.
- Adjudicar o património corrente de operação e gestão dos sistemas para a constituição das Sociedades Comerciais Regionais de direito privado, que não inclui as infra-estruturas permanentes de funcionamento dos sistemas, nomeadamente estações de captação e de tratamento, reservatórios e rede de distribuição de água e os respectivos equipamentos, que dela fazem parte, bem como infra-estruturas administrativas e comerciais, detidas pelo FIPAG em representação do Estado.
- Que por princípio, o Estado controle pelo menos 51% do capital destas sociedades comerciais e promova a participação crescente e rápida do sector privado continuando a assegurar o seu envolvimento na gestão como parte no processo de capacitação.
- Envolvimento de parcerias estratégicas para desenvolver a capacitação e gestão das Empresas (Sociedades Regionais Comerciais).
- A participação do sector privado nas sociedades regionais comerciais será de forma competitiva e transparente. Poderá igualmente assegurar a participação dos trabalhadores na estrutura accionista das sociedades constituídas, através de fundos dedicados.
- Estabelecimento de contrato de gestão delegada entre o FIPAG, representante legítimo do Estado, e todas as sociedades de direito privado, incluindo aquelas com participação pública, que pretendam estar envolvidas na prestação de serviços no abastecimento de água. Devem ser resguardados no contrato os compromissos financeiros previamente assumidos pela FIPAG.

Cientes da atenção que Vossa Excelência irá dispensar ao assunto, subscrevo-me com elevada estima e consideração.

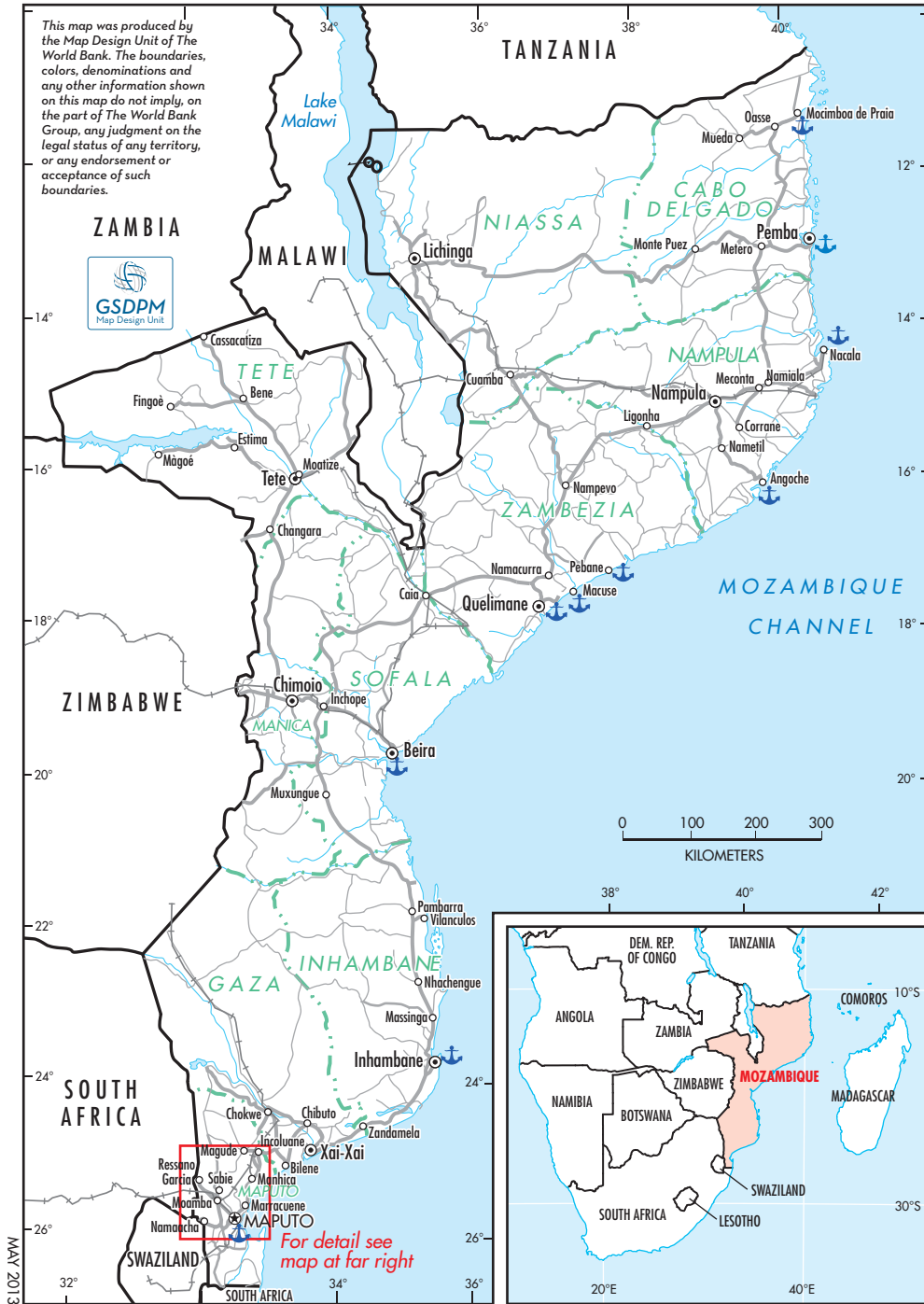
Maputo, aos 27 de Setembro de 2012

O Ministro



Cadmiel Filiane Mutemba

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MOZAMBIQUE GREATER MAPUTO WATER SUPPLY EXPANSION PROJECT

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| | SERVED PROJECT AREA | | PAVED ROADS | | SELECTED CITIES |
| | NOT SERVED PROJECT AREA | | SECONDARY ROADS | | PROVINCE CAPITALS |
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| | | | RAILWAYS | | PROVINCE BOUNDARIES |
| | | | PORTS | | INTERNATIONAL BOUNDARIES |

