

AFRICAN DEVELOPMENT FUND

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Original : English**



APPRAISAL REPORT

ANGOLA

**SUMBE WATER SUPPLY, SANITATION AND INSTITUTIONAL
SUPPORT PROJECT**

**OPERATIONS – WATER AND SANITATION
DEPARTMENT**

AUGUST 2007

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PROJECT INFORMATION SHEET

The information given hereunder is intended to provide some guidance to prospective suppliers, contractors, consultants and all persons interested in the procurement of goods and services for projects/programs approved by Boards of Directors of the Bank Group. More detailed information and guidance should be obtained from the Executing Agency of the Beneficiary.

1. COUNTRY : Angola
2. NAME OF PROJECT: Sumbe Water Supply, Sanitation and Institutional Support Project
3. LOCATION : Sumb in Kwanza Sul Province
4. EXECUTING AGENCIES: Ministry of Energy and Water
National Directorate of Water
CP no. 2229
Luanda – Angola
Tel: 244-222-339988 or 339335
Fax: 244-222-339988 or 339335
5. PROJECT DESCRIPTION:
The project will involve: i) Water Supply Infrastructure; ii) Sanitation; iii) Community Mobilization, Hygiene Education, and Environmental Awareness, iv) Institutional Support for Water Utility, v) Development of a Comprehensive NRWSSP, and vi) Project Management
6. TOTAL COST : UA 24.00 million
Foreign Exchange : UA 18.00 million
Local Cost : UA 6.00 million
7. ADF LOAN : UA 12.0 million
8. OTHER SOURCES OF FINANCE
Government of the Angola : UA 12.00 million
9. DATE OF APPROVAL : November 2007
10. ESTIMATED STARTING DATE AND DURATION : January 2008, 4 years
11. PROCUREMENT :
Procurement of goods and works and procurement of consultancy services (financed from ADF resources) will be in accordance with the Bank's Rules of Procedure for Procurement of Goods and Works or Rules of Procedure for Use of Consultants, as appropriate, using the relevant Bank Standard Bidding Documents. Civil Works: International Competitive Bidding (ICB) and National Competitive Bidding (NCB). Goods: NCB, International Shopping (IS) and National Shopping (NS). Services: Short-listing
12. ENVIRONMENTAL CATEGORY : II

EQUIVALENTS AND ABBREVIATIONS

CURRENCY EQUIVALENTS

(June 2007)

1 UA	=	USD	1.51
1 UA	=	AON	120
1 USD	=	AON	80

WEIGHTS AND MEASURES

l/c/d	=	litres per capita per day
m ³	=	cubic metre (1000 litres)
m ³ /d	=	cubic metre per day
MI/d	=	million litres (thousand cubic metres) per day
Mm ³	=	million cubic metres
Km	=	kilometres

FISCAL YEAR

1st January- 31st December

ABBREVIATIONS

ADB	African Development Bank	MINFAMU	Ministry of Family and Women's Promotion
ADF	African Development Fund	MINFIN	Ministry of Finance
AEP	Angolan Enterprise Programme	MINPLAN	Ministry of Planning
CSP	Country Strategy Paper	MPLA	Movement for the Liberation of Angola
BNA	Banco Nacional de Angola	NGO	Non-governmental Organisation
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women	NRRP	National Rehabilitation and Reconstruction Programme
DNA	Direcção Nacional de Agua (National Directorate of Water)	NSP	National HIV/AIDS Strategy
DW	Development Workshop (an NGO)	O&M	Operation and Maintenance
DWSS	Drinking Water Supply and Sanitation	OHCHR	Office of the United Nations High Commissioner for Human Rights
EA	Executing Agency	PFA	Platform of Action of the Fourth International Conference for Women
ECP	Estratégia de Combate à Pobreza (Angola's PRSP)	PHAST	Participatory Hygiene and Sanitary Transformation
EMRP	Emergency Rehabilitation Project (World Bank)	PRRP	Post-conflict Rehabilitation and National Reconstruction Programme
ELISAL	Empresa de Limpeza e Saneamento de Luanda	PRSP	Poverty Reduction Strategy Program
EPAL	Empresa Publica de Agua	SFA	Schools for Africa
FAO	United Nations Food and Agricultural Organisation	TA	Technical Assistant
FAS	Fundo de Apoio Social (World Bank's Social Action Fund)	ToR	Terms of Reference
GDI	Gross Domestic Income	U5MR	Under 5 (five years old) Mortality Rate
GDP	Gross Domestic Product	UFW	Unaccounted For Water
GoA	Government of Angola	UNAIDS	United Nations Programme on AIDS
HDI	Human Development Index	UNDAF	United Nations Development Assistance Framework
HDR	Human Development Report	UNDESA	United Nations Department for Economic and Social Assistance
IMF	International Monetary Fund	UNDP	United Nations Development Programme

INE	Instituto Nacional Estatística	UNFPA	United Nations Population Fund
MICS	Multiple Indicator Cluster Survey	UNHCR	United Nations High Commissioner for Refugees
MINADER	Ministry of Agriculture and Rural Development	UNICEF	United Nations Children's Fund
MINEA	Ministry of Energy and Water	UNITA	National Union for Angola's Independence
MINEDU	Ministry of Education	WU	Water Utility
MINSA	Ministry of Health		

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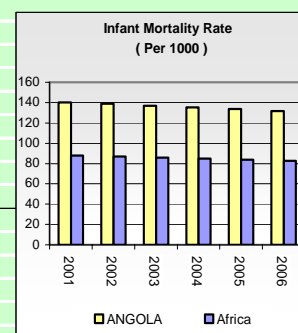
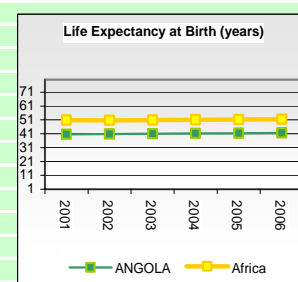
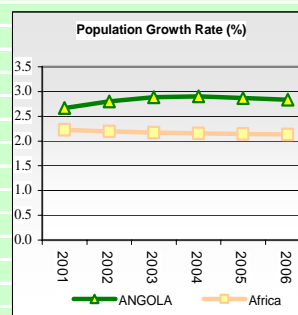
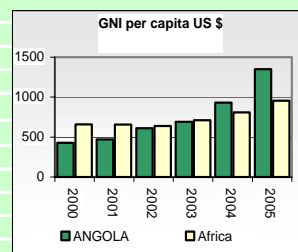
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Angola

COMPARATIVE SOCIO-ECONOMIC INDICATORS

	Year	Angola	Africa	Developing Countries	Developed Countries
Basic Indicators					
Area ('000 Km ²)		1 247	30 307	80 976	54 658
Total Population (millions)	2006	16.4	924.3	5 253.5	1 211.3
Urban Population (% of Total)	2006	33.3	38.4	43.1	78.0
Population Density (per Km ²)	2006	13.2	30.5	60.6	22.9
GNI per Capita (US \$)	2005	1 350	955	1 154	26 214
Labor Force Participation - Total (%)	2005	41.3	42.3	45.6	54.6
Labor Force Participation - Female (%)	2005	46.3	41.1	39.7	44.9
Gender -Related Development Index Value	2004	0.431	0.475	0.694	0.911
Human Develop. Index (Rank among 177 countries)	2004	161	n.a.	n.a.	n.a.
Popul. Living Below \$ 1 a Day (% of Population)	2000	68.0	45.0	32.0	20.0
Demographic Indicators					
Population Growth Rate - Total (%)	2006	2.8	2.1	1.4	0.3
Population Growth Rate - Urban (%)	2006	4.4	3.5	2.6	0.5
Population < 15 years (%)	2006	46.4	41.3	32.4	18.0
Population >= 65 years (%)	2006	2.5	3.4	5.5	15.3
Dependency Ratio (%)	2006	95.2	80.8	57.8	47.8
Sex Ratio (per 100 female)	2006	97.3	99.9	102.7	94.2
Female Population 15-49 years (% of total population)	2006	25.3	26.8	27.1	25.0
Life Expectancy at Birth - Total (years)	2006	41.7	51.4	64.1	76.0
Life Expectancy at Birth - Female (years)	2006	43.2	52.2	65.9	79.7
Crude Birth Rate (per 1,000)	2006	47.6	36.5	22.8	11.0
Crude Death Rate (per 1,000)	2006	21.3	14.9	8.7	10.4
Infant Mortality Rate (per 1,000)	2006	131.8	82.5	59.4	7.5
Child Mortality Rate (per 1,000)	2006	233.1	137.7	89.3	9.4
Total Fertility Rate (per woman)	2006	6.5	4.7	2.8	1.6
Maternal Mortality Rate (per 100,000)	2004	1 850	623	440	13
Women Using Contraception (%)	2004	6.2	26.6	59.0	74.0
Health & Nutrition Indicators					
Physicians (per 100,000 people)	2005	16.7	38.2	78.0	287.0
Nurses (per 100,000 people)*	2005	247.8	110.7	98.0	782.0
Births attended by Trained Health Personnel (%)	2004	22.5	43.7	56.0	99.0
Access to Safe Water (% of Population)	2004	53.0	62.3	78.0	100.0
Access to Health Services (% of Population)*	2000	24.0	61.7	80.0	100.0
Access to Sanitation (% of Population)	2004	31.0	44.2	52.0	100.0
Percent. of Adults (aged 15-49) Living with HIV/AIDS	2005	3.3	4.5	1.3	0.3
Incidence of Tuberculosis (per 100,000)	2004	259.0	310.2	144.0	11.0
Child Immunization Against Tuberculosis (%)	2005	61.0	78.1	82.0	93.0
Child Immunization Against Measles (%)	2005	45.0	68.0	73.0	90.0
Underweight Children (% of children under 5 years)	2003	40.0	39.0	31.0	...
Daily Calorie Supply per Capita	2004	2 178	2 435	2 675	3 285
Public Expenditure on Health (as % of GDP)	2002	2.1	5.6	1.8	6.3
Education Indicators					
Gross Enrolment Ratio (%)					
Primary School - Total	2004/05	91.0	96.7	91.0	102.3
Primary School - Female	2004/05	69.0	90.4	105.0	102.0
Secondary School - Total	2004/05	17.0	43.1	88.0	99.5
Secondary School - Female	2004/05	16.8	36.5	45.8	100.8
Primary School Female Teaching Staff (% of Total)	2003/04	41.0	47.5	51.0	82.0
Adult Illiteracy Rate - Total (%)	2006	32.6	43.3	26.6	1.2
Adult Illiteracy Rate - Male (%)	2006	17.1	34.5	19.0	0.8
Adult Illiteracy Rate - Female (%)	2006	45.8	52.4	34.2	1.6
Percentage of GDP Spent on Education	2004	2.6	4.7	3.9	5.9
Environmental Indicators					
Land Use (Arable Land as % of Total Land Area)	2005	2.4	6.0	9.9	11.6
Annual Rate of Deforestation (%)	2000-05	0.2	0.7	0.4	-0.2
Annual Rate of Reforestation (%)	2000-05	1.0	10.9
Per Capita CO2 Emissions (metric tons)	2005	0.5	1.0	1.9	12.3



Sources : ADB Statistics Department Databases; World Bank: World Development Indicators;

last update : October 2007

UNAIDS; UNSD; WHO, UNICEF, WRI, UNDP; Country Reports

Note : n.a. : Not Applicable ; ... : Data Not Available; * : latest data available within 1995-2000

ANGOLA: SUMBE WATER SUPPLY AND SANITATION REHABILITATION AND AUGMENTATION PROJECT - MPDE MATRIX

HIERACHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGET AND TIME FRAME	ASSUMPTIONS AND RISKS
<p>Sector Goal</p> <p>1. To improve the health and quality of life and reduced poverty of the population of Angola and contribute to achievement of Millennium Development Goal for water and sanitation.</p>	<p>Long Term Outcome</p> <p>1. Halve the proportion of people without water supply and sanitation services by 2015 i.e. increase coverage of urban and rural water supply and sanitation.</p>	<p>Beneficiaries</p> <p>Population of Angola</p>	<p>1. Percentage of population with access to safe and clean water</p> <p>2. Percentage of rural population with access to improved sanitation</p> <p>3. Reduction in incidence of water related diseases</p>	<p>1. 1. Increased proportion of the population with access to clean and safe water increased to 67% by 2015.</p> <p>2. Increased access to improved sanitation facilities to 80% by 2015</p> <p>3. Reduce incidence of water-borne diseases by 30% by 2015</p>	<p>Stable macroeconomic framework continued</p> <p>Consistency in sector reforms</p> <p>Sustained peace in the country</p> <p>Improved human resource capacity in the country.</p>
<p>Project Objectives</p> <p>1. To improve the access , quality and sustainability of water supply and sanitation services of Sumbe town</p>	<p>Medium Term Outcome</p> <p>1.1.1) Increased proportion of the residents of Sumbe with access to adequate and convenient supply of clean water</p> <p>1.2.1) Increased access and use of the sanitation services (sewerage system in core area/urban Sumbe and improved excreta disposal in semi and periurban areas)</p> <p>1.2.2) All schools and public institutions with access to adequate water and sanitation facilities</p> <p>1.2.3 Improved awareness and attitudes on environmental cleanliness and personal hygienic practices among school pupils and residents of semi and peri-urban Sumbe</p> <p>1.3.1 Improved management and functionality of water supply and sanitation facilities.</p> <p>1.3.2 Improved management of public water supply points in semi urban & peri-urban areas</p>	<p>All residents of Sumbe municipality</p> <p>Sumbe municipal authorities</p> <p>All local Authorities</p> <p>Schools, public institutions</p> <p>Private firms</p> <p>NGOs</p> <p>MINEA/DNA</p> <p>Ministry of Health,</p> <p>Ministry of Education,</p> <p>Ministry of Family and Women Affairs</p> <p>Ministry of Urban Planning and Environment</p> <p>Sumbe Water and Sanitation Utility</p> <p>Sumbe Municipality</p> <p>Sumbe residents</p>	<p>1.1.1.1 % of residents of Sumbe with access clean water supply</p> <p>1.1.1.2) Number of hours of supply</p> <p>1.1.1.3 Quality of water supplied</p> <p>1.1.1.4 No. of connections to water system</p> <p>1.1.1.5 No of communal/public water points in peri/semi urban areas</p> <p>1.2.1.1a % of households in urban area connected to sewerage system</p> <p>1.2.1.1b Effluent quality from sewage treatment ponds at marine outfall</p> <p>1.2.1.2% residents with access to sanitation in peri urban and semi urban areas</p> <p>1.2.2.1 % Schools and public institutions with adequate water and sanitation facilities</p> <p>1.2.3.1 % of pupils washing hands after latrine use</p> <p>1.3.1.1 % Unaccounted for water</p> <p>1.3.1.2 % bill collection efficiency</p> <p>1.3.1.3 % of cost recovery.</p> <p>1.3.2.1.% of public water points with actively functioning committees</p> <p>1.3.2.2 % of committees with women in key positions</p>	<p>1.1.1.1 90% of residents of Sumbe with access clean water supply by 2011</p> <p>1.1.1.2 Water supply system able to meet 24 hour supply by 2011</p> <p>1.1.1.3 Water quality meeting national standards by 2010</p> <p>1.1.1.4 7000 new and metred connections by 2011</p> <p>1.1.1.5 200 communal/public water points in peri/semi urban areas by 2011</p> <p>1.2.1.1a 80% of households in urban area connected to sewerage system</p> <p>1.2.1.1b Effluent from sewage treatment ponds at marine outfall meeting national standards by 2010</p> <p>1.2.1.2 40% of residents in semi urban and peri urban areas with access to sanitation facilities by 2011</p> <p>1.2.2.1 All Schools and public institutions with adequate water and sanitation facilities by 2012</p> <p>1.2.3.1 30% of pupils washing after use of latrines by 2011</p> <p>1.3.1.1 20% unaccounted for water by 2011 from over 50% in 2007</p> <p>1.3.1.2 More than 90% bills collection efficiency by 2011</p> <p>1.3.1.3 Tariff collection meets O&M costs by 2011, and Full cost recovery by 2016</p> <p>1.3.2.1 All public water points with actively functioning committees by 2011</p> <p>1.3.2.2 Committees with women in key positions</p>	<p>Availability of resources</p> <p>Sustained donor support</p> <p>Adoption of institutional changes</p> <p>Tariff Adjustments</p> <p>Willingness of residents to continue financial contributions for operation and maintenance</p> <p>Commitment of residents to continue to sustain the systems implemented</p> <p>Capacity of DNA, Provincial government, NGOs and the communities to implement and maintain communal/public water points.</p>

HIERACHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGET AND TIME FRAME	ASSUMPTIONS AND RISKS
<p>Activities/Inputs</p> <p>1. Engineering Consultant engaged to prepare detailed design</p> <p>2 Contractors engaged to undertake the rehabilitation and expansion of water supply system</p> <p>3 Contractors engaged to undertake rehabilitation of the sewerage system for urban core area</p> <p>4 Formation and Capacity building for commercial utility</p> <p>5 Advocacy among water consumers of payment for water</p> <p>6 Mainstream Gender, HIV/AIDS and malaria, and environment.</p> <p>7 Training and capacity building for planning and management of water supply and sanitation facilities in semi and peri urban areas. Sanitation and hygiene education</p> <p>8 Promotion of sanitation and personal hygiene in semi urban and peri urban areas</p> <p>9. Develop Solid Waste Management Plan for Sumbe</p> <p>10. Develop Comprehensive National Rural water and Sanitation Program</p>	<p>Short-Term Outputs</p> <p>1.1 Detailed designs for rehab/augmentation of water supply and sanitation system prepared</p> <p>2.1 Water supply system rehabilitated and augmented and extended to periurban and semi urban areas</p> <p>3.1 Sewerage system rehabilitated</p> <p>4.1 Improved operation and management of the water supply and sanitation system</p> <p>5.1 Payment for water and sanitation services</p> <p>6.1 Gender, HIV/AIDS and malaria integrated in the training and communication materials</p> <p>6.2 Gender specific indicators included in M&E system</p> <p>6.3 Environmental template prepared and used for screening and mitigation during construction and O&M of facilities.</p> <p>7.1 Community organizations in semi urban able to manage public water supply points</p> <p>7.2 Community organizations/NGOS and private sector able to deliver sanitation and hygiene education and able to construct sanitation facilities</p> <p>8.1 Demonstration sanitation facilities constructed</p> <p>9.1 Study report on Solid Waste Management Plan for Sumbe</p> <p>10.1 Study Report on National Rural Water and Sanitation Program</p>	<p>DNA, Consultants, Contractors, Municipality and Provincial Authorities, Water and Sanitation Utility</p> <p>Water and sanitation Utility, DNA, municipality authorities Users (men, women, children) of water and sanitation services</p> <p>Communities, Community organizations, artisans, small scale service providers of water and sanitation services</p>	<p>1.1.1 Design report and tender documents for the rehabilitation and augmentation of water supply and sewerage systems</p> <p>2.1.1 Water supply treatment, distribution and reticulation system rehabilitated/augmented</p> <p>3.1.1 Sewerage system constructed</p> <p>4.1.1 Water and sewerage utility formed by 2008 and fully operational by 2009</p> <p>5.1.1 Advocacy materials for water consumers to pay for water prepared and disseminated</p> <p>6.1.1 Training materials integrating gender, HIV/AIDS and malaria</p> <p>6.2.1 Gender specific indicators developed</p> <p>6.3.1 Environmental template</p> <p>7.1.1 No of committees with meaningful participation of women trained for management of water and sanitation facilities</p> <p>7.2.2 No. of small scale service providers (SSP)/artisans trained</p> <p>8.1.1 No. of demonstration sanitation facilities constructed</p> <p>9.1.1 Study of current solid waste, Institutional arrangements and cost recovery study thematic report</p> <p>10.1.1 Development of Strategy and Investment Plan, guidelines and tools/manuals for implementation of NRWSSP</p>	<p>1.1.1 Design report and tender documents for the rehabilitation and augmentation of water supply and sewerage systems by March 2009</p> <p>2.1.1 Water supply treatment, distribution and reticulation system rehabilitated/augmented to 350m³/hr from 150 m³/hr and extended to periurban and semi urban areas by 2011</p> <p>3.1.1 Sewerage system constructed for average dry weather flow of 1,462 m³/day flow by end of 2010</p> <p>4.1.1 Water and sewerage utility formed by 2008 and fully operational by 2009</p> <p>5.1.1 Advocacy materials for water consumers to pay for water prepared and disseminated by end of 2009</p> <p>6.1.1 Training materials integrating gender, HIV/AIDS and malaria by 2009</p> <p>6.2.1 Gender specific indicators developed by 2008</p> <p>6.3.1 Environmental template prepared by 2008</p> <p>7.1.1 200 committees with meaningful participation of women trained for management of water and sanitation facilities</p> <p>7.2.2 5 SSP trained by 2009</p> <p>8.1.1 100 demonstration sanitation facilities constructed by 2011</p> <p>9.1.1 Study of current solid waste, Institutional arrangements and cost recovery study thematic report by November 2008</p> <p>10.1.1 Development of Strategy and Investment Plan, guidelines and tools/manuals for implementation of NRWSSP by December 2008</p>	<p>Timely engagement of local authorities at provincial and municipality level</p> <p>Timely mobilization of communities</p> <p>Willingness of users/communities to pay for water and sanitation services</p> <p>Timely release of budgetary allocations</p>

EXECUTIVE SUMMARY

1. The Government of Angola has prioritised the rehabilitation and expansion of the dilapidated water supply systems of urban centres starting with 15 provincial capitals. These systems by 2002 were in total disrepair and had insufficient capacity to serve the current populations due to years of neglect. The proposed project for Sumbe, capital of Kwanza Sul Province, is the outcome of the Master plan, and is an integral part of the GOA's program for the provision of water supply and sanitation in the provincial capitals.

2. The project is in line with the national sector goal of improving the quality of life and productivity of all Angolans by ensuring an equitable provision of an adequate quantity and quality of water to all competing user groups and improved sanitation services for all at acceptable cost and on a sustainable basis. The proposed establishment of a Water Utility to manage the water supply and sanitation services in the project area, gradually moving towards full cost recovery, addresses many of the principles of the Water Law which recognizes the need for autonomy in the delivery of the services and acknowledges water as an economic good. The project is in line with the government's PRSP objectives of rehabilitating basic infrastructure and institutional capacity building and improvement of governance.

3. The project is also in line with the Bank's Integrated Water Resources Management Policy which, among others, supports priority of rehabilitation of existing infrastructure over new construction, and also encourages ultimate cost recovery while taking into account social equity and capacity to pay by the poor. It is also in agreement with the Bank's Strategic Plan for the sector, which recognises that in order to ensure sustainability, the poor have to be fully involved in the whole process of service delivery and maintenance.

Project Objectives

4. The objective of the project is to improve the access, quality and sustainability of water supply and sanitation services of Sumbe town (capital of Kwanza Sul Province), including the peri-urban area, by rehabilitating and extending the water supply and sanitation system, and providing institutional support for the formation and functioning of a water utility.

Project Description

5. The project comprises of rehabilitation/expansion of water supply and sanitation system in Sumbe and the development of a Comprehensive National Rural Water and Sanitation Program. The project's main components are: a) Water Supply infrastructure; b) Sanitation consisting of (b.1) rehabilitation of sewerage infrastructure, (b.2) On site sanitation in schools, health centres, markets and public places and (b.3) solid waste management c) Community Mobilization, Hygiene Education and Environmental Awareness, d) Institutional Support for Water and Sanitation Utility, e) Development of Comprehensive National Rural Water Supply and Sanitation Program and f) Project Management.

Project Costs

6. The total cost of the project is estimated at UA 24 million, of which UA 18 million (75%) is in foreign currency and UA 6.0 million (25%) in local costs.

Sources of Finance

7. The project will be financed by GOA and the ADF loan. The proposed ADF loan of UA 12 million, which represents 50% of the total project cost, will finance both foreign and local cost of all the components of the project. GOA will finance the balance of UA 12 million, covering both foreign exchange costs and local costs, which represent 50% of the total project cost.

Project Implementation

8. Project implementation is scheduled to last four years. The executing agency is the Ministry of Water and Energy through the National Directorate of Water (DNA).

Conclusions and Recommendations

9. The need to improve water supply and sanitation facilities in Sumbe (capital of Kwanza Sul Province) is critical, given the poor water supply and sanitation situation. The project will improve the physical condition of the infrastructure, through rehabilitation and expansion of the existing facilities. The project will also support the formation of a Commercial Utility, an autonomous institution that will manage the water supply and sewerage services. Improved quality of services delivery will contribute towards improving the health and well being of the population, and boost economic activities in the project area.

10. The project is technically feasible, financially and economically viable with important socio-economic benefits, and environmentally sustainable. Moreover, the project is accorded a high priority by the national and the provincial governments as well as the population in the project area. When completed, the project will contribute to achievement of the water and sanitation MDGs in Angola.

11. It is recommended that the African Development Fund provides an ADF loan not exceeding UA 12.00 million to the Republic of Angola for the purpose of implementing the Sumbe Water Supply and Sanitation Rehabilitation and Augmentation Project as described in this report, subject to the conditions specified in the loan agreement.

1. ORIGIN AND HISTORY OF THE PROJECT

1.1 Angola's nearly 30 years of internal conflict had devastating effects and has left the country in a difficult and complex social and economic situation. Though it is endowed with abundant water resources, more than two third of its population does not have access to water supply and sanitation services. According to the National Institute of Statistics (INE) the population of Angola is estimated at 15.5 million of which about 53% live in urban areas and 47% in rural. Of the urban population, it is estimated that 70% live in peri-urban areas. Only about 36 percent of the population has access to safe water and sanitation services.

1.2 The Government has prioritised the rehabilitation and expansion of the dilapidated water supply systems (in some cases construction of entirely new systems) of urban centres starting with 15 provincial capitals. These systems by 2002 were in total disrepair and had insufficient capacity to serve the current populations due to years of neglect. In order to address the problems in the major provincial cities, GOA embarked on developing master plans, with the intention of strengthening the institutions and implementing urgent and vital projects. The proposed project for Sumbe, capital of Kwanza Sul Province, is the outcome of the Master plan, and is an integral part of the GOA's program for the provision of water supply and sanitation in the provincial capitals.

1.3 Following a Bank identification mission in January 2007, GOA in May 2007 requested the Bank to finance the proposed project. GOA's request to finance the proposed project takes cognizance of the central role of water and sanitation in economic and social development and contribution of adequate water supply and sanitation services to poverty reduction as articulated in the Country's PRSP, the National Rehabilitation and Reconstruction Program (NRRP) covering the period 2003-2010. A Bank preparation mission was fielded in May 2007 to prepare the project followed by an appraisal mission in August 2007. This appraisal report is the outcome of these missions.

2. THE WATER SECTOR

2.1 Water Resources

2.1.1 In general Angola has abundant water resources and does not suffer from a scarcity of either surface or groundwater resources, however there are spatial and seasonal differences across the country. It has rich and diversified hydrological basins (42 hydrological basins directed to 5 main slopes). The annual superficial drainage is estimated to be 140km³. The main rivers are Zaire, Zambezi, Kwanza, Kunene, Kuando and Kubango.

2.1.2 Groundwater annual recharge is estimated to be 72 km³. In the South of Angola there are limited surface water resources and the main source of water supply is through groundwater. The average depths of aquifers, range between: 5 to 30 metres in the coastal zones; 10 to 30 metres in the central tableland region; and 200 metres or more in the semi arid areas (Kunene).

2.2 Policy and Legal Framework

2.2.1 The general principles for the management, planning and use of water resources are set up in Law 6/02 promulgated in the 2002. The law sets out the following: the principal of integrated water resources management and the adoption of the hydrographic basin as the geographical unit of managing hydrological resources; promotes users participation and inter-sectoral coordination; and recognizes the social and economic value of water. The main

complimentary regulations that govern activities linked to drinking water supply are under preparation.

2.2.2 The strategy for the development of the water sector was adopted in 2003, sets out the framework for the development of the water and sanitation sub-sector up to 2016. The action plan outlined in the strategy is divided into 2 phases: i) Phase I (2-3 years) to carry out emergency actions and rehabilitate existing systems and extend them where possible with emphasis on the provincial capitals and municipalities with very big populations. During this phase (2005-2008) in parallel to emergency measures capacity building as well as finalization of the policy and regulatory framework will be undertaken; and ii) Phase II- Development of the sector will be taken in accordance to policy to meet MDG and national targets.

2.3 Institutional Framework

2.3.1 The Ministry of Energy and Water (MINEA) through the Directorate of Water (DNA) is responsible for the management of water resources and water supply and sanitation. In accordance to the water law 2002 and the water strategy 2003, DNA of MINEA is responsible for Policy development, ensuring adherence to national standards and providing advice and mentoring of provinces and municipalities. A Water Resource Management Institute has been newly created in MINEA responsible for water resources management.

2.3.2 Other key institutions related to water and sanitation are: the Ministry of Agriculture and Rural Development (for promoting irrigation), the Ministry of Urban Planning and Environment (for Environmental management program), the Ministry of Health (for setting drinking water quality standards and for health education and promotion of improved sanitation), the Ministry of Education (for water and sanitation infrastructure in schools), and the Ministry of Family and promotion of Women (MINFAMU) (for ensuring gender integrated planning and implementation).

2.4 Sector Development

2.4.1 The sector has been undergoing some remarkable transformations since 2002, and these include: i) the promulgation of water laws in 2002, ii) institutional streamlining, with the Ministry of Energy and Water being charged with the responsibility of policy formulation, monitoring and management of water resources, while service delivery has been devolved to the provincial governments, iii) Preparation of Strategy for the development of the water sector in 2003, iv) emergency rehabilitation of existing systems in the major urban areas, iv) preparation of master plans to address the physical and institutional issues in the 15 major urban centres, vi) creation of commercial utilities in some of the provincial capitals and vii) comprehensive assessment of rural water and sanitation situation and development of a management information system to enable better planning, implementation and leveraging of resources in order to achieve national and MDG targets.

2.4.2 Due to high urban populations in the provincial capitals, with an estimated 70% living in peri-urban areas, which are served by water supply and sanitation systems designed for pre-independence populations, these urban centers have very low water and sanitation coverage. GOA in the water sector strategy prioritized and developed a plan for the rehabilitation and augmentation of water and sanitation systems in urban centres, starting with the preparation of water and sanitation master plans and pre-feasibility studies. A summary of the system capacities, master plans completed and funding secured by July 2007, for provincial capitals is shown in annex 3.

2.4.3 In addition to the infrastructure improvements Commercial Utilities are being established and capacitated through technical assistance support to operate the rehabilitated and expanded systems on a commercial basis. In line with the water law, which considers water as economic good, the commercial utilities are expected to adopt a phased approach to full cost recovery, with targets to achieve O&M cost recovery tariffs within 1-2 years of commissioning and eventually full cost recovery. In addition, the Government is developing a “Water for All” programme whose objective is to extend water supply and sanitation services to 80% of rural populations by 2012.

2.5 Poverty, Gender and Socio Economic Development

2.5.1 68% of the 15.5 million estimated population of Angola live below the poverty line and 26% living in extreme poverty, Angola is ranked 79th (out of 102) on human poverty index 2006. The major social indicators and the gender-related development index (2006) of the country for males and females are: low life expectancy of 39.6 and 42.5 years; adult literacy rates are low and according to preliminary UNESCO estimates, the combined gross enrollment ratio for primary, secondary and tertiary schools is 28% and 24%. Due to the low literacy rates, it is essential that appropriate methods are used to mobilize and engage the communities in advocacy and behavior change campaigns.

2.5.2 Like many African countries, women continue to be under-represented in decision making positions, including in the water and sanitation sector. The government has introduced a gender budgeting initiative with the objective to “advocate for and support the engendering of economic governance and leadership in order to increase women’s participation in decision making processes that shape women’s lives (UNIFEM 2000)”. Angolan women have been affected by poverty more than men because when men were away fighting during the war, the women had the responsibility and burden of raising their children, taking care of the family, including the sick and the elderly, generating income, providing household food security and generally ensuring that the family continues to survive. As a result, many women have become heads of households. About 31% of all households are female headed, and according to MINADER/FAO survey (2004) they form the majority of households living in extreme poverty.

2.6 Donor Support and Coordination

2.6.1 The main donors active in the sector are World Bank (WB), the European Union (EU), Government of Portugal (GOP), Government of China, Government of Brazil, Government of Spain and UNICEF.

2.6.2 Donor coordination in Angola has been a great challenge. Since 2005, GOA has prepared a strategy for aid coordination but was not able to put in place efficient mechanisms for its implementation. However, the MOPD with support by UNDP and DFID is to implement functional aid coordination mechanism and improve donor assistance in the country. There is currently no formal donor coordination mechanism in the water sector. However, donors meet periodically on an informal basis or through missions to share experiences, views and coordinate their operations. Donor coordination in the sector will be strengthened through the establishment of the joint GOA/donors technical unit within DNA.

Bank Group Support

2.6.3 The Bank Group has since 2001 financed seven operations in the education, health agricultural and environment sectors, for a total amount of UA 45.24 million. There has been

limited experience which was not good. These projects experienced slow start up, very low disbursement and poor project management mainly due to the inadequate capacities at all levels. The Bank will play proactive role to ensure effective implementation of the projects. The lessons of these projects have been taken into consideration in the design and implementation of the Bank's support of the proposed project which includes capacity building coordinated with the other main donors as part of the overall institutional support to the water and sanitation sector. In addition, in consideration of the experience of the other development partners (World Bank and EU), the proposed project will be implemented within the framework of the joint GOA/development partners supported Technical Unit within DNA.

2.7 Sector Issues, Constraints and Strategies

2.7.1 The key constraints in the water supply and sanitation sector include:

- Lack of regulatory framework for the management of the sector. A proposal of the regulatory framework is awaiting approval. Capacity building support to the establishment and functioning of the proposed regulator is included as part of a Water Sector Development Project funded with support from the WB.
- Damaged, insufficient and inadequate infrastructure, including the destroyed hydrometric monitoring network and water supply and sanitation installations both in the rural and urban areas. Government has prioritized the rehabilitation of infrastructure in the ECP/PRSP and provided funding the preparation of master plans for the provincial capitals and emergency rehabilitation of water supply systems.
- High migration to urban areas resulting in big periurban populations. As part of rehabilitation and upgrading of infrastructure the Government is carrying out the preparation of urban planning masterplans.
- Difficult access to some areas of the country. Demining and rehabilitation of rural roads is being undertaken and this will greatly improve access to rural areas.
- Shortage of trained and experienced personnel at all levels. Capacity building is a priority for the GOA across all sectors including the water and sanitation sector. The water sector institutional development project to be financed by the GOA and World Bank planned to start at the end of 2007 and this project include training of staff.
- Weak management information system (for water resources, water supply and sanitation). Through funding provided by EU/UNICEF a comprehensive assessment of the sector (a RWSS MIS) is to be established;
- There is a lack of institutional anchoring for sanitation. A study is planned with support by UNICEF for defining the institutional framework for sanitation.
- Lack of national plan/strategy, tools, guidelines and manuals for implementation of rural water and sanitation services. The project will support GOA to develop a Comprehensive National RWSSP 2007-2012 including strategy and investment plan and tools and guidelines for implementation.

3. THE URBAN WATER SUPPLY AND SANITATION SUB-SECTOR

3.1 The Institutional Set-up

3.1.1 The key institutions in the urban water supply and sanitation sub-sector are the Ministry of Energy and Water (Ministerio da Energia e Aguas- MINEA) through the National Directorate of Water (DNA) at national level, Empresa Publica de Aguas E. P (EPAL) and Empresa de Linpeza e Saneamento de Luanda (ELISAL). DNA of MINEA is responsible for Policy development, ensuring adherence to national standards and providing advice and mentoring of provinces and municipalities. At provincial level the Provincial Directorates of Water have the

responsibility of planning and implementation of water and sanitation activities in collaboration with municipal administrations.

3.1.2 EPAL is the water utility serving Luanda and ELISAL is the state utility responsible for Sewerage and solid waste management in Luanda. In the rest of the urban centres of the country the water supplies are managed by the provincial and municipal authorities. In accordance to water law 2002 (Law62/02) and the decentralization policy formation of commercial utilities to manage urban water supply systems is ongoing.

3.2 Water and Sanitation Coverage

3.2.1 The 2006 HDR estimates the population of Angola to be 15.5 million (2004); with an urban ratio of 52.7%. Of the urban population, it is estimated that 70% live in peri urban areas. Only about 36 percent of Angolans (34% in urban areas and 39% for rural) have access to safe water, (well below the 55% average for Sub-Saharan Africa), and 48% to adequate sanitation services (59% in urban areas and 26% in rural).

Water and sanitation services in Luanda

3.2.2 Only 30 percent of the metropolitan population has access to the EPAL water supply system. The remainder rely on untreated river water brought into the capital by tankers, paying prices per cubic meter more than 50 times the price paid by those connected to EPAL's network (US\$0.2/m³). According to the World Bank, currently the supply (production and distribution) cost of water is estimated at US\$ 12.5/m³. This high supply cost is mainly due to big losses on the network. Currently EPAL is implementing several projects aimed at rehabilitating and expanding the water supply system, including expansion to the peri-urban areas in Luanda.

3.2.3 A combined pluvial and sewage collection system built during the colonial times serves Luanda's urban core, and discharges directly into the Luanda bay. Elsewhere sewage is disposed of in septic tanks, leaching pits, or directly into the streets and gutters of the city. As water consumption rises, the pressure on the sewerage system increases commensurately.

Water and sanitation services in urban centres outside of Luanda

3.2.4 Water and sanitation systems have suffered significant damage in the areas most affected by the war, households are served by either their own wells or by high-priced water, provided through vehicle tankers. Even in urban areas that escaped direct war damage, a lack of investment and maintenance in water supply limits services to a small proportion of the population. In provincial cities the water utilities serve only about 30 percent of the population. This is partly due to the fact that most urban centers are served by water supply and sanitation systems built during the colonial times with the design capacity for much smaller population. About 59 percent of the urban population has access to some sanitation service, with 18 percent connected to a sewer and the remainder relying on septic tanks, latrines, and leaching pits. Only four provincial capitals- Huambo, Lubango, Lobito and Benguela are partially covered with sewerage systems. Only two, Lobito and Benguela which have benefited from a World Bank-supported project completed in 2000, have the capacity to treat sewage from small parts of the cities.

3.2.5 Water and Sanitation master plans have been developed for 15 provincial capitals and emergency rehabilitation of urban water supply systems has been undertaken through funding by the GOA, World Bank and the Chinese Government. For sustainable management of the rehabilitated systems based on commercial principles, Commercial utilities are being set up with support from development partners i.e. the Spanish government and the World Bank.

3.3 Existing Water supply and Sanitation Services in Sumbe

3.3.1 Sumbe has an old and dilapidated water supply system with a conventional water treatment system consisting of a water intake from Cambogo river, sedimentation tanks, rapid gravity filters and chlorination equipment. Emergency rehabilitation of the system was undertaken in 2005; however, the production capacity is insufficient to supply the reticulated area (only covering the core urban area- system was originally designed for 30,000 but now the population of Sumbe is over 100,000 people). Initially pretreatment used to be carried out to reduce on the algae load, but now no pretreatment is carried out and the water supplied is of very poor quality. The supply experiences frequent interruptions and there is not enough pressure to supply the hilly areas of the town. The residents who have no access to the current inadequate system rely on water from river Cambogo or buy from trucks at exorbitant prices. The operation of the water system is under the Provincial Directorate of Water and Energy while the collection of water bills is managed by the municipality.

3.3.2 As a result of the poor sanitation condition (poor liquid/excreta disposal and solid wastes handling and disposal) and low access to clean water, there is high incidence of water-borne diseases like cholera, dysentery and diarrhea in Sumbe like in all urban centres of Angola, which is more pronounced in the poorer communities. Due to the poor living conditions, the main problems facing the people in Sumbe include: poor health and morbidity, loss of productivity resulting from illness, and loss of school hours by children particularly girls, are all related to the poor quality and low coverage of water supply and sanitation services.

Accounting and Finance

3.3.3 The accounting for water and sanitation services is not separated from the other activities of the Municipality of Sumbe, which prevents an independent reporting on the water supply and sanitation operations. This situation has also contributed to the diversion of revenues away from water supply to other municipality activities. The finance department of the Municipality of Sumbe operates manual accounting system. Budgetary control is weak, and restricted to simply monitoring available cash against current needs while the actual processes and systems supporting the revenue cycle do not effectively relate billing to actual consumption, because of the flat rate applied.

3.3.4 The water scheme in the project area has no audited financial statements for the past years, and neither reliable historical financial data were available. Based on data for 2006 provided by the Municipality, collection efficiency of the water supply and sanitation in Sumbe is very low, below 50%. The system is run on deficit, when comparing the estimated receipts and payments for the services. Notwithstanding the fact that the true cost of running the business is understated, the financial performance of the water supply and sanitation schemes in the project area has not been satisfactory. The block tariffs in use do not even cover O&M expenses, and liquidity has deteriorated to the extent that the scheme in Sumbe has not been able to pay for cash costs related to power supply and treatment chemicals. In accordance with the water law and water strategy a water utility will be formed as part of the project to manage the water supply services on commercial basis.

3.3.5 Since the Municipality of Sumbe has no audited financial statements for the past financial years and historical financial data on water and sanitation are not available, the focus of the financial projections analysis is on the proposed commercial utility, which will manage and operate the water and sewerage system developed under the project. The projected financial statements of the CU, including the underlying assumptions, are provided in Annex 7.

4. THE PROJECT

4.1 Project Concept and Rationale

4.1.1 The need to improve the water supply and sanitation services in the project area- Sumbe is a high priority for GOA as well as for the population of the surrounding peri urban areas where the majority of the population live. The proposed project is based upon the Master Plan Water Supply and Sanitation Study, and is in line with the water sector strategy 2003 which prioritizes the rehabilitation of water and sanitation systems of the provincial capitals of Angola with very big populations which grew 5-10 fold during the years of conflict. Sumbe ranks among the bottom 3, based on the criteria of total per capita production over installed capacity as well as actual production capacity of the water system over population. The other bottom ranked cities have already been included under funding from WB and Chinese credit. A summary of investment for water and sanitation for the provincial capitals is provided in annex 3.

4.1.2 The project is an integral part of the strategic development plan prepared for Sumbe covered under the GOA financed Master Plan and Pre Feasibility study. The study considered various alternatives, taking into account the available water resources, various technologies, investment and operation and maintenance costs, availability of spare parts, as well as staffing requirements. As far as possible, rehabilitation of existing facilities has been the preferred option over construction of new facilities. In addition, other factors considered were affordability, social acceptability and environmental sustainability.

4.1.3 The project is the outcome of extensive consultations carried out during the study stage, with various stakeholders, including communities to be served, local authorities, health officials, FAS and NGOs. Comprehensive survey of the beneficiary communities was carried out in order to determine effective demand, willingness and ability to pay for the selected level of services. Stakeholder workshop was conducted, in order to agree on the preferred technology options. Issues considered included: ability to pay, the institutional and management options. The workshop was also used to solicit communities support.

4.1.4 In formulating the project, the experience of other donors on similar projects and the Bank's experience with operations in other countries have also been taken into account. Operation and maintenance of projects financed under and operated directly by the local authorities suffered due to lack of adequate institutional arrangements, as compared with those being operated by CUs. The project is anchored in the multi donor Technical Unit in DNA which will enhance synergies with other projects and reduce on the transaction costs by the EA. At project town level, a project implementation team will be established to coordinate and manage activities.

4.1.5 Curtailing the high levels of Unaccounted for Water (UFW) will save resources and also prepare the systems for further expansion to cope with increases in demand. The proposed project falls within this framework of sector development, which also conforms to the Bank Group's integrated water resources management policy. The project is high among the priorities of both the national and provincial governments, as indicated by the priority given to the sector in the country's PRSP.

4.2 Project Area and Project Beneficiaries

4.2.1 The project area is the town of Sumbe, the capital of Kwanza Sul province situated 360 Kms South of Luanda. The beneficiaries of the project are the populations of Sumbe including the semi urban and peri urban areas as well as the adjacent satellite towns of E15 and Chingo. The population is estimated at 140,000 of whom the majority (70%) live in the periurban area. The project will also benefit the schools and health sector facilities, as well as the commercial sectors in the city.

4.2.2 The main occupation of the population in Sumbe include public service, fishing, trading in light merchandise and agro products, and limited industrial activities in the urban and sub urban areas while subsistence agriculture is the dominant occupation in the more populous peri-urban settlements. Active factories in Sumbe include a tile factory, sawing/locksmith industry, and palm oil factory. A tractor factory and a frozen fish factory for export are located in Chingo satellite town North of Sumbe. In addition to the functioning factories there are a number of dysfunctional ones including a soft drinks factory and 2 cotton factories.

4.2.3 Poverty is widespread, and destitution is quite visible particularly in the peri-urban areas, where the settlements which were set up as for people displaced by war are highly populated and congested and on average 5 to 8 persons live in a hut purely built as temporary shelters. Housing units are mostly made of mud bricks and prone to destruction by storms. The project will enhance Sumbe's tourist potential, as its beaches are a tourist attraction. In addition to the tourism potential; Sumbe has fishing industries which can provide a good customer base for the water supply and sewerage system.

4.3 Strategic Context

4.3.1 The project is in line with the national sector goal of improving the quality of life and productivity of all Angolans by ensuring an equitable provision of an adequate quantity and quality of water to all competing user groups and improved sanitation services for all at acceptable cost and on a sustainable basis. The project is in line with the government's PRSP objectives of rehabilitating basic infrastructure and institutional capacity building and improvement of governance. It is also in line with the GOA's objectives in the water sector, which is to ensure that Angola's water resources are effectively developed to contribute to poverty reduction through increased access to safe water and sanitation for rural and urban people. Angola also ascribes to the Millennium Development Goals (MDGs), which as these pertain to water supply and sanitation, is aimed at reducing by 50% the proportion of people without these services by 2015. The Bank's CSP for 2005-2007 highlights the Government's expressed priority for the water sector, and the project falls within the Bank's development objectives. This project will provide adequate services to over 140,000 people, and would contribute to the achievement of the water and sanitation MDGs in Angola.

4.3.2 The project is also in line with the Bank's Integrated Water Resources Management Policy which, among others, supports priority of rehabilitation of existing infrastructure over new construction, and also encourages ultimate cost recovery while taking into account social equity and capacity to pay by the poor. The project support for the development of these basic services in the peri-urban areas will empower this target population to participate fully in the delivery of these services. This approach is also in agreement with the Bank's Strategic Plan for the sector, which recognises that in order to ensure sustainability, the poor have to be fully involved in the whole process of service delivery and maintenance.

4.4 Project Objectives

The objective of the project is to improve the access, quality and sustainability of water supply and sanitation services of Sumbe town (capital of Kwanza Sul Province), including the peri-urban area, by rehabilitating and extending the water supply and sanitation system, and providing institutional support for the formation and functioning of a water utility.

4.5 Project Description

4.5.1 The project comprises of rehabilitation/expansion of water supply and sanitation system in Sumbe and the development of a Comprehensive National Rural Water and Sanitation Program. The project's main components are: a) Water Supply infrastructure; b) Sanitation consisting of (b.1) rehabilitation of sewerage infrastructure, (b.2) On site sanitation in schools, health centres, markets and public places and (b.3) solid waste management c) Community Mobilization, Sanitation, Hygiene Education and Environmental Awareness (CBSHE), d) Institutional Support for Water and Sanitation Utility, e) Development of Comprehensive National Rural Water Supply and Sanitation Program and f) Project Management. The detail of the project description is provided in Annex 5.1.

4.5.2 The project outputs will be: (i) water supply and sanitation systems rehabilitated, improved and extended, (ii) water supply and sanitation services extended to the low-income peri-urban areas, (iii) promotion of hygiene and environmental sanitation, increased knowledge and prevention of HIV/AIDS and malaria, (iv) formation and functioning of water utility to manage the system, v) and development of a comprehensive National RWSSP.

4.6 Production, Market and Prices

Water Demand

4.6.1 Projections of water demand over the project horizon are based on analysis of current consumption patterns in the project area, the expected coverage, and projected changes in demographic patterns. Domestic water demand is estimated at 120, 80, and 20 litres per capita per day (l/c/d) for high, medium, and low income households (including peri-urban settlements). Institutional, commercial and industrial consumption is projected to increase at a rate of 2% per annum. The demand projections are summarized in Annex 4.2.

Production

4.6.2 The rehabilitation and augmentation of the water supply system infrastructure for Sumbe will result in an increased production capacity of 8,400m³/day meeting the 2015 demand. The project will bring down water losses from the current high level of over 50% to about 20% through replacement of the current dilapidated reticulation system and capacity building of the WU to ensure water losses are kept at a minimum level.

Tariffs

4.6.3 The market for water in the project area is dual in nature: the formal market comprising consumers who buy water directly from the municipality of Sumbe; and the informal segment comprising unconnected consumers who rely on private vendors for their water supply. Those households, and other poorer families who cannot afford the price charged by vendors, also obtain water from unsafe and easily contaminated sources such as hand dug wells, ponds and streams. The Master Plan and the pre-feasibility report has established that in general,

households that obtain water from private vendors pay more than 10 times the prevailing tariff in the formal market.

4.6.4 The majority of consumers in the project area currently pay monthly flat rates, depending on the type of property and connection. The rates are not linked to volumes consumed and are lower than cost recovery tariffs. Currently, the flat rates are AON 363.30, AON 606 and AON 1454 per month for domestic, services, and industrial customers. The flat rate system has created imbalance in cost allocation in favor of high-income consumers, to the disadvantage of low income-households. Based on consumption levels determined during the feasibility study, the current price of piped water for low-cost households is equivalent to more than 160 AON/m³ (US\$ 2.0) while the price for households in the high-cost areas is only AON 20/m³ (US\$ 0.25), even though the unit cost of supply to the two consumer categories are comparable. In comparison, the equivalent price for peri-urban households is 10 AON/jerican, which is about AON 500 /m³ (US\$ 6.25)

4.6.5 The proposed WU will introduce cost reflective tariff structure, incorporating a lifeline tariff. The estimated average full cost recovery tariff in the project area is AON 86 (US 1.07 /m³), while the estimated O&M cost recovery tariff is about AON 17.2 (US 0.21). Tariffs will initially cover operation and maintenance costs (excluding depreciation charges), and will be adjusted gradually towards meeting full cost recovery by 2015. The tariffs will also incorporate charges for sanitation services, estimated at an average of 40% of water bills, for the users connected to the off site sanitation system.

4.6.6 Household water expenditure in peri-urban areas is estimated not to exceed 5% of their monthly income (i.e. about AON 200 per month) for the low-income group of the beneficiary population. At this level of expenditure, it is expected that poor households would be able to afford the consumption of at least a subsistence level of safe water.

4.7 Environmental Impact

4.7.1 In accordance with the Bank's environmental and social safeguard policies, the project has been classified under category 2. As the expected impacts of the project are site related, limited in time, could easily be mitigated, and do not entail any involuntary displacement or resettlement of people. An environmental and social management plan (ESMP) was prepared by the Government through a consulting firm in accordance with the national legislations and the Bank's safeguard policies. The ESMP has been approved by the government in compliance with the national environmental law and has been disclosed in the Bank's public information center. Annex 9 provides a summary of the ESMP.

4.7.2 The project will be implemented in a relatively stable zone, contribute to an urban and peri-urban community development and lead to an overall environmental and health-improvement. Provision of adequate potable water and improved sanitation facilities as well as promotion of hygiene education, environmental awareness, sensitization of the population on water borne diseases, and promotion of water conservation will contribute to improve the living standards of the residents of Sumbe including the urban and peri-urban areas.

4.7.3 The Project may have very few negative environmental impacts during the construction phase, and relate principally to impacts such as noise and dust, as well as some inconvenience to road users and land owners. These impacts are, however, of low significance and will be managed through the implementation of simple mitigation measures during the construction phase. Most importantly, the project entails the upgrading of existing infrastructure, installation

of new pipelines in either undeveloped areas or along the route of existing infrastructure, hence no resettlement or compensation for loss of assets or structures will be required.

4.8 Social Impact

4.8.1 The project will reduce the burden of fetching water from unreliable sources, and reduce the time spent on water fetching. The availability of safe water and improved sanitation within close proximity (maximum 200 metres from dwellings) and adoption of improved hygienic practices like hand washing and safe storage and handling of drinking water will lead to reduction in the incidence of water-borne diseases. The communities also strongly indicate that they are able and willing to pay for water, provided supply is guaranteed; the quantity and quality is good and reliable. This would end the dependence on unsafe river sources, unreliable private connections and vendors selling water by tankers who exploit some of the poorest in society; and do not even guarantee that the water they sell is either safe or is supplied regularly to consumers.

4.8.2 The close proximity of water points to residents will lead to saving time for women and children (children, in particular girls who together with their mothers and older siblings are responsible for looking for and providing water for the family) spent collecting water either from the river, other unsafe sources and/or waiting for tankers. Improved health in the family will reduce the time women spend on caring for sick. The safer and more readily available water will also enable the women to start small businesses and those already engaged in entrepreneurial activities would be able to expand their ventures.

4.8.3 Another benefit in availability of water and improved sanitation practices is adolescent girls being able to keep themselves clean all through the month including during menstruation, and be able to attend school. In a country where literacy rates for women above age 15 is 54% (against 67% for the region), the time gained could be used to improve school attendance rates which in the long term enhance education attainment of women, there-by positively impacting on society at large.

4.9 Project Costs

The total cost of the project is estimated at UA 24 million, net of taxes and duties, of which UA 18.0 million (75%) is in foreign currency and UA 6.0 million (25%) in local costs. Tables 4.1 and 4.2 give the summary of the project costs by component and category of expenditure respectively, while detailed cost estimates are provided in Annex 5.1. These US dollar based costs are derived from the Master Plan and Pre-feasibility study report whose unit rates have been obtained from suppliers and contractors, as well as from experience with similar ongoing projects in the country. A physical contingency of 10% and a price contingency of 3.5% per annum have been built into these estimates.

Table 4.1: Summary of Project Costs by Component

		In '000 US\$			In '000 UA		
	Component	FC	LC	Total	FC	LC	Total
A	Water Supply Infrastructure	16,319	4,210	20,529	10,707	2,762	13,469
B	Sanitation	4,842	1,249	6,091	3,177	820	3,996
C	Community Mobilization, Hygiene Education and Environmental Awareness	110	440	550	72	289	361
D	Institutional Support for WU	1,085	465	1,550	712	305	1,017
E	Development of NRWSSP	700	300	1,000	459	197	656
F	Project Management	492	1,148	1,640	323	753	1,076
	Total Base Cost	23,548	7,812	31,360	15,450	5,125	20,575
	Physical Contingency	2,355	781	3,136	1,545	513	2,058
	Price Contingency	1,587	494	2,081	1,041	324	1,365
	Total Cost	27,490	9,087	36,577	18,036	5,962	23,998
		75%	25%				

Table 4.2: Summary of Project cost by Category of Expenditure

		In '000 UA		
	Category of Expenditure	FC	LC	Total
1	Works	12,824	3,329	16,153
2	Goods	307	73	381
3	Services	2,059	1,072	3,131
4	Miscellaneous	260	650	911
	Total Base Cost	15,450	5,125	20,575
	Physical Contingency	1,545	513	2,058
	Price Contingency	1,041	324	1,365
	Total Cost	18,036	5,962	23,998
		75%	25%	

4.10 Sources of Finance

4.10.1 The project will be financed by ADF and GOA in conformity with the plan set out in Table 4.3 (Project Cost by Source of Funds) and Table 4.4 (Project Components) below. The proposed ADF loan of UA 12.0 million, which represents 50% of the total project cost, both foreign and local cost of all the components of the project.

4.10.2 GOA will finance the balance of UA 12 million, covering both foreign exchange costs and local costs, which represent 50% of the total project cost.

Table 4.3: Financing Plan by Source

		In '000 UA			
Component	FC	LC	Total	%	
ADF	9,046	2,954	12,000	50	
GOA	8,990	3,008	11,998	50	
Total	18,036	5,962	23,998		

**Table 4.4: Financing Plan by Project Component
In '000 UA**

	Component	ADF	GOA	Total
A	Water Supply Infrastructure	6,676	6,793	13,469
B	Sanitation	1,981	2,015	3,996
C	Community Mobilization, Hygiene Education and Environmental Awareness	188	172	361
D	Institutional Support for WU	531	486	1,017
E	Development of NRWSSP	343	314	656
F	Project Management	562	514	1,076
	Total Base Cost	10,281	10,294	20,575
	Physical Contingency	1,028	1,029	2,058
	Price Contingency	691	674	1,365
	Total Cost	12,000	11,998	23,998

4.10.3 The GOA has the capacity to finance the counterpart fund requirement of UA 12.0 million in the implementation of the project. GOA has confirmed that the proposed project conforms to GOA's sector policy and priorities for water and sanitation, and the counter part funds required for the implementation of the project will be incorporated with the National Investment Plan (PIP) for the period 2008-2011.

5. PROJECT IMPLEMENTATION

5.1 Executing Agency

5.1.1 The Borrower of the proposed ADF loan will be the Government of the Republic of Angola. DNA will be the Executing Agency (EA) of the project.

5.1.2 The capacity of DNA was reviewed during the Bank mission, and the institution was found to require additional staff and institutional support to carry out the responsibility for the implementation of the project. The DNA will establish a (joint GOA multi-donor) Technical Unit (TU), to manage and coordinate various donor and government financed projects in water supply, sanitation and water resources management. The TU will be staffed by DNA staff and local consultants supported by TAs. Key staff include a Project Coordinator, Water and Sanitation Engineer, Procurement/Contracts Management Expert, Social/Community Mobilization Expert, and Financial Management Expert. DNA will recruit young professionals to be attached to the TU for on the job training. DNA will be supported by various donors in financing the operation and equipping of the TU.

5.2 Institutional Arrangements

5.2.1 For management of the project activities and coordination with the province and municipality a project implementation team (PIT) in Sumbe comprising of three staff will be established. The PIT will be headed by a task manager who will be a member of the TU. The formation of the TU with a dedicated task manager and PIT for the project will be a condition for the loan.

5.2.2 The TU will coordinate and supervise the implementation of the project, maintain the project accounts and financial records, process disbursement requests, and reports in accordance with the requirements of GRA and ADF. The TU will be assisted by external engineering

consultant in preparing the detailed designs, tendering, and supervision of works. A flow chart of the project implementation arrangement is provided in Annex 6.

5.3 Supervision and Implementation Schedule

5.3.1 The project will be implemented over a period of four (4) years in accordance with the implementation schedule given in Annex 7. In order to facilitate early commencement of project implementation, GOA is to finance the cost of the engineering consultancy services for the preparation of detailed design, tendering and supervision of the project activities. The Bank shall supervise the project twice a year and a Mid-Term Review conducted 24 months after loan effectiveness. The critical milestone of the implementation process include:

Loan Approval	Bank	Nov 2007
Recruitment of Engineering Consultant	DNA	Nov 2007
Loan Declared Effective	Bank	Mar 2008
Invitation for Bids (Works)	DNA/Consultant	June 2008
Submission of Bids	Bidders/Consultant	Sept 2008
Award of Contracts	DNA/Bank	Dec 2008
Commencement of Works	DNA/Contractors	Jan 2009
Completion of Works	DNA/Contractors	Dec 2011

5.3.2 A summary of the expenditure schedule by project component is given in Table 5.1 while the expenditure schedule by financing source is shown in Table 5.2 below.

Table 5.1 - Expenditure Schedule by Component (In '000 of UA)

	Component	2008	2009	2010	2011	Total
A	Water Supply Infrastructure	273	5,251	3,972	3,972	13,469
B	Sanitation	590	1,338	1,034	1,034	3,996
C	Community Mobilization, Hygiene Education and Environmental Awareness	90	90	90	90	361
D	Institutional Support for WU	354	331	331	0	1,017
E	Development of NRWSSP	656	0	0	0	656
F	Project Management	308	256	256	256	1,076
	Total Base Cost	2,272	7,266	5,684	5,353	20,575
	Physical Contingency	227	727	568	535	2,058
	Price Contingency	0	280	445	640	1,365
	Total Cost	2,499	8,273	6,698	6,528	23,998

Table 5.2 - Expenditure Schedule by Source of Finance (In '000 of UA)

Source	2008	2009	2010	2011	Total
ADF	1,101	4,214	3,388	3,296	12,000
GOA	1,398	4,058	3,309	3,232	11,998
Total	2,499	8,273	6,698	6,528	23,998

5.4 Procurement Arrangements

5.4.1 Procurement arrangements are summarised in Annex 5.3. All procurement of goods, works, and acquisition of consulting services financed by the ADF will be in accordance with the Bank's *Rules of Procedure for the Procurement of Goods and Works* or, as appropriate, *Rules of Procedure for the Use of Consultants*, using the relevant Bank Standard Bidding Documents.

Civil Works

5.4.2 Procurement of water supply rehabilitation and extension works in the urban and semi urban (Lot 1) (UA 7.53 million), Lot 2 for the water supply rehab and extension works in the peri-urban areas (UA 7.49 million), and rehabilitation works of the sewerage infrastructure (UA 3.57 million) will be carried out under International Competitive Bidding (ICB) procedures.

5.4.3 Procurement of civil works for the construction of promotional sanitation facilities valued at UA 0.36 million will be procured through NCB. Contract package under National Competitive Bidding (NCB) is justified by the fact that the character, location or size of the construction works to be undertaken are such that they are unlikely to attract bids from outside Angola, and there are local contractors, sufficiently qualified and in number sufficient to ensure competitive bidding.

Goods

5.4.4 Procurement for the supply of Solid Waste Management Equipment (UA 0.36 million) will be undertaken through NCB procedures, while office equipment (UA 0.03 million) and vehicles (UA 0.03 million) will be procured through National Shopping (NS) procedures. The use of NCB and NS is justified by the fact that the value or quantities or character of the goods are such that they could not possibly attract bids from outside Angola, and there are local suppliers, sufficiently qualified and in number sufficient to ensure competitive bidding.

Services

5.4.5 Procurement of consulting and training services, as detailed in Table 5.3, will be undertaken in accordance with the Bank's *Rules of Procedure for the Use of Consultants*. Consultancy services for Institutional Support for the Commercial Utility, valued at UA 0.747 million, for the Study for the development of NRWSSP (UA 0.722 million), Study for Sustainable Solid Waste Management (UA 0.108 million) and Audit Services (UA 0.09 million) will be procured through competition of short listed consulting firms. Selection procedures will be based on combination of technical quality with price consideration. Consulting services for the project management within the TU, four individuals, valued UA 0.876 million in total will be procured through competition in accordance with the Bank's procedure for use of individual consultants.

Miscellaneous

5.4.6 The cost for Community Mobilization (0.152 million), Awareness creation campaigns (UA 0.133 million), Trainings and workshops (UA 0.133 million), Other project implementation costs (UA 0.21 million), and CU start up and other related costs (UA 0.41 million) will be expended gradually. A special account shall therefore be used, with procurement following direct negotiations with local institutions and NGOs.

5.4.7 General Procurement Notice – The text of a General Procurement Notice (GPN) will be discussed with the GOA and it will be issued for publication in Development Business, upon approval by the Board of Directors of the Loan Proposal.

5.4.8 Review Procedures – The following documents are subject to review and approval by the Bank before promulgation: (i) Specific Procurement Notices; (ii) Tender Documents or Requests for Proposals from Consultants; (iii) Tender Evaluation Reports or Reports on Evaluation of Consultants' Proposals, including recommendations for Contract Award; (iv) Draft contracts, if these have been amended from drafts included in the tender invitation documents.

5.5 Disbursement Arrangements

Disbursement for the main packages will be made by applying direct disbursement method. Payments will be made by direct disbursement to the suppliers and contractors of works for the ICB and NCB packages, and for consultancy services with firms. Other payments including, Community Mobilization and Public Health Education and payments for project management costs for the TU and other activities involving monthly payments or payments in amounts of less than UA 20,000 will be paid using the Special Account method. As a condition precedent to first disbursement, the EA will open a Special Account in foreign currency at a bank acceptable to the ADF for the loan. Other Bank disbursement procedures could be used should it become necessary.

5.6 Monitoring and Evaluation

5.6.1 The Fund will monitor the project implementation through quarterly progress reports and annual audits prepared and submitted by the EA. These reports shall cover all aspects of project implementation, including the status of progress against agreed implementation and disbursement schedules, appropriateness and timeliness of the implementation of the environmental and social mitigation measures, key performance indicators highlighting issues and unforeseen problems, as well as offer corrective actions to be taken. Bank's supervision missions will be undertaken twice a year.

5.6.2 The EA will assume primary responsibility for monitoring project implementation, and will perform its reporting obligations to the Fund through the PTU. The supervision consultant and PTU will be required to prepare and submit to the Fund a final report at the completion of their assignments, which shall serve as input into the Borrower's PCR. The Fund, in turn, will use these reports as background material to prepare its own PCR in the established format.

5.7 Financial Reporting and Auditing

5.7.1 The TU will maintain separate accounts and records for the project. It shall maintain detail as well as summary of project costs, status of commitment, status of disbursements and expenditure schedules by contract, component and sources of funds. It shall prepare and submit withdrawal applications through MPED, conduct periodic reconciliation of all bank statements, and will prepare regular accounting reports for management, which would include expenditure reports from all the provincial capitals as well as produce consolidated annual financial statements for the project.

5.7.2 The External Auditor will be recruited to undertake annual audit of the project accounts, including the special accounts. Certified copies of the audit report, including the management report will be submitted to the Fund, within six months after the end of each financial year.

5.8 Donor Coordination

The proposed project has been prepared in consultation with other development partners (including World Bank, UNICEF, Spanish Cooperation Agency and European Union) active in the water and sanitation sector, through DNA, direct contacts with visiting Bank missions and discussions on specific issues and proposals. This close collaboration will be maintained through direct contacts by the supervision missions, and using the platform of emerging donor consultative forums on the sector. In addition, the development partners supporting the implementation of the water supply, sanitation and institutional support in the 15 urban towns

through the joint GOA/donor supported technical unit TU (within DNA) will be actively involved in common supervision/dialogue activities. The Bank will work closely with the other development partners to ensure that project resources are utilised in accordance with the agreements between GOA and the Bank and conform to activities and approaches by other sector donors.

6. PROJECT SUSTAINABILITY

6.1 Recurrent Costs

6.1.1 The proposed water supply and sewerage infrastructures involve relatively standard and well-known technologies that require little to moderate operation and maintenance. Indeed, refurbishment and replacement of dilapidated water supply and sanitation infrastructure in Sumbe will reduce the need for and frequency of repairs, and allow for significant savings on operations and maintenance costs. The oxidation ponds for sewage treatment are simple to operate.

6.1.2 Average annual recurrent costs, including operation & maintenance, chemicals, spare parts, running cost of vehicles etc., at full project maturity are estimated at AON 52 million (US\$ 0.65 million). As borne out by the financial analysis, incremental revenues generated from the project, estimated at an annual average of AON 216 million (US\$ 2.7 million) at full project maturity, will more than offset these incremental recurrent costs. Consequently, there will not be any need for budgetary support or subsidies from GOA to the water supply operations in Sumbe.

6.2 Project Sustainability

6.2.1 Technical sustainability of the project is assured through the use of simple technology and capacity building is planned as part of the project to ensure management of the piped water and sewerage facilities on commercial basis. The design of the project will take into account the need to protect the facilities against flooding and pollution from human activity.

6.2.2 The establishment of the water utility (WU), an autonomous entity that will take over the function of water supply services provision from the Municipality of Sumbe and Provincial Government of Kwanza Sul, will enhance sustainability as it will (i) eliminate the use of water revenues to fund other municipal activities, and ensure their proper use for the sustained improvements in the quality of service delivery, and (ii) allow for the management of the facilities on a commercial basis. This concept is also supported by several donors, who have also supported the establishment of similar WUs in other provincial capitals. Institutional sustainability will be further enhanced in the present project by the Technical Assistance to the WU when the latter becomes operational, which will progressively phased out.

6.2.3 The long-term sustainability of sector institutions is a key objective of the on-going sector reforms, which seek to achieve, in the long term, full cost recovery in service provision through user charges. As such, a revision of the tariff regime is critical to ensure that the WU can meet its revenue requirements from user charges, taking into account both the needs of the poor and the WU's financial sustainability. As a condition of the loan a cost reflective tariff, incorporating lifeline tariffs, will be introduced to cover the operation and maintenance costs by 2012, and adjusted gradually to cover operation, maintenance and depreciation costs by 2014.

6.2.4 Affordability of service has been a key consideration in the design of the project and choice of technology such that the majority of households falling within the poor strata of the

population are not overburdened by high user charges. In this regard, water-vending kiosks, each serving between 100 and 250 households, and a menu of technology options i.e. simple Improved Latrines are specified for the poor peri-urban settlements. These options are all demand driven and offer appropriate low cost solutions, bringing down operational costs within affordable levels for the peri-urban population. The involvement by the people (men and women) in the selection of sites for the facilities, and households' contributions towards the cost of improved sanitation creates a strong sense of ownership, which enhances sustainability. In addition, a social (lifeline) tariff will be put in place to allow for subsistence consumption up to 3 m³ per month, which is considered adequate for cooking and drinking needs of low-income households. The resulting water expenditure will range between 4–6% of household income, which is comparable to the recommended of 5%.

6.3 Critical Risks and Mitigating Measures

6.3.1 Water supply is considered by many as a social service, and as such there is often strong pressure from various interest groups on government to keep tariffs low. There is therefore a risk of tariffs being kept low to the detriment of the utilities. The application of appropriate tariffs throughout the project horizon is essential to ensure that projected revenue requirements are met from user charges. As part of the project community mobilization (CMCB) there will be sensitization campaigns and wide consultation with various interest groups from civil society, women's groups, academia and political parties, to achieve broad consensus on project design and pricing implication. The TA to the WU will include strengthening customer orientation and introduction of pro-poor supply strategy. The capacity of the WU to carry out campaigns to encourage customers to pay for services will be built.

6.3.2 Delays in implementation of tariff adjustments could also have adverse impact on the performance of the WU and the sustainability of the project. However the ongoing institutional reform of separating policy setting and regulation, by establishing an independent regulatory body would positively change the approval of tariff proposals. Further a loan condition requiring gradual tariff adjustments, from O&M recovery to full cost recovery in the long run is proposed.

6.3.3 The possibility of GOA failing to meet counterpart funding obligations is another risk. However, given the macro economic performance and budgetary allocation of the country and the importance accorded to the project by GOA, this risk is minimum. However, as a safeguard to mitigate the risk, the application of the General Condition requiring the Borrower to meet its obligation to contribute towards the project cost will be strictly applied during project implementation.

6.3.4 The weakness in the institutional capacity of the executing agency (DNA) could be a major risk in the implementation of the project, as well as in the monitoring and evaluating the impact of the project. This risk is being addressed through the ongoing and proposed TA and Institutional capacity building activities, by the World Bank, UNICEF and other donors active in the sector. Similarly the proposed project includes technical assistance to DNA in implementing similar activities, within the multi-donor Technical Unit (TU) arrangement.

7. PROJECT BENEFITS

7.1 Financial Analysis

7.1.1 For the financial analysis, the project is defined as the provision and operation of all those assets required for meeting the projected demand for potable water and sanitation in

Sumbe. Determination of the net benefits of the project is based on a comparison of (i) benefits accruing from the project and (ii) incremental costs arising from the project implementation. The Financial Internal Rate of Return (FIRR) computations are based on the assumptions stated in Annex 8.

7.1.2 The project yields a NPV of AON 623.9 million (at 7%) and an FIRR of 9.13 %. This rate of return is acceptable when compared to the project's cost of capital of 7% and considering that the investments are geared towards improving the quality of services. In addition there are wider social and economic benefits arising from the implementation of the project. This rate of return is acceptable considering that the proposed new WU will be able to recover its incremental O & M costs from the revenues generated over the projection period. It would over time be able to fully recover its costs while also contributing in expanding the population's access to water supply and sanitation services at affordable prices, thereby contributing towards achievement of the water supply related MDGs in Angola.

7.2 Economic Analysis

7.2.1 The economic benefits of the project are also evaluated by making an assessment of the quantifiable benefits and costs that will accrue to the various sectors affected "with project" and "without project". In addition to the financial costs and benefits evaluated under the financial analysis of the project, the economic analysis considered the impact of the project on the health sector, household income and expenditure. The economic impact on employment generation is recognized but is excluded from the analysis due to lack of reliable data. The assumptions underlying the economic analysis are provided in Annex 8.

7.2.2 The Economic Internal Rate of Return (EIRR) under the given assumptions is 15.87%, and NPV of AON 894.3 million (at 10%). The value of the EIRR is higher than the estimated opportunity cost of capital of about 10% for Angola, and therefore shows that the project is economically viable.

7.3 Socio-economic Impact Analysis

7.3.1 The inadequate safe water supply and sanitation services have adversely affected the quality of life and public health conditions of the people living in the project areas. The hardship experienced by the people, especially women and young girls in obtaining water severely constrains their ability to improve their living conditions. Lack of sanitation facilities and poor hygiene practices contribute to the heavy disease burden (water and sanitation related diseases like diarrhea, dysentery, cholera) and exacerbates poverty. The poor handling of waste water in the core urban area and household waste in the semi and peri urban areas leads to unsanitary environment and pollution of river Cambongo (which also serves as the intake for the water supply system), groundwater as well as the coastal line.

7.3.2 Availability of safe and convenient water supply to households will alleviate the hardship experienced by the people living in the project area, especially for women and children who are more vulnerable. In terms of savings in household expenditure on water, families who now purchase water from vendors at 800 – 1600 AON per cubic meter will be able to purchase from public fountains at about 87 AON per cubic meter, representing a saving of 85-90% on water expenditure, at current prices. This saving can be channeled to other uses such as paying school fees and buying food for the family. Similar economic benefits will accrue to the people from savings in health related expenditure, as well as from a reduction in loss of productive work due to improved health condition and the shorter time spent obtaining water. These

benefits will improve the living condition of the population. The project will also help to improve sanitation and waste disposal in all project areas through the creation of awareness and capacity building. This will improve the quality of life of the people.

7.3.3 Improved water supply and sanitation will also help attract and sustain business activities, particularly tourism and commercial activities that have a high potential in Sumbe. This will in turn contribute to the provision of employment for the people.

7.4 Sensitivity Analysis

7.4.1 Sensitivity analysis was undertaken to assess the financial and economic performance of the project under changes in key project variables, namely revenues and project costs. The analysis shows that a 10% decrease in operating revenues, with investment costs unchanged, reduces the FIRR to 8.08% while a 10% increase in investment costs, with no change in revenues, reduces the FIRR to 8.35%. These results indicate that the project is robust, although exhibiting slightly more sensitivity to changes in operating revenues than to increases in investment costs. This shows the importance of ensuring regular tariff adjustments.

7.4.2 The EIRR manifests slightly less sensitivity to changes in these variables. A 10% decrease in revenues with investment costs unchanged results in an EIRR of 14.51%. With a 10% increase of investment costs with revenues unchanged, the EIRR drops to 14.67%.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

8.1.1 The need to improve water supply and sanitation facilities in Sumbe (capital of Kwanza Sul Province) is critical, given the poor water supply and sanitation situation. The project will improve the physical condition of the infrastructure, through rehabilitation and expansion of the existing facilities. The project will also support the formation of a Commercial Utility, an autonomous institution that will manage the water supply services. Improved quality of services delivery will contribute towards improving the health and well being of the population, and boost economic activities in the project area.

8.1.2 The project, as conceived, is consistent with Government strategy, which seeks to promote access to water and sanitation services as a means of reducing poverty, and improve the quality of service delivery in the sector through commercialisation of the water supply services. Moreover, it conforms to the Bank Group's Integrated Water Resources Management Policy.

8.1.3 The project is technically feasible, financially and economically viable with important socio-economic benefits, and environmentally sustainable. Moreover, the project is accorded a high priority by the national and the provincial governments as well as the population in the project area. When completed, the project will contribute to achievement of the water and sanitation MDGs in Angola.

8.2 Recommendations

8.2.1 It is recommended that the African Development Fund provides an ADF loan not exceeding UA 12.00 million to the Republic of Angola for the purpose of implementing the Water Supply, Sanitation and Institutional Support Project in Sumbe (Kwanza Sul Province) as described in this report, subject to the following conditions:

A. Conditions Precedent to Entry into Force of the Loan Agreement: The Loan Agreement shall be subject to fulfillment by Borrower of the conditions set forth in Section 5.01 of the General Conditions Applicable to Loan Agreements and Guarantee Agreements of the Fund.

B. Undertakings

The Borrower shall provide an undertaking to:

- (i) ensure that the water utility in Sumbe apply tariff covering at least O&M costs after the project facilities have been commissioned or by 2011 (ref. 6.2.3 and 6.3.2), and
- (ii) ensure the establishment of a water and sanitation regulatory body (as part of the proposed Water Sector Institutional Development Project) by 2011 (ref. 6.3.2)

C. Conditions Precedent to First Disbursement of Loan

The Borrower shall:

- (i) Provide evidence on the establishment of the Technical Unit within DNA and the Project Implementation Team in Sumbe, including a Water and Sanitation Engineer (Project Coordinator), Procurement/Contracts Management Expert, Social/Community Mobilization Expert, and Financial Management Expert. (Ref. 5.1.2 and 5.2.1) : and
- (ii) Provide evidence of opening a special account in a bank acceptable to the Fund (ref. 5.5)

MAP OF ANGOLA

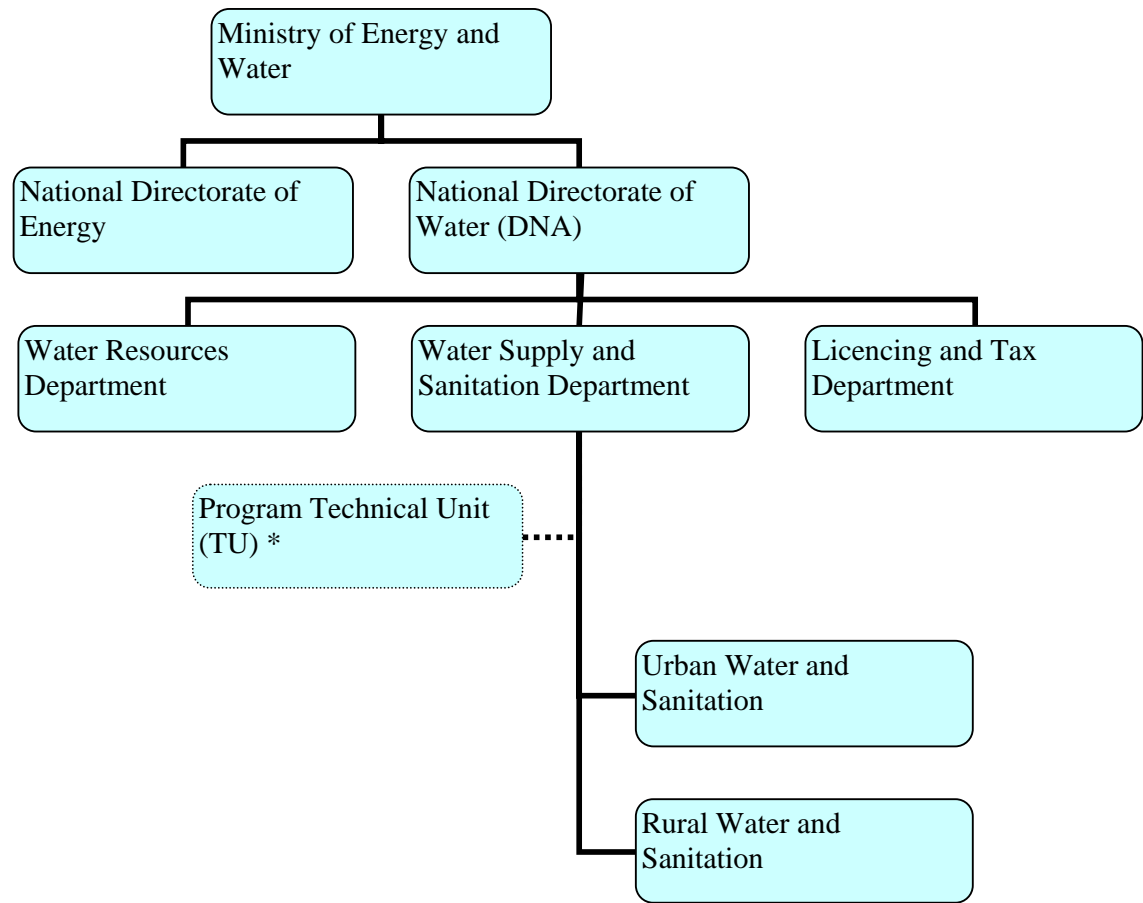


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Bank Group Operations

	Project	Window	Date of Approval	Signature Date	Effectiveness date	Closing Date	Amount Approved	Amount Disb	Disb Ratio	Status
1	Artisanal Fisheries Development Project	ADF	10/30/2002	01/20/2003	11/17/2003	12/31/2009	7.00	1.37	19.57	Active
2	Rehabilitation Of Health Facilities	ADF	11/13/2002	01/23/2003	09/12/2003	12/31/2007	6.50	0.81	12.49	Active
3	Reintegration Of Vulnerable Groups	ADF	11/12/2003	01/13/2006	01/13/2006	12/31/2010	3.78	0.12	3.15	Active
4	Support To Basis Education (Edu II)	ADF	12/05/2001	03/28/2002	11/27/2002	12/31/2007	9.63	0.99	10.24	Active
5	National Environmental Management Plan	ADF	07/09/2003	04/29/2004	04/29/2004	06/30/2007	0.85	0.70	81.88	Active
6	Bom Jesus -Calenga Rural Dev Project	ADF	11/24/2005	12/29/2005	12/29/2005	12/31/2012	17.20	0.29	1.70	Active
	Total						44.96	4.28	9.51	

Organization Chart of the Ministry of Energy and Water/DNA



Summary of Investment Plan for Water and Sanitation in Provincial Capitals

Provincial Capital	Estimated Population	Nominal (design) Production Capacity (m ³ /day)	Nominal Per Capita possible (m ³ /day)	Estimated Real per capita available (m ³ /day)	Master plan prepared	Co-Funding with GOA available by
Benguela	400,000	35,600	67	44	Yes	China
Cabinda	5,120	7,200	45	30	Yes	
Caxito	20,000	1,200	45	30		
Dundo	50,000	11,000	165	50		
Huambo	400,000	12,000	22	15	Yes	World Bank
Kuito	69,000	3,600	39	26	Yes	World Bank
Luanda	4,000,000	356,000	67	37	Yes	China, Portugal, EU
Lubango	300,000	17,500	44	29	Yes	World Bank
Luena	70,000	2,880	31	20	Yes	World Bank
Malange	27,500	8,544	23	15	Yes	World Bank, Spain
Mbanza Congo	50,000	518	14	5	Yes	World Bank
Menongue	70,000	5,040	54	36	Yes	World Bank
N'Dalatando	9,500	1,728	14	9	Yes	World Bank
Namibe	150,000	9,600	48	32	Yes	
Ondjiva	63,000	1,536	18	9	Yes	
Saurimo	70,000	3,840	41	27		
Sumbe	140,000	3,600	21	14	Yes	ADB
Uige	140,000	5,962	32	21	Yes	World Bank
Total	6,270,000	487,598	58	25	15 MP prepared	

Source for populations and system capacities: "Strategy for the Development of the Water Sector" Report – MINEA, 5th December 2003

Demand Projections for Water in Project Area

Average Daily Demand M³ per day

	2005	2010	2015	2020	2025	2030
Sumbe – Urban	1,299	1,585	1,617	1,649	1,682	1,716
Sumbe – Sub urban	164	298	354	388	424	459
Sumbe - Peri urban	164	2,722	2,915	3,237	3,558	3,881
Sumbe Future Exp	-	147	149	152	155	159
E-15 – Urban	139	141	144	147	150	153
E – 15 – Sub urban	12	29	30	32	34	36
E 15 - Future Exp	-	391	435	479	523	567
Chingo – Urban	59	60	61	62	63	65
Chingo – Sub Urban	384	1,058	1,107	1,227	1,348	1,469
Chingo – Future ext	-	340	510	680	850	850
Salinas	65	287	298	326	354	382
Alto Chingo – Fut. Dev.	17	75	143	350	770	1,694
TOTAL (Average)	2,302	7,132	7,762	8,731	9,912	11,429

Source: Master Plan and Pre Feasibility Study Report and Mission Estimates

Detailed Project Description and Project Costs

1. The project comprises of rehabilitation/expansion of water supply and sanitation system in Sumbe and the development of a Comprehensive National Rural Water and Sanitation Program. The project's main components are: a) Water Supply infrastructure; b) Sanitation consisting of (b.1) rehabilitation of sewerage infrastructure, (b.2) On site sanitation in schools, health centres, markets and public places and (b.3) solid waste management c) Community Mobilization, Sanitation, Hygiene Education and Environmental Awareness (CBSHE), d) Institutional Support for Water and Sanitation Utility, e) Development of Comprehensive National Rural Water Supply and Sanitation Program and f) Project Management. The detailed description of each component is provided below.

2. The project outputs will be: (i) water supply and sanitation systems rehabilitated, improved and extended, (ii) water supply and sanitation services extended to the low-income peri-urban areas, (iii) promotion of hygiene and environmental sanitation, increased knowledge and prevention of HIV/AIDS and malaria, (iv) formation and functioning of water utility to manage the system, v) and development of a comprehensive National RWSSP.

a) Water Supply Infrastructure

3. The component outputs will include rehabilitated, improved and expanded water treatment plant, upgraded and extended reticulation network to serve Sumbe urban and extended to peri-urban areas.

4. The works will include a new raw water abstraction weir approximately 6 km upstream of the current works where the raw water is of a good quality. 2 Raw water pumps and a 5.7km, 500mm diameter raw water pumping main from the weir to the existing works. A new 800 m³ elevated raw water balancing tank will be erected to replace the existing contact tank at the works.

5. The existing water treatment plant will be upgraded to increase the total capacity to 350m³/hr from the current maximum possible production capacity of 150 m³/hr. The works comprise: provision of new dosing point for chemicals on the raw water pipeline at the treatment works; demolishing of large clarifier and provision of new clarifier; rehabilitation of existing small clarifier; rehabilitation of the existing filters and increasing capacity of sand filters, associated pipework and backwash facility; renovation of the existing clear water reservoir; provision of new bulk flow water meters for both raw and clear water pipelines.

6. Improvement of the distribution system will comprise of: provision of new clear water pumps inside the existing pumphouse in addition to the existing pumps; rehabilitation of the existing pump control; provision of new 350/300 mm diameter clear water pumping main from the works to new low level storage reservoir in Sumbe; provision of 2,500 m³ capacity low level concrete reservoir on ground for urban and semi urban Sumbe; extend distribution system to peri-urban Sumbe and

improve the bulk water supply to the satellite towns of E15 and Chingo by providing new pump station at the treatment works to E15.

7. The reticulation system in the urban core area will be repaired and upgraded including increasing connections from present 1,284 to 7,000 connections and consumer meters. The consumer reticulation system will be expanded to the semi urban and peri-urban areas including provision of new metered connections (yard and house connections) and 200 communal/public water points. The component also includes the provision of engineering services for the design, tendering and construction supervision of the water supply rehabilitation and expansion works.

b) Sanitation

b1) Rehabilitation of the Sewerage system

8. This sub-component includes rehabilitation of the sewerage system. The works include the rehabilitation and expansion of the sewerage reticulation and construction of new treatment plant consisting of oxidation ponds at the existing sewage bulk discharge point, for average dry weather flow of 1,462 m³/day for urban core area of Sumbe. The sub-component also includes the provision of engineering services for the design, tendering and construction supervision of the rehabilitation works of the sewerage system.

9. The sanitation collection/reticulation system will be separated from the storm water system and will include pumping from the low point in the town to the proposed sewage treatment ponds. The effluent from the treatment facility meeting the quality parameters compatible with international and national coastal standard and requirements will be discharged through a sea outfall. The necessary environmental protection and improvement works will also be provided.

b2) On-site sanitation in schools, health centres, markets and public places

10. The sub-component will include construction of sanitation facilities in schools, health centres and public places (markets, parks and etc). The sub-component will also include construction of 100 demonstration household latrines applying different appropriate technologies and training of small scale sanitation service providers (small contractors, local artisans and providers of simple hand washing facilities).

b3) Solid Waste Management

11. This sub-component will involve short term measures to improve the current poor situation by providing 60 skips, 1 skip truck, and 4 tractors and trailers and to seek a long term sustainable solution by financing a consultancy study to improve the solid waste management.

12. Activities to be undertaken in the consultancy include i) a baseline study to establish the waste amounts produced and composition today plus prognosis for the future; ii) Proposed system of waste management integrating waste reduction, re-use, recycling and composting building on current practices; iii) A study of the current waste management system and definition of necessary institutional and legislative

improvements Solid Wastes cost recovery study; iv) selection of wastes treatment site and preliminary design of treatment system (sanitary landfill); and v) Elaboration of costs for implementation of project for improving Solid Wastes management in Sumbe.

c) Community Mobilization, Hygiene, Education and Environmental Awareness

13. The Community mobilization and management, sanitation, hygiene education and environmental awareness sub-component of the project will include community sensitization, awareness raising, organization and training and capacity building in water supply and sanitation services to: i) enhance the management capacities for the public water points, ii) promote improved hygienic behavior, and encourage households investment in hygienic latrines and payment for of water services, iii) promote clean and hygienic environment to improved management of solid wastes in the peri-urban areas.

14. Taking cognizance of the low literacy rates, during community sensitization and training as well as promotion for improved hygiene and environmental sanitation, participatory methods including drama, Participatory Hygiene and Sanitation Transformation (PHAST), among others will be used. Communities in the peri-urban areas will be involved in choosing the locations and management options for public/communal water and sanitation facilities. Appropriate methodologies and methods for ensuring women taking up leadership roles in water and sanitation management committees and engaged in decision making will be developed.

d) Institutional Support for the Water Utility

15. The component will be implemented through Technical assistance consultancy for the formation and institutional development of the new water and sanitation utility. In addition to the institutional support to the new CU, support will be provided to DNA, the province of Kwanza Sul and Sumbe municipality to enable them play their supervisory and oversight roles. Activities to be undertaken include i) facilitation in setting up a commercial utility; ii) support in staff recruitment for the commercial utility (competitive recruitment); iii) staff training (training needs assessments, developing and implementing effective manpower training program including : commercial orientation, customer relations, communication and technical skills in O&M; iv) implement customer survey; v) commercial, accounting and financial management system including: development of strategic plans and business plans, develop bookkeeping and financial management systems, develop cost recovery tariff system and introduction and application of effective billing and revenue collection (including introduction of a computerized billing system, meter reading and repairs). It shall also include funds to cover startup running costs for the commercial utility.

16. The outputs of this component will be i) A commercial water and sanitation utility has been incorporated and is operational on commercial principles.

17. The TA training/Institutional Support will be carried out mainly through on the job training method. In addition to training support for operation and maintenance (design and implementation of maintenance and inspection programs, development of

maintenance teams, establishment of leak detection team and program), support will be provided for extensions to the network and small works which are tied to specific performance outcomes.

e) Development of Comprehensive National Rural water Supply and sanitation Program

18. The output of this component, which is to be carried out through a consultancy will be a comprehensive National Rural Water and Sanitation Program, including investment plans, tools, guidelines and manuals for the implementation of the “Water for all”. The consultant will facilitate/develop the national implementation, procurement and financial management guidelines, manuals and tools, for adopting common approaches for use by all players in the sector which will assist GOA leverage more resources to the RWSS subsector, improve and speed up implementation in order to meet national and MDG targets.

f) Project Management

19. This component will provide logistical and operational support for the GOA/multi donor Technical Unit (TU), comprising a Project Coordinator, Water and Sanitation Engineer, Procurement/Contracts Management Expert, Social/Community Mobilization Expert, and Financial Management Expert. It also includes provision of annual audits of the project accounts.

Detailed Cost Estimates

Water Supply Rehab and Extension (Urban and Semi Urban)				
	COMPONENT DESCRIPTION	UNIT	QNTY	AMOUNT
1.000	Supply phase 1 from location of upstream weir			
1.010	Raw water pump station at weir : Capacity = 400 m3/hr	kW	6	134,750
1.020	Generator set at weir	kVA	25	18,182
1.030	500 mm dia steel raw water pumping main to works: Capacity = 800 m3/hr	m	5,700	2,280,000
1.040	Raw water balancing tank at existing works	m3	800	240,000
1.050	Water treatment plant (upgrade and expand)	m3/hr	350	1,802,500
1.060	Treated water pump station to Sumbe (upgrade) : Capacity = 100 m3/hr	kW	35	140,000
1.070	Treated water rising main to Sumbe new low level reservoir:			
1.071	350 mm dia steel : Capacity = 280 m3/hr	m	1,700	425,000
1.072	315 mm dia uPVC : Capacity = 195 m3/hr	m	1,100	215,455
1.080	Low level storage reservoir at Sumbe	m3	2,500	600,000
1.090	Consumer reticulation for Sumbe Urban and Sub-Urban areas	Sum		1,909,091
1.100	Provide 5 000 house connections and flow meters (Sumbe)	Sum		1,181,818
1.110	Extend Sumbe reticulation to 30 stand-pipes Sum	Sum		590,909
1.120	Improve existing treated water pump station to Chingo	Sum		231,818
	Total construction cost for Sumbe water supply phase 1			9,769,523
Water Supply Rehab and Extension Peri Urban				
1.000	Supply from Cambongo River to all areas south			
1.010	Raw water pump station at weir : Capacity = 400 m3/hr	kW	6	93,500
1.020	Generator set at weir	kVA	25	12,500
1.030	Raw water balancing tank	m3	800	160,000
1.040	Water treatment plant	m3/hr	430	4,945,000
1.050	Treated water pump station to Sumbe : Capacity = 270 m3/hr	kW	55	115,500
1.060	Treated water balacing tank	m3	500	62,500
1.070	Generator set at works	kVA	335	85,425
1.080	350 mm dia steel rising main : Capacity = 280 m3/hr	m	1,700	289,000
1.090	315 mm dia uPVC rising main : Capacity = 195 m3/hr	m	1,100	143,000
1.100	200 mm dia uPVC rising main : Capacity = 83 m3/hr	m	2,700	216,000
1.110	Storage reservoir on GL at Sumbe	m3	4,700	705,000
1.120	Storage reservoir on GL at Sumbe	m3	3,500	525,000
1.130	Extend Sumbe reticulation Sum	Sum		810,000
1.140	Sub-total A			8,162,425
2.000	Supply from Cambongo River to all areas north (intermediate arrangement)			-
2.010	Treated water pump station to Chingo : Capacity = 280 m3/hr	kW	40	100,000
2.020	Treated water balancing tank m3	m3	280	35,000
2.030	350 mm dia uPVC rising main : Capacity = 407 m3/hr m	m	3,700	610,500
2.040	Storage reservoir on GL at Chingo	m3	6,000	810,000
	Total construction cost for Sumbe water supply phase 2			9,717,925
Sanitation				
3.100	Off-site waterborne sanitation:			
3.110	Sewer reticulation network for Sumbe Urban areas	Sum		1,579,636
3.120	Sewage pump station for Sumbe low : Capacity = 87 m3/hr	kW	15	272,727
3.130	160 mm dia sewage rising main from Sumbe low : Capacity = 87 m3/hr	m	1,300	90,909
3.140	Oxidation ponds for Sumbe	m3/day	2,127	2,658,750
3.150	Generator set at sewage pump station for Sumbe low	kVA	50	30,000

3.100	Sub total - Rehab of Sewege system			4,632,023
3.200	Promotional Sanitation in schools, health centers and public places		1,000	500,000
3.300	Solid Waste Mgt			
3.310	Consultancy services for Sustainable Solid Waste Mgt		1	150,000
3.320	Skips		60	150,000
3.330	Skip trucks		1	150,000
3.340	Tracktors and trailers		4	200,000
	Total construction cost			5,782,023
Community Mobilization, Sanitation, Hygiene and Health Education				
1.100	Community Mobilization			200,000
1.200	Hygiene and Health Education			350,000
	Media Campaign - Health Messages		100,000	
	Pdn and Dissemination of Visual Messages		75,000	
	Awareness Raising workshops/messages		100,000	
	Training of Trainers		75,000	
	Total Community Mobilization, SHE			550,000
Tendering and Supervision Consultancy Services				
	Total Tendering and Engineering Services			1,350,690
Institutional Support for the formation and Operationalisation of CU				
1.000	Technical Assistance for CU			1,000,000
1.010	CU Startup running costs			350,000
1.020	Other costs for CU			200,000
	Total construction cost			1,550,000
Development of NRWSS Strategy				
1.010	Consultancy services			
	Total Tendering and Engineering Services			1,000,000
Project Management				
1.000	TA	48	8,000	768,000
1.010	TA Local	48	4,000	384,000
1.020	Running Costs	48	5,000	240,000
1.030	Other costs	48	1,000	48,000
1.040	Project Audit	4	30,000	120,000
1.050	Office Equipment		40,000	40,000
1.060	Vehicle	2	40,000	40,000
	Total construction cost			1,640,000
Summary				
1.000	Water Supply Rehab and Extension			19,487,448
2.000	Sanitation			5,782,023
3.000	Community Mobilization, Sanitation, Hygiene and Health Education			550,000
4.000	Institutional Support for PU			1,550,000
	Detailed Design, Tendering and Engineering supervision			1,350,690
5.000	Development of NRWSS Strategy			1,000,000
6.000	Project Management			1,640,000
	Total Base Cost			31,360,161
	Physical Cont (10%)	10%		3,136,016
	Sub total			34,496,177
	Price Cont			2,080,836
	Total Cost			36,577,013

Provisional List of Goods and Services

Category	In US\$			In UA			UA		
	Total	FE	LC	Total	FE	LC	Total	ADF	GOA
1.0 Goods									
1.1 Solid Waste Mgt Eqpt	500,000	400,000	100,000	328,045	262,436	65,609	360,850	188,424	172,426
1.2 Office Equipment	40,000	28,000	12,000	26,244	18,371	7,873	28,868	15,074	13,794
1.3 Vehicles	40,000	40,000	-	26,244	26,244	-	28,868	15,074	13,794
2.0 Works									
2.1 Water Supply Works (Lot 1)	9,769,523	7,815,618	1,953,905	6,409,691	5,127,753	1,281,938	7,529,984	3,931,913	3,598,071
2.2 Water Supply Works (Lot 2)	9,717,925	7,774,340	1,943,585	6,375,838	5,100,671	1,275,168	7,490,214	3,911,146	3,579,068
2.3 Rehab of Sewage System	4,632,023	3,705,618	926,405	3,039,026	2,431,221	607,805	3,570,191	1,864,237	1,705,953
2.4 Promotional Sanitation Facilities	500,000	250,000	250,000	328,045	164,023	164,023	380,241	198,549	181,691
3.0 Services									
3.1 Engineering Ser. for Det Design & Sup.	1,350,690	945,483	405,207	886,175	620,323	265,853	1,016,698		1,016,698
3.2 Institutional Support for the CU	1,000,000	700,000	300,000	656,090	459,263	196,827	747,254	390,192	357,062
3.3 Study for Development of NRWSSP	1,000,000	700,000	300,000	656,090	459,263	196,827	721,700	376,848	344,852
3.4 CS for Sustainable Solid Waste Mgt	150,000	120,000	30,000	98,414	78,731	19,683	108,255	56,527	51,728
3.5 Project Audit	120,000	96,000	24,000	78,731	62,985	15,746	91,258	47,652	43,606
3.6 TA for Project Management	1,152,000	691,200	460,800	755,816	453,490	302,326	876,074	457,457	418,616
4.0 Miscellaneous									
4.1 Community Mobilization	200,000	40,000	160,000	131,218	26,244	104,974	152,096	79,420	72,677
4.2 Awareness Creation Campaigns	175,000	35,000	140,000	114,816	22,963	91,853	133,084	69,492	63,592
4.3 Training and Workshops	175,000	35,000	140,000	114,816	22,963	91,853	133,084	69,492	63,592
4.4 Other Project Implementation Costs	288,000	57,600	230,400	188,954	37,791	151,163	219,018	114,364	104,654
4.5 CU start up and other costs	550,000	275,000	275,000	360,850	180,425	180,425	410,095	214,138	195,957
Total Base Cost	31,360,161	23,708,860	7,651,301	20,575,103	15,555,157	5,019,946			
Physical Contingency	3,136,016	2,354,806	781,210	2,057,510	1,544,966	512,545			
Price Contingency	2,080,836	1,586,769	494,066	1,365,216	1,041,064	324,152			
Total Cost	36,577,013	27,650,435	8,926,578	23,997,830	18,141,187	5,856,643	23,997,830	12,000,000	11,997,830

Summary of Procurement Arrangements

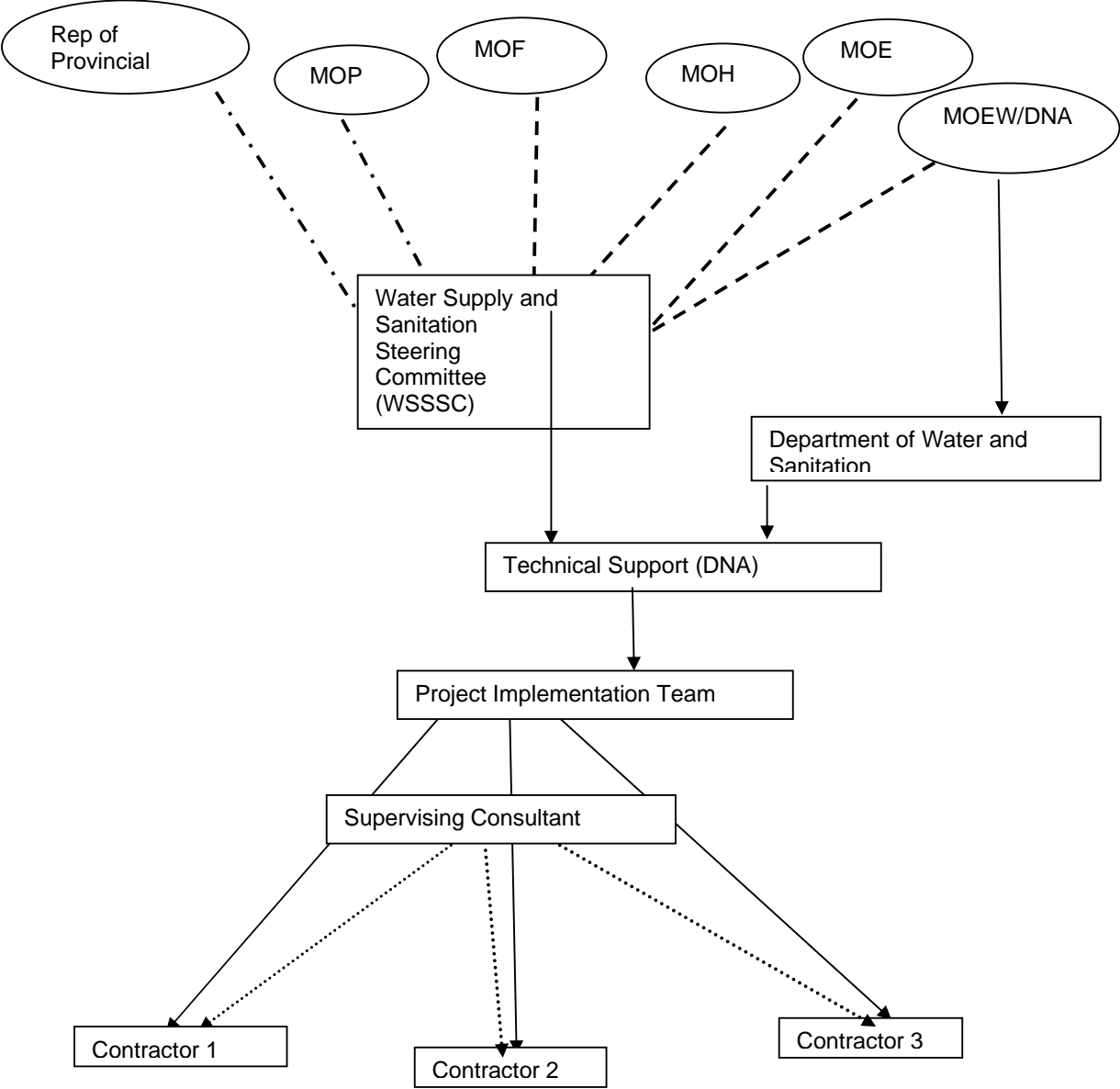
Categories	UA in million					
	ICB	NCB	Other	Short List *	Non Bank	Total
1. Works						
Water Supply Infrastructure	7.53(3.93)					7.53(3.93)
Water Supply Infrastructure	7.49(3.91)					7.49(3.91)
Rehabilitation of Sewage system	3.57(1.86)					3.57(1.86)
Promotional Sanitation facilities		0.38(0.20)				0.38(0.20)
2. Goods						
Solid Waste Management Equip.		0.36(0.19)				0.36(0.19)
Office Equipment			0.03(0.015)			0.03(0.015)
Vehicles			0.03(0.015)			0.03(0.015)
3. Services						
Engineering Consultancy					1.02	1.02
Institutional Support WU				0.75(0.39)		0.75(0.39)
Develop NRWSSP				0.72(0.38)		0.72(0.38)
Study for Sustainable Solid Waste M.				0.11(0.057)		0.11(0.057)
Project Management – PTU				0.87(0.46)		0.87(0.46)
Audit Services				0.09((0.048)		0.09((0.048)
4. Miscellaneous						
Community Mobilization			0.15(0.08)			0.15(0.08)
Awareness Creation Campaigns			0.13(0.07)			0.13(0.07)
Training and Workshops			0.14(0.07)			0.14(0.07)
Other Project Imp Costs – DNA			0.22(0.11)			0.22(0.11)
CU start up and Other costs			0.41(0.21)			0.41(0.21)
GRAND TOTAL	18.59(9.71)	0.74(0.39)	1.11(0.57)	2.54(1.33)	1.02	24.0(12.0)

* Short List applies to the use of consulting services only.

– Other may be LIC, International or National Shopping, Direct Purchase or Force Account.

+ Figures in brackets are amounts financed by the Bank/Fund as the case may be.

Project Implementation Arrangement



**ANGOLA: SUMBE WATER SUPPLY, SANITATION
AND INSTITUTIONAL SUPPORT PROJECT
ASSUMPTIONS USED IN THE FINANCIAL
AND ECONOMIC EVALUATION**

A. ASSUMPTIONS FOR FINANCIAL EVALUATION

Currency: The analysis has been done in the Angolan local currency – Angola Kwanza (AK).

Project's Life Span: The estimated operational life span of the project is 25 years.

Costs

Investment Costs: These are actual costs of the Project, which include (a) initial cost of the project, and (b) capital injections (10% of the initial investment) to cater for major replacement costs after 10 years normal operation. Thus in the years 2021 and 2031, an estimated 10% of the total investment costs is accounted to provide for rehabilitation or major maintenance works of the facilities.

Unaccounted for Water: The level of unaccounted for water has been assumed at 20% after the implementation of the project.

Operation and Maintenance Costs: These are the incremental costs of chemicals, energy, labour and other necessary maintenance inputs. These are estimated at 15% of the value of water sold.

Revenues

Water Sales: This is the revenue from water supplied to customers. It is the volume of water supplied in cubic meter, taking into account the UFW of 20% after the completion of the project. This is then multiplied by the average tariff. The volume of incremental water sold is estimated to increase from 2.7 million to 8.7 million M³.

Incremental Sanitation Revenue: Embedded 25% of water supply revenue, to take into account the additional revenue for sanitation from customers connected to the sanitation system, charged at 50% of water bill.

Tariff: The tariff levels used are those levels expected to be put in place by the proposed water utility. This is projected to increase from AON 27/ M³ to reach full cost recovery of AK 87/ M³ starting 2018.

Salvage Value: As a conservative measure for the computation of the IRR, no residual value has been considered at the end of the project's life span.

B. ASSUMPTIONS FOR ECONOMIC EVALUATION

The calculation of the EIRR for the project is based on the cost and benefit streams used in the FIRR, with the following adjustments:

Tariff: Willingness to pay is assumed to reflect the economic value of clean water to consumers, at a given quantity supplied. Without the project the value is assumed to be the current average market price for clean water (AON 160 to 500/ M³). With the project, the willingness to pay should represent the market clearing price that will prevail at the projected demand level. It is approximated here as the full cost recovery tariff (estimated as AON 87 per cubic meter on average), which is determined taking into account the willingness to pay expressed by the residents.

Health Benefits: Health related benefits considered in the analysis and the assumptions used to evaluate them are as follows: the potential increase in the cases of water borne diseases is projected with reference to the population without access to clean water. A 30% reduction in disease incidence would accrue from provision of clean water and sanitation services by virtue of increased quality, quantity, and regularity of supply. These benefits reflect containing the cases of water borne diseases and the savings in medical consultation as well as treatment costs.

Investment Costs: These exclude price contingencies. All foreign costs are net of import duties and local taxes. A conversion factor of 0.75 is applied to local costs to account for domestic market distortion

C. ASSUMPTIONS FOR THE FINANCIAL PROJECTIONS OF THE CU

- i) The demand projections in the project area is based on the information provided in Table 4.2 of the report which is based on the Master Plan and Pre-Feasibility Report and Bank mission estimates.
- ii) Average tariffs will be set at the O&M DPC in 2010, adjusted gradually towards reaching full cost recovery tariffs by 2016;
- iii) UFW is reduced dramatically as a result of the immediate infrastructure rehabilitation measures and the metering program supported under the project;
- iv) GOA will pass through the rehabilitated infrastructure to the CU, which would represent part of equity contribution; and
- v) The CU's staffing will be increased gradually to match operational requirements.

ANGOLA					
Sumbe Water Supply, Sanitation and Institutional Support Project					
Computation of The Financial Internal Rate of Return					
(x 1000 Angola Kwanza)					
Year	Investment Costs	Incremental Operating & Maintenance Costs	Water Sales (x 1000 m3)	Incremental sales income	Net Cash Flow
2008	(140,695)	0	0	0	(140,695)
2009	(866,111)	-	-	-	(866,111)
2010	(667,993)	-	-	-	(667,993)
2011	(624,420)	-	-	-	(624,420)
2012	-	(14,572)	2,692	80,955	66,383
2013	-	(18,360)	2,827	102,003	83,642
2014	-	(23,134)	2,968	128,523	105,389
2015	-	(29,149)	3,117	161,939	132,790
2016	-	(36,728)	3,273	204,044	167,316
2017	-	(48,205)	3,436	267,807	219,602
2018	-	(63,269)	3,608	351,497	288,228
2019	-	(66,433)	3,788	369,072	302,639
2020	-	(69,755)	3,978	387,526	317,771
2021	(209,020)	(73,242)	4,177	406,902	124,640
2022	-	(76,904)	4,386	427,247	350,343
2023	-	(80,750)	4,605	448,609	367,860
2024	-	(84,787)	4,835	471,040	386,253
2025	-	(89,027)	5,077	494,592	405,565
2026	-	(93,478)	5,331	519,321	425,844
2027	-	(98,152)	5,597	545,287	447,136
2028	-	(103,059)	5,877	572,552	469,492
2029	-	(108,212)	6,171	601,179	492,967
2030	-	(113,623)	6,480	631,238	517,615
2031	(209,020)	(119,304)	6,804	662,800	334,476
2032	-	(125,269)	7,144	695,940	570,671
2033	-	(131,533)	7,501	730,737	599,205
2034	-	(138,109)	7,876	767,274	629,165
2035	-	(145,015)	8,270	805,638	660,623
2036	-	(152,266)	8,683	845,920	693,654
FIRR					9.13%
Sensitivity Analysis					
Revenue is reduced by 10%					8.08%
Investment cost increased by 10%					8.35%

NPV at 7%

\$623,883

ANGOLA Sumbe Water Supply, Sanitation and Institutional Support Project Computation of Economic Internal Rate of Return (x 1000 Angola Kwanza)						
Year	Investment Costs	Incremental Operating & Maintenance Costs	Economic & Health Benefits	Water Sales (x 1000 m3)	Incremental sales income	Net Cash Flow
2008	(110,463)	0		0	0	(110,463)
2009	(680,005)	-		-	-	(680,005)
2010	(524,457)	-		-	-	(524,457)
2011	(490,247)	-		-	-	(490,247)
2012	-	(14,572)	33,600	2,692	262,293	281,321
2013	-	(18,360)	34,440	2,827	275,407	291,487
2014	-	(23,134)	35,301	2,968	289,178	301,344
2015	-	(29,149)	36,184	3,117	303,636	310,671
2016	-	(36,728)	37,088	3,273	318,818	319,179
2017	-	(48,205)	38,015	3,436	334,759	324,569
2018	-	(63,269)	38,966	3,608	351,497	327,193
2019	-	(66,433)	39,940	3,788	369,072	342,579
2020	-	(69,755)	40,938	3,978	387,526	358,709
2021	(180,517)	(73,242)	41,962	4,177	406,902	195,104
2022	-	(76,904)	43,011	4,386	427,247	393,353
2023	-	(80,750)	44,086	4,605	448,609	411,946
2024	-	(84,787)	45,188	4,835	471,040	431,441
2025	-	(89,027)	46,318	5,077	494,592	451,883
2026	-	(93,478)	47,476	5,331	519,321	473,319
2027	-	(98,152)	48,663	5,597	545,287	495,799
2028	-	(103,059)	49,879	5,877	572,552	519,372
2029	-	(108,212)	51,126	6,171	601,179	544,093
2030	-	(113,623)	52,405	6,480	631,238	570,020
2031	(180,517)	(119,304)	53,715	6,804	662,800	416,694
2032	-	(125,269)	55,058	7,144	695,940	625,729
2033	-	(131,533)	56,434	7,501	730,737	655,639
2034	-	(138,109)	57,845	7,876	767,274	687,010
2035	-	(145,015)	59,291	8,270	805,638	719,914
2036	-	(152,266)	60,773	8,683	845,920	754,427
EIRR						15.38%
Sensitivity Analysis						
Revenue is reduced by 10%						14.04%
Investment cost increased by 10%						14.21%

NPV at 10%

\$894,286

**Projected Financial Statements of CU Sumbe
(in Angolan Kwanzas x 1000)**

	2012	2013	2014	2015	2016	2017
Income Statement						
Operating Revenue	64,579	88,258	113,081	139,089	178,208	219,196
Operating Costs						
Personnel Costs	21,526	22,065	22,616	23,182	23,761	24,355
Fuel and Electricity	10,763	11,032	11,308	11,591	11,881	12,178
Chemicals and supplies	8,611	8,826	9,046	9,273	9,504	9,742
Other operating costs	5,382	5,516	5,654	5,795	5,940	6,089
Uncollectible debts	6,458	8,826	11,308	13,909	17,821	21,920
Total Operating Costs	52,740	56,265	59,933	63,749	68,907	74,283
Operating margin	11,840	31,994	53,148	75,340	109,301	144,913
Depreciation	56,468	62,115	68,327	75,159	82,675	90,943
EBIT	(44,629)	(30,121)	(15,179)	181	26,626	53,970
Financial Charges	(22,587)	(23,717)	(24,902)	(26,148)	(27,455)	(28,828)
Net Income/Loss	(67,216)	(53,838)	(40,081)	(25,967)	(829)	25,143
Balance Sheet						
Current Assets						
Cash and cash equivalent	6,458	10,591	16,962	27,818	35,642	54,799
Accounts receivable	18,578	22,971	26,334	28,580	29,295	36,032
Supplies and inventories	3,498	3,585	3,063	3,139	2,574	2,638
Total Current Assets	28,534	37,148	46,359	59,537	67,510	93,470
Fixed Assets, Property Plant and equipment (net)	2,377,793	2,857,521	3,090,574	3,133,529	3,375,514	3,461,843
Total Assets	2,406,327	2,894,669	3,136,933	3,193,066	3,443,024	3,555,313
Current Liabilities						
Accounts Payable (Creditors)	10,315	9,515	8,670	8,886	7,970	8,169
Various accruals	5,812	7,943	12,722	20,863	26,731	41,099
Total current liabilities	16,127	17,459	21,391	29,750	34,701	49,268
Long Term Liabilities	358,530	503,512	623,108	711,746	852,081	876,511
Shareholders Equity	2,031,670	2,373,699	2,492,433	2,451,570	2,556,242	2,629,533
Net Invested Capital	2,390,200	2,877,211	3,115,541	3,163,317	3,408,323	3,506,044
Margins %						
Operating Profit Margin %	18.3%	36.3%	47.0%	54.2%	61.3%	66.1%
EBIT margin%	-69.1%	-34.1%	-13.4%	0.1%	14.9%	24.6%
Net profit margin%	-104.1%	-61.0%	-35.4%	-18.7%	-0.5%	11.5%
Rate of Return						
Return on Total Capital Employed	-1.9%	-1.0%	-0.5%	0.0%	0.8%	1.5%
Return on Fixed Assets (Net)	-1.9%	-1.1%	-0.5%	0.0%	0.8%	1.6%
Return on Equity	-3.3%	-2.3%	-1.6%	-1.1%	0.0%	1.0%
Ratios						
Current ratio	1.77	2.13	2.17	2.00	1.95	1.90
Debt to capital employed ratio	15%	18%	20%	23%	25%	25%

* Source – Mission Estimates

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN SUMMARY

Project Title: Sumbe Water Supply and Sanitation Rehabilitation and Augmentation Project
Country: Angola
Project Number: P-AO-E00-002
Department: Division: OWAS.2

1. Introduction

1.1 The projects will be implemented in a relatively stable zones, contribute to urban, semi and peri-urban community development and lead to an overall environmental and health-improvement. In accordance with the Bank's environmental and social safeguard policies, the urban, semi and peri-urban water supply and sanitation program has been classified under **category 2**. As a consequence, an environmental and social management plan (ESMP) was prepared by the Government through a consultant in accordance with the national policies and the Bank's safeguard policies. The ESMP has been approved by the country in accordance with the legal national requirements and in the Bank's public information center for 30 days prior to Board approval of the projects in July 2007.

2. Brief Description of the Projects

2.1 The objective of the project is to improve the access, quality and sustainability of water supply and sanitation services of Sumbe town (capital of Kwanza Sul Province), including the peri-urban area, by rehabilitating and extending the water supply and sanitation system, and providing institutional support for the formation and functioning of a water utility.

2.2 The project comprises of rehabilitation/expansion of water supply and sanitation system in Sumbe and the development of a Comprehensive National Rural Water and Sanitation Program. The project's main components are: a) Water Supply infrastructure; b) Sanitation consisting of (b.1) rehabilitation of sewerage infrastructure, (b.2) On site sanitation in schools, health centres, markets and public places and (b.3) solid waste management c) Community Mobilization, Sanitation, Hygiene Education and Environmental Awareness (CBSHE), d) Institutional Support for Water and Sanitation Utility, e) Development of Comprhensive National Rural Water Supply and Sanitation Program and f) Project Management. The project outputs will include upgraded and expanded water treatment plant (increased to 350m³/hr from current design capacity of 150 m³/hr), upgraded and extended reticulation network to serve Sumbe urban and peri-urban areas, establishment and functioning of the water utility, rehabilitation of the sewerage system (including reticulation and treatment plant) for urban core area of Sumbe, increase in sanitation coverage in semi urban areas, and water management committees for public stand posts in peri-urban areas.

3. Major Environmental and Social Impacts

Positive Impacts

3.1 Provision of adequate potable water and improved sanitation facilities as well as promotion of hygiene education, environmental awareness, protection of river basin catchment areas, sensitization of the population on water borne diseases, and promotion of water conservation will contribute to improve the living standards of the rural population of Sumbe. The sanitation situation and drainage system in Sumbe are of serious concern. The fisheries industry in Salinas for example is very active and source of diverse pollutions (solid and liquid

waste). There is however, no treated water near the houses where the fishermen sell the fish and this gives rise to a health and hygiene problem. Therefore, implementing these project through the construction of physical facilities including motorized and hand pumps boreholes, rural community pipes schemes, sanitation facilities including household latrines, public latrines, septic tanks, and provision of rain water harvesting tanks will lead to improve the health standards of selected communities. During the field appraisal and discussions held with all stakeholders, it was concluded that these project will invariably contribute to the improvement of the physical and social environment and the living conditions of the communities at large. Besides, the project does not entail any involuntary displacement or resettlement of people. It is also expected that the project will not exacerbate gender issues and will on the contrary contribute in particular to reduce efforts associated with water transport by women.

Negative Impacts

3.2 Implementation of the project will lead to limited negative impacts. These impacts are of the following nature: i) impacts mainly occurring during construction phase - air pollution through dust, damage to existing paved and unpaved roads, noise pollution and occasional destruction of property walls due to rehabilitation of the reticulation systems, loss of jobs to water vendors; and ii) impacts observed during operation - upset in regional water balance and distortions in surface water, inadequate drainage around the water supply points, spillage and creation of unhealthy environment around the water and sanitation facilities due to pool of water around the water points, pollution of the groundwater if the sanitation facilities are not well sited and located at an approve distance from streams and rivers, and uncontrolled discharge of septic tanks carelessly emptied into the drainage systems, and inability of the very poor, infirm and economically very weak segment of the population to pay for the water they consume. Above impacts could be easily mitigated by well defined mitigation measures.

4. Enhancement and Mitigation Measures

4.1 Long-term socio-economic benefits of the project far outweigh the negative environmental and social impacts. Negative impacts can, in turn, be reduced to within negligible significance through the implementation of the mitigation measures. During the implementation phase, the mitigative measures will include the proper design and ensuring that the infrastructures are protected and the latrines are properly sited and constructed. All the facilities will be integrated with adopted standard-designed well pads and drainage channels to carry wastewater into soak away. Monitoring of the surface water will ensure avoidance of over-exploitation of the resources and prevent soil pollution. Regular water quality analyses will be undertaken by accredited laboratories on behalf of the Sumbe Water Supply and Sanitation Agencies with respect of the parameters required for monitoring and compliance with the national and provincial potable water standards. Intensive sensitization programs have been incorporated into the project to ensure adequate capacity building of the Sumbe urban and peri-urban communities in general and women and school children in particular, on environmental health and impact of water-borne diseases and their prevention. These awareness and capacity building programs will empower communities to better manage their water facilities and operate and maintain their safe drinking water facilities and toilet points. A preventive maintenance program will be put in place to ensure detection of leaks and repairs and avoid wastage;.

5. Institutional Arrangements and Capacity Building Requirements

5.1 It will, however, be necessary to ensure that an appropriate institutional arrangements be established and implemented to ensure that the ESMP is properly implemented and adhere to.

These include the establishment of a site environmental control officer (ECO), who will be responsible for the implementation of the plan and the daily environmental control of the construction site. The following general recommendations have been highlighted:-

- Erosion control measures must be implemented throughout the project area where required and rehabilitation measures instituted (particularly where excavations occur within road reserves and private properties).
- Local labour must be used as far as possible during the construction phase as far as possible
- Labourers must be educated and trained to provide much needed skills that can be used on other projects elsewhere.
- Care must be taken that the short-term provision of work does not impact negatively on a community when construction is complete and their skills are not needed anymore. Mitigation measures for construction works will be included in contractors' contracts.

6. Monitoring Program and Complementary Initiatives

6.1 In order to reinforce the follow up of the environmental and social impacts, an environmental technical assistant will be recruited by the program to train the provincial environment and sanitation officers. This TA will also monitor the implementation of the ESMP. He will also supervise the preparation of the environmental awareness campaigns. He will prepare a detailed checklist on environmental and social monitoring program, with clearly defined indicators for implementation. The monitoring process will use appropriate environmental and social indicator to ensure that the project is achieving the objectives of the ESMP.

7. Public Consultations and Disclosure Requirements

7.1 Public participation and consultations would take place through workshops, meetings, radio programs, public readings and explanations of project ideas and requirements, as needed to meet the above objective. Public documents would be made available at Sumbe district level at suitable locations like the offices of the provincial directorate of environment (PDE), Sumbe Water and Sanitation Directorate (SWSSD) and at public libraries, complying with national laws regarding disclosure of public documents. These measures would take into account the literacy levels prevalent in the communities by allowing enough time for responses and feedback.

7.2 Consultations will be monitored by PDE and SWSSD officers who will set their own verifiable indicators to assess the degree of participation of the key stakeholders during all phases of project implementation.

7.3 The consultation process will consider the affected people directly and indirectly and ensures no exclusion of specific groups such as women.

8. Estimated Costs

8.1 The total cost of mitigation; environmental and social capacity building and training; environmental awareness; management and monitoring are estimated US\$ 776,287.00.

9. Implementation Schedule and Reporting

9.1 The ESMP will be implemented through the use of existing provincial government. However, the existing institutions need strengthening through training to build their capacities. Successful implementation of the ESMP and reporting will require dynamic and multi-disciplinary professionals that have general knowledge in environment management and specific skills in the use of the ESMP and the screening process. Short and tailor-made training courses

and seminars will be required to reinforce the capacity and skills of the key stakeholders and officers, to carry out the environmental management activities of the ESMP. In particular, the key stakeholders participating in the Sumbe water supply and sanitation project will require capacity building.

9.2 For the purpose of the implementation of the ESMP, there is a lack of awareness and well-trained personnel to deal with the environmental, social and health impacts of the project. Intensive awareness campaigns and capacity-building activities have been incorporated into the overall design. Emphasis would be made at the community level to impact the knowledge to all stakeholder, most especially school children and women who are most vulnerable.