Administration and Management of Water Supply Services (B)

Country Reports FY2023

Japan International Corporation of Welfare Services (JICWELS)

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1. CAMBODIA

Cambodia

Inception Report

Country : **Cambodia** Organization : **Siem Reap Water Supply Authority** Name : **VAN Sosamneang**

1. Outline of Water Supply Service

1.1 Legal Basis of Water Supply Service

Siem Reap Water Supply Authority is to a public enterprise called SRWSA with administrative & financial autonomy by Sub-Decree of Royal Government of Cambodia on 10 January 2007 to entirely operate the water supply infrastructures in Siem Reap City and to implement the commercial and financial operations to achieve its mission independently.

1.2 Demarcation of Water Supply Service

Cambodia have four Ministry in charge of water management, water treatment and water supply management:

- Ministry of Public Works and Transport: Waste water and sewage management
- Ministry of Industry, Science, Technology & Innovation: Urban water supply (as like SRWSA)
- Ministry of Rural Development: Rural water management
- Ministry of Water Resource and Meteorology: Water resource management.

1.3 Main Actor of Water Supply Utilities

Water supply utilities in Cambodia consists of public water utilities and private operators. For the public water utilities, all are autonomous bodies established by the Sub-dree of the Royal Government of Cambodia lead by a Board of Directors and have two supervision ministries which are Ministry of Industry, Science, Technology and Innovation (Technical), and Ministry of Economy and Finance (Finance). Siem Reap Water Supply Authority is one of the Public water utilities have its mission to produce and supply water in Siem Reap city and its surrounding areas. For Private Operator is water supply utility operated by a individual person or a company under license issued by MISTI.

1.4 Miss/Vision of Water Supply Utilities

SRWSA is responsible for producing and effectively providing clean water to all citizens of Siem reap City.

1.5 Your Mission/Vision in your organization

Become the one of middle manager have a voice and value at the same level as a man.

2. Water Supply Service Levels

2.1 Main Performance Indicators (Year 2022) (PI)

Coverage area	-
Population served	38%
Collection ratio	98%
Production capacity	30,000m ³ /day
Supply duration	24H/7
Supply pressure	2.5 bars
Non-Revenue water	9.55%
Water quality	Compliance with drinking water quality standard
Staff number	164
Number of connections	18,588
Staff/1000 connections	8.82

2.2 Any Monitoring by Performance Indicators (PI)

Production ratio (Daily production / Production capacity)	67%
Coverage ratio (Population served / Total population)	59%
Billing ratio (Number of bill out / Total connection)	81%
Cost of goods sold	\$ 0.50
Average selling price	\$ 0.46

3. Management of Water Quality

3.1 Current Situation and Major Challenges/Problems

As SRWSA have recently operated the new treatment plant that take the water source from Tonle Sap lake:

- <u>In dry season</u>: It faces some challenges with water quality such as high turbidity, color, and especially algae bloom that is difficult to treat and also effected to the drinking water quality. And other point, it makes the high production cost when using a lot of chemical dosing like PAC for coagulant and chlorine for disinfection.
- <u>In wet season</u>: Not have much problem for water quality because this time is low of turbidity, color and also algae..., so it not so difficulty to treat the raw water, it just controls carefully on chemical dosing.

3.2 Current Actions against Those Challenges/Problems

- Control carefully on water quality: Raw water, during production and treated water.
- Strictly control on chemical dosing rate.
- Cleaning the treatment basin especially sedimentation basin regularly.

3.3 Any Achievements

- Use less of chemical dosing rate (now)
- Get better water quality day by day

- 3.4 Water Quality Standards for Drinking Water
- The water quality compliance with drinking water quality standard.
- 3.5 Monitoring System or Plans for Safety of Drinking Water in Your Organization / Regulatory Body / Independent Institution / Others
- Drinking water quality standard guideline
- Standard Operation Procedure of water quality analysis (SOP)
- Online for water quality control that show the result on SCADA system

3.6 Implementation of Water Safety Plans

SRWSA just implemented our water safety plan but did not fully complete and use it.

4. Reduction of Non-Revenue Water

4.1 Current Situation and Major Challenges / Problems

From 2019 to 2022, Due to the rehabilitation of 38 roads in Siem Reap it's a huge impact for NRW of SRWSA as like:

- More than 10 construction sites working the same time
- NRW team have only 11 persons
- Technical staff to operate leakage detection still limited
- Some of our DMA are not working so a bit difficult to measure block consumption.

4.2 Current Actions against Those Challenges / Problems

To reduce our challenges with NRW or Water losses, SRWSA has SOP and actions as a routine for NRW's team:

- Daytime to find water leakage
- Night step test every Friday night
- Keep finding opportunities to send our staff to knowledge abroad and other experts
- Contribute and on job training for the new technical to our staff.

4.3 Any Achievements

- Maintain NRW level below than 10%
- Gain more technical staff for Water leakage.

4.4 Constitution of NRW (Year 2022)

	Authorized consumption	Revenue water (6,646,156 m ³) 90.45%	Billed authorized consumption	6,646,156 m ³ 90.45%
(6,655,628 r 90.58%	(6,655,628 m ³) 90.58%	Non-Revenue Water	Unbilled authorized consumption	9,472 m ³ 0.13%
7,348,140m ³	Water losses	(NRW) (701,984 m ³)	Apparent losses	221,747 m ³ 3.02%
	9.42%	2.0070	Physical losses	470,765 m ³ 6.40%

4.5 Situations about Leakage Detection Measures (DMA etc.)

From 2005 to 2022, we divided our service area into 4 zones within 4 DMA or 4 Flow water matters but from 2017 some DMA are broken and not working. So, by JICA loan in 2023 we installed and divided our server area into 7 zones within 7 DMA.

5. Accounting system of Water Supply Service

5.1 Water Tariff in SRWSA

From 2017 till now, SRWSA has been using a block tariff system (Affordable tariff system) with an average water tariff bill of around $0.48/m^3$ (Domestic at $0.35/m^3$ and commercial at $0.65/m^3$).

Type of Tariff	Consumption rate	Tariff	Type of Customer	
	$0 - 3m^{3}$	\$ 0.22		
Domestic	$4 - 7m^{3}$	\$ 0.24	Domestic and	
	8 - 15m ³	\$ 0.37	Administration Public	
	16 - 30m ³	\$ 0.44	customer	
	Over 30m ³	\$ 0.49		
	0 - 50m ³	\$ 0.46		
Commercial	51 - 150m ³	\$ 0.59	Commencial austamon	
	151 - 350m ³	\$ 0.71	Commercial customer	
	Over 350m ³			

5.2 Balance Sheet of SRWSA

STATEMENT OF FINANCIAL POSITION						
As at 31 December 2022					\$1=4,100\$	
	Note	For th	ne year ended 31-Dec-22	For th	e year ended 31-Dec-21	
ASSETS						
Non-current						
Property, plant and equipment	6	\$	96,631,330	\$	69,669,947	
Intangible asset	7	\$	3,818	\$	9,510	
Loan receivable	8		-	\$	196,730	
		\$	96,635,147	\$	69,876,187	
Current						
Inventories	9	\$	1,593,417	\$	1,536,557	
Trade and other receivables	10	\$	102,710	\$	79,665	
Other current assets	11	\$	145,516	\$	57,631	
Cash and cash equivalents	12	\$	6,726,513	\$	650,331	
		\$	8,568,156	\$	2,324,184	
TOTAL ASSETS		\$	105,203,303	\$	72,200,370	
EQUITY AND LIABILITIES						
EQUITY						
Share capital	13	\$	5,485,265	\$	5,491,563	
Reserves	14	\$	5,506,352	\$	5,506,352	
Accumulated profits		\$	8,287,714	\$	1,467,026	

TOTAL EQUITY		\$ 19,279,331	\$ 12,464,941
LIABILITIES			
Non-current			
Borrowings	15	\$ 79,645,272	\$ 58,832,542
Long term deposit	16	\$ 395,930	\$ 326,346
Deferred tax liabilities	17	\$ 509,738	\$ 509,738
		\$ 80,550,940	\$ 59,668,626
Current			
Trade and other payables	18	\$ 5,352,665	\$ 37,523
Current tax liabilities	19	\$ 20,367	\$ 29,280
		\$ 5,373,032	\$ 66,803
TOTAL LIABILITIES		\$ 85,923,972	\$ 59,735,430
TOTAL EQUITY AND LIABILITIES		\$ 105,203,303	\$ 72,200,370

1.1. Profit and Loss Statement of SRWSA

STATEMENT OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME

For the year ended 31 December 2022

	Note	For the year ended 31 December 2022		For the y	year ended 31 ecember 2021
Revenue					
Water sales	20	\$	3,036,507	\$	2,324,183
Service fees	21	\$	396,911	\$	347,791
Other income	22	\$	770,367	\$	379,056
		\$	4,203,785	\$	3,051,030
Expenses					
Salaries, Wages and relate expense	21	\$	(1,143,880)	\$	(1,153,567)
Raw materials for water treatment	24	\$	(281,850)	\$	(174,514)
Materials for household water connection	25	\$	(253,124)	\$	(220,681)
Repair and maintenance		\$	(68,875)	\$	(46,418)
Electricity expense		\$	(324,314)	\$	(303,162)
Depreciation and amortization charge	6,7	\$	(982,920)	\$	(1,028,472)
Other operating expenses		\$	(276,298)	\$	(634,640)
		\$	(3,331,261)	\$	(3,561,454)
Profit (loss) from operation		\$	872,524	\$	(510,424)
Finance income	26	\$	8,231	\$	7,477
Finance costs	26	\$	(295,552)	\$	(267,644)
Profit (loss) before income tax		\$	585,204	\$	(770,591)
Income tax expense	27	\$	(36,131)	\$	(30,585)
Net profit (loss) for the year		\$	549,072	\$	(801,177)
Other comprehensive income					
Foreign exchange gain - net	28	\$	6,271,616	\$	3,220,263
Total comprehensive income for the year		\$	6,820,688	\$	2,419,086

\$1=4,100\$

6. Major Recent Achievements in Improvement of Water Supply

SRWSA has remarkable achievements in improvement of water supply include (i) The water production capacity has increased from 30 000 m³/day in 2019 to 90 000 m³/day in 2023 after the completion of the water treatment plan constructed under JICA loan and this production capacity can cover water demand until 2030, (ii) The distribution network has increased from 240 Km in 2019 to about 828 Km in September 2023, and (iii) Total number of connections has increased from 11,033 connections in 2019 to about 23 257 connections in September 2023. As the results, the current water supply coverage has increased to about 59% with the total population of about 162,799 persons served water supply from SRWSA. The water pressure in distribution networks can be maintained at least 2 bar across the distribution networks. Moreover, SRWSA is able to supply water to development areas of Run Tak Ek and Peak Sneng as well as new international airport which are about 40 km from the city. The NRW has remained at below 10% such as 9,55% in 2022 and expected 7% in this 2023.

7. Recent Challenges to Improve Water Supply Service

The recent challenges to improve water supply service of SRWSA are as follows:

- Expansion of distribution networks: SRWSA need to expand its distribution networks at least 800 km from 2024 to 2030 in order to reach the target of the Royal Government of Cambodia to provide 100% of population with access to water supply. This expansion of distribution needs a big investment but the return will be low because the network mostly expanded in the sub-urban areas with low density and mostly domestic use. On other hand, SRWSA have extensively expanded distribution network from about 240 km length in 2019 to around 820km length in 2023. Remarkably, in the recent years, the pipe network is expanded about 40km away from city to the outskirts. That, it will be a quite challenge to effectively control the water leakage and water pressure management.
- <u>Financial Burden</u>: The finance condition of SRWSA has serious impacted by the Covid-19, Economy crisis and the War in Ukraine. The commercial water consumption which can generate profits of SRWSA has dramatically decreased from 2020 due to decrease of number of tourists. Currently, the number of tourists has increased but still slow and in small numbers. At the same time, the expenditures of SRWSA have dramatically increased from year to year because of payment for interests and principles of loans from development partners, increase of operation and maintenance costs etc.
- <u>Increase of Production Costs</u>: The production cost increases after operating the new water treatment plant because of high electrical and chemical consumptions and the increase of material/chemical costs. While, the increase/revision of water tariff seems not be allowed by the government.

8. Expectations toward Japan

8.1. Expectations toward Japanese Government and JICA

JICA is a main development partner to supports for water supply improvement in Cambodia. Particularly, SRWSA has a long-time cooperation with JICA by receiving Japanese/JICA financial supports for water supply expansion projects including technical assistances. SRWSA expects that Japanese Government and JICA to continue to provide these financial and technical supports to SRWSA.

8.2. Expectations toward Japanese Water Utilities

We expect to have supports from Japanese Water Utilities continuously such as assistances for technical and managerial capacity building and exchanges of experiences for better water supply operation and management.

8.3. Expectations toward Japanese Private Companies

Our expectation toward Japanese Private Companies is to be a partner for water supply service improvement, technology and technical exchanges, contractors and suppliers etc. On the hand, we wish Japanese companies make more investment on water supply sectors in Cambodia.

9. Expectations toward the Program

9.1. Expectations of SRWSA's

We expect that our nominated official will learn more knowledge from the Co-Creation Program to enhance her capacities on the administration and management of water supply services to help improvement of our services in the future.

9.2. Your expectation, any comments and requests are appreciated

I wish to understand deeply about better management and administration of water supply services from the Co-Creation Program. It is a great opportunity to hear from the Japanese experts about their experiences to gain more knowledge to contribute to improving water supply services at my authority and our country.

Administration and Management of Water Supply (B)

Inception Report of Siem Reap Water Supply Authority

1. Country : Cambodia

2. Name : VAN Sosamneang

3. Position : Director of Internal Audit Unit



1. Overview



Siem Reap City-Province



1. Overview





1. Overview



 Planning

 (2027)

 73%

 80%

 90%

 \$ 0.50

 \$ 0.50

* Main Performance Indicators

Nº	INDICATORS	2017	2022	Planning (2027)	Nº	INDICATORS	2017	2022
1	Population served	23%	38%	80%	11	Production	93%	67%
2	Collection ratio	90%	98%	98%	13	Coverage ratio	23%	34%
3	Production capacity	17,500m ³ /day	30,000m ³ /day	90,000m ³ /day	14	Billing ratio	89%	81%
4	Supply duration	24H/7	24H/7	24H/7	15	Cost of goods sold	\$ 0.43	\$ 0.50
5	Supply pressure	1.5 bars	2.5 bars	2.5 bars	16	Average selling price	\$ 0.53	\$ 0.46
6	Non-Revenue water	6.15%	9.55%	8%				
7	Water quality	Compliance	with drinking standard	water quality		0	1	(s)
8	Staff number	92	164	183		NO	R.F	Sa P
9	Number of connections	7,967	18,588	46,588		CL)	4.5	2
10	Staff/1000 connections	11.5	8.8	3.9		71	1010	Series .

2. Success story of SRWSA

- Well solution impact of 38-Road Construction
 - Short notice by the government for construction
 - The road construction works were done at the same time with many construction teams
 - Pipe installation could be done only in a short period allowed by road construction contractors
 - Locations for pipe installation mostly changed from the original design
 - Some lines need to be rerouted. For some roads, pipe installation was not planned by the Project but required to do.





2. Success story of SRWSA

✤ Maintain NRW level below than 10%

Using block tariff system (Affordable tariff)

16%		Type of Tariff	Consumption rate	Tariff	Type of Customer
14%	13.49%		$0 - 3m^3$	\$ 0.22	
12%	11.37%		$4-7m^3$	\$ 0.24	Denting
10%	9.71% 8.70% 9.71% 9.55%	Domestic	8 - 15m ³	\$ 0.37	Administration Public
8%	7.59% 6.73% 6.15% 6.49%		16 - 30m ³	\$ 0.44	customer
6%	6.78%		Over 30m ³	\$ 0.49	
4%			0 - 50m ³	\$ 0.46	
2%		Commercial	51 - 150m ³	\$ 0.59	Commercial customer
0%			151 - 350m ³	\$ 0.71	
	2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023		Over 350m ³	\$ 0.83	

3. Recent Challenges to Improvement of SRWSA

The recent challenges to improve water supply service of SRWSA are as follows:

- Water quality such as high turbidity in dry season for surface water
- Expansion of distribution networks: SRWSA need to expand its distribution networks at least 800 km from 2024 to 2030
- Increase of Production Costs: The production cost increases after operating the new water treatment plant.







3. Recent Challenges to Improvement of SRWSA

• <u>Financial Burden:</u> The finance condition of SRWSA has serious impacted by the Covid-19, Economy crisis and the War in Ukraine. The commercial water consumption which can generate profits of SRWSA has dramatically decreased from 2020 due to decrease of number of tourists.





4. Expectations toward the program

We expect that our nominated official will learn more knowledge from the Co-Creation Program to enhance her capacities on the administration and management of water supply services to help improvement of our services in the future.



I wish to understand deeply about better management and administration of water supply services from the Co-Creation Program. It is a great opportunity to hear from the Japanese experts about their experiences to gain more knowledge to contribute to improving water supply services at my authority and our country.

Thanks for Your Attention



2. MICRONESIA

Micronesia

Inception Report

Kosrae State

Federated State of Micronesia

By

Hairom E, Livaie Customer Service Supervisor Kosrae Utility Authority

1. Outline of Water Supply Services

- 1.1 Kosrae State Law 9-104 Section 7.1218 calls for "The Water and Waste Water transfers to the Authority all water facilities and grounds associated with the water system, owned by the State Government, along with all equipment and supplies therefore, in terms mutually agreed by the State and the Authority, for the purpose of creating potable water. The State shall negotiate with the municipal governments for the transfer to the Authority of all water facilities and grounds associated with the water system owned by the municipalities, on terms mutually agreed to by the State and the municipal governments". Currently most of the water supply service operated by the local government around the four municipalities in the island of Kosrae. Currently six (6) water services around the Island, three (3) system owned by the local government and three (3) are actually owned by the central government. Five are water surface and one is underground well served that supply the industrial area to the following below:
 - Fishing loaning company at the dock side (fish production, Dai Yang Corporation)
 - 2. Kosrae Port Authority (KPA)
 - Shipyard Areas for dry docking facility (Luen Thai Coampany)
- 1.2 State Government of Kosrae State operated two water surface and one Underground water service and local governments operated three (3) water services in each jurisdiction capability.
- 1.3 Some Water Supply Service System are owned and operated by the State Government and Local Government
- 1.4 Mission/Vision of Water Supply Utilities: Is to provide efficient, reliable, and alfordable water and wastewater utility services in a good manner that respects the natural environment.
- 1.5 Our mission/vision is to provide reliable, flexibility and affordable water service to the community with quality water and accessible to the rural and urban areas around the island.

2. Water Supply Service Levels

3. 2-1. Main Performance Indicators (PI)

6 so km
6 24 Mill
1370
40%
750 (m3/day
18 (hr/day)
3.8 bars
>50%
Acceptable
3employees
planned 271, currently 33
2/ 1,000 connections

2-2. Performance Indicators were based on the daily activity report from the data collection report

4. Management of Water Quality

3-1. Main challenges of the water quality of the system as follows:

- a. Non-Revenue Water percentage need to be resolved
- b. Domestic leaks from the household problems
- c. Main distributions lines leaks
- d. Funding Constraint

3 2. Action against the challenges

- a. Working with the local government and central government to repair / replace defected pipelines with the good coordination through the partner stakeholders
- b. Local government coordination with the household for the identification of the issues to controls and reduction the usage at the household level.
- c. Central government work closely with the public bureau under the local government
- d. Subsidy from the national /state government for immediate action

3-3. Achievements with the challenges

Good collaborations and coordination with the major stakeholder agencies

3-4. Water Quality Standard

Periodic quality testing from the public health personnel with the MOU, the test Twice a month for any present of bacterial in the system

- 3-5. Monitoring system is not in place due to the water system still in the transition Process with the transfer agreement from the tripartite arrangement
- 3-6. After the system transferred to the utility as part of the mandatory to follow the WHO regulations.

5. Reduction of Non-Revenue Water

4-1. Main distribution line defected; pressure was high and burse the pipeline on certain sections in the system

- 4-2. Preventive maintenance program and regular repair to fix the problems
- 4-3. Reduction from the NRW from the 75% to 50%
- 4-4. Constitution of NRW

Authorized		Revenue	Billed authorized	m3/year
consumption	1	water	Consumption	75%
	- 1	Non-Revenue	Unbilled authorized	(m3/year)
	-	Water NRW	Consumption	5%
Water losses			Apparent losses (Unauthorized consumption (illegal use)customer metering ihaccuracies	(m3/year) 2%
			Physical losses (Leakage)	(m3/year) 25%

4-4. Situation about Leakage Detection Measures (DMA etc)

There is no meant of leak detection device to realize the leak, physical check and report from the public to realize the leakage around the system. The community support from the general public will assist the utility for any leakages.

5 Accounting System of Water Supply Service

5-1. The Technical Assistance for the ABD recommended to apply \$6.00 for 1-1000 gallon to accommodate the operation cost of the pilot project for Utwe Water System. Recently the complain from the water user and allow the legislation amend the law to \$2.00 for the 1,000 gallons for the potable pilot project.

5-2. Let me apologize that under the tripartite agreement the Utwe Water System is not transferred to the utility yet and as stated in the agreement the responsibility for the KUA is to bill and collect the water usage. The KUA is operating the system under the transition and waiting to fix main distribution lines, domestic leak to the household and some other pending issues need to be resolved prior to transfer the system to the utility.

5-3 These scenarios indicate undertake during the transition period to transfer one water service owned by the state government to the utility. The tariff rate impose during the transition recommended by the ADB Consultant impose the rate of \$6.00 for every 1000 gallons later during the transition period as utility has it responsibility based on the tripartite agreement that utility exercise it authority to collect and bill the customers. Later on during the transition period that imposed by the legislation from the rate of \$2.00/ 1000 gallons. Please refer to the income statement scenarios below:

Two Scenarios of Water Supply Service Utwe

Income Statement

\$6.00 Scenera	S2.00 Scenero		
Income Rev.	and the second s		
Water Sales	\$1,127.89	\$592.61	
Other			
Sub-total revenue	\$1,127.89	\$592.61	
Operating Expense			
Salary	\$1005.15	1000.16	
POL	\$171.17	\$171.17	
Utility	\$299.60	\$299.60	
Office Supply	\$25.00	30.00	
Sub-total	\$2,853.21	\$2,848.38	
Profit/Loss	-\$1,725.32	-\$2,255.77	

6. Major Recent Achievements in Improvement of Water Supply Services/Management

The tariff revision with progression tariff slabs considering the issues pertaining to Socio-economic un-balance at present with court case & limited number of service connection to cover the operational cost

7. Recent Challenges to Improve Water Supply Service

Lacking of the human resources ability to train local people to operate the water system

8. Expectation toward Japan

8-1. What I would expect during the program in Japan is willing to learn the Government Structure set up with the support from JICA as a international assistance to other PIC. I would like to learn the culture, environment and traditional life style in Japan. 8-2. The aim for the program is allow me to gain knowledge in handling specific issues and challenges to mitigate the problem at the present stage of the WSS. And also would like to acquire water in the development structure in term of the Water Safety Plan and Monitoring process through the water service in Japan.

8-3. The development of Private Companies involvement with the water public bureau in the local government to sustain the water operation in Japan.

9. Expectation toward the Program

9-1. My Superior is really supporting the program; the outline of the program will provide great opportunity to achieve our goal and objective of the WSS. Exchanging knowledge from the program will benefit the utility operation as well as the lesson learned from the other participants to up skill and enhance the water supply service through the island.

9-2. This program will allow me to learn the success story from other countries or even In Japan In dealing with quality water for next generation to come.

Kosrae Island, Federated State of Micronesia

Hairom Livaie Customer Service Supervisor Kosrae Utility Authority

Outline of Water Supply Services for KUA

- Under the Tripartite Agreement with the following entities & responsibilities:
- Kosrae State Government-Operation & Maintenance and repayment of the ADB Loan
- Kosrae Utility Authority-Tariff and Collection of water usage from the community
- Utwe Municipal Government-Public Awareness and fixing the domestic leak from the meter to the household

1

Omnibus Project

- Funded Water Supply Project of Utwe MC area by Asian Development Bank (ADB)
- Project call for Potable Water to serve 500 Household
- Project started in June 12, 2016
- Completed September 2018
- Project Cost 2.7 Million USD
- Commissioning of the Project turn to Kosrae State Government in 2019 to act on Tripartite agreement with the other responsible parties

Six (6) Water System in Kosrae

- Kosrae State Government Owned System
 - 1. Tofol Water System
 - 2. Okat Water System
 - 3. Utwe Water Treatment Plan
- Local Government Owned System
 - 4. Lelu Water System
 - 5. Malem Water System
 - 6. Tafunsak Water System

3

Graphical Map for Kosrae



Background

Whole Country

Area : <u>42.3</u> km2 Population: <u>6,663</u> Habitants Coverage Water Supply: <u>25%</u> Utwe Water Supply System/ Kosrae Service Area: <u>11.0</u> km2 Population Served: <u>250</u> million/ thousand

Level of Service Utwe Water Supply

INDICATORS	2018 or 2020	Goals for 2025
Staff/ 1,000 connections	2	6
Production capacity(m3/day)	500	750
Water quality	WHO / EPA	WHO Guidelines/ EPA
Coverage area	75%	95%
Supply duration(hr/day)	12	18
Supply pressure	2.5bars	2.5bars
Number of connections	100	250
NRW	55%	20%
Collection ratio	50%	85%
Staff	2	6
		7

Success Story of Utwe Water Supply Service

- Functionality :
- Water Intake located at the Palustrik River is functioning well
- River bed dynamic filter is functioning in accordance with the design parameters & able to cater 160 g.p.m pumping to WTP. Pump capacity & operating efficiency is in order
- Water Pump function well to the Roughing & Slow Sand Filters as the Primary & Secondary treatment units
- Both Roughing Filters (02 units) and SSF (02 units) are in working order for the design rate of filtration process.
- Slightly greenish color in SSF inflows but the filter outflows in high quality with crystal clear water. Bacteriological quality is up to the satisfaction of EPA standard.

Agreement with the Kosrae State Government

- Prior for Transferring the System the following should be met:
- System should be function well
- Based on the KUA Board of Director Resolution
- Transferring of Asset
- Sufficient Capital to sustain the operation

Challenges to Improve the Water Supply Services

- Challenges of the Non-Revenue Water reduction
- Outreach to the Community to obtain their consensus & behavioral change for reliable potable water facility
- Domestic Leak in the household service lines and demand management with water conservation

24

- Improvement of main water pipe leakage
- Tariff rate & regular bill payments:

9

Jana La Contra C	nber	Customer Name	e				
stomer P	roffic	Charges Due		Payment	•	Mechanical	
1D	Utility		Street#	Street n	Meter #		
	1 MANUE		0		TURNAMO		
				-	olice about	13536	
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11

Please detach and return with your payment Please make shecks payable to: KOSRAE UT& THES AUTHORITY

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Customer Service	Total Water Fees	Usage Serv	ice Charge	s & Adjustment	s 11.66

Please ensure payment is received by due daw to avoid a late charge

Expectations toward the Program

- My expectation for this program
- Learn the success story for the country the challenges and issues of the water supply services
- Gain knowledge from the Japan Water Supply Service
- Able to acquire acknowledge from other PIC
- Expectation from my superior:
- Able to learn from other country especially Japan good story and learn as much to improve the our new system
- Improvement of the operation & maintenance of the system

Scale Up

• Action Plan after Training (8 months)

- □ Improve the damage main pipeline to reduce NRW along UMG with the KSG
- Community Outreach Program
- □ Transferring Operation from KSG to KUA
- □ Funding Source to be finalized

Question !

Thank you! Domo Arigato Goshaimus

3. NIGERIA

<u>Nigeria</u>

INCEPTION REPORT

Country: Nigeria

Name: Musa Dan-Hamidu (Federal Capital Territory Administration Water Board)

1. Outline of Water Supply Services

1-1 Legal Basis of Water Supply Services

Water Supply Services for the Federal Capital Territory Administration Water Board are based on its Establishment Act of 2017 passed into Taw as well as other Eaws and Regulations of the Federal Republic of Nigeria on drinking water as recommended by the Federal Ministry of Water Resources, such as the Nigerian Standards for Drinking Water Quality (NSDWQ).

- 1-2 Demarcation of Water Supply Services
 - The Federal Ministry of Water Resources oversees the management of water resources in Nigeria
 - The Federal Capital Territory Administration is in-charge of provision of potable water to the residents of Federal Capital Territory through infrastructural development and management, water production, supply and collection of revenue.
- 1-3 Main Actor of Water Supply Utilities
 - The Federal Capital Development Authority is in-charge of water infrastructure development and construction.
 - The Federal Capital Territory Water Board is in-charge of operation and maintenance of all water infrastructure used in the provision of potable water.
- 1-4 Mission / Vision of Water Supply Utilities
 - Mission: To provide consumers with an adequate quantity of high-quality water for consumption at a reasonable financial cost, and manage water resources for future generations.
 - Vision: to provide safe water for all, exceeding customer expectations while protecting the environment.

- 1-5 Mission / Vision of Federal Capital Territory Administration Water Board
 - Mission: To become a world-class water utility provider which is consistent in excellent service delivery and uncompromising in the quality of its product - potable water.
 - Vision: To provide the residents of the Federal Capital Territory with Potable water using the Best of Industry Technology and a Highly Skilled Workforce to provide Exceptional Services

2. Water Supply Service Levels

2-1. Main Performance Indicators (PI)

Coverage area	784,00(sq. km)
Population Served	1,073,840
Collection ratio	40.9(%)
Production capacity	720,000 (m3/day)
Supply duration	24(hr/day)
Supply pressure	1MPA
Non-Revenue Water	50.3(%)
Water quality	Good
Staff number	1,225
Number of connections	59,495
Staff/1,000 connections	20.6 (people/1,000connections)

2-2 Any monitoring by Performance Indicators (PI). Yes.

3. Management of Water Quality

3-1 Current Situation and Major Chailenges/Problems: Pollution at raw water catchment (solid waste at from inhabitants of Mpape Community)

3-2 Current Actions Against Those Challenges/Problem: Manual evacuation of accumulated solid waste/plastics and debris after rainfall and implementation better strategies in controlling solid waste from polluting the raw water catchment.

3-5 Any Achievements: Striving towards being ISO Certified.

3-4 Water Quality Standards for Drinking Water: The Federal Capital Territory Water Board uses Nigerian Standards for Drinking Water Quality (NSDWQ) as well as the World Health Organization (WHO) Regulations.

3-5 Monitoring Systems or Plans for Safety of Drinking Water In Your Organization/Regulatory Body/Independent Institution/Others: There is a monitoring system for safety of drinking water.

3-6 Implementation of Water Safety Plans or Similar Efforts: There is an existing Water Safety Plan for The Federal Capital Territory Water Board which needs to be reviewed and approved for full implementation.

4. Reduction of Non-Revenue Water

4-1. Current Situation and Major Challenges/Problems:

- Sustaining JICA support through the implementation of the Federal Capital Territory Water Board's NRW Strategic Plan is currently ongoing with relevant milestones achieved.
- Irrespective of the achievements registered in the NRW campaign, challenges still exist in the area of poor customer meter readings for existing meters, lack of branded and efficient customer meters, physical losses both surface and underground leaks on network pipelines and service pipes, illegal connections and high number of unwilling customers to pay for water consumed.

4-2 Current Actions Against Those Challenges/Problems:

- Implementation of Medium-Term Strategic Plan on NRW (2019-2023)
- Implement projects on leakage survey, illegat connection survey, pipeline monitoring using technology and installation of water meters to eliminate flat rate billing.
- The Federal Capital Territory Water Board target 35.1% of NRW by the end of year 2023

4-3 Any Achievements.

- Prospected in the reduction on Non-Revenue Water by sustaining the implementation and completion of Phase 1 of Non-Revenue Water Project by the Federal Capital Territory Water Board
- 4-4. Constitution of NRW (If you have the data, please fill in the table)

Authorized	Revenue Water	Billed authorized consumption	(m3 /year) 89.3 (%)
Carlsumption		Unbilled authorized consumption (ex. fire lighting, cleaning)	(m3 /year) 107 (%)
Non-Revenue Water (NRW) Water losses	Non-Revenue Water (NRW)	Apparent losses (Unauthorized consumption (i.e. Begal use), Customer metering inaccuracies)	(m3 /year) 46.1 (%)
		Physical losses (Leakage)	(m3 /year) 53.9(%)
4-4. Situations about Leakage Detection Measures (DMA etc.)

- Part of the Medium-term strategic Plan for NRW (2019-2023)
- Ongoing Implementation of Xylem -Visenti Real Time Pipeline Monitoring Project.

6. Major Recent Achievements in Improvement of Water Supply Services/Management

- Completion of Phases of Non-Revenue Water project with JICA.
- Completion Clean Energy project (brough collaboration with JICA leading to reduction in electricity bills and Carbon monoxide emissions.

7. Recent Challenges to Improve Water Supply Services:

- Existing bureaucratic bottlenecks in accessing funding timely for Water Supply Operations and Maintenance
- Better management of water supply services in lieu of the Autonomy of FCT. Water Board.
- Poor revenue generation as a result of water theft and water leakage resulting to Non-Revenue Water.
- Capacity building of staff to meet up with the challenges of the new Autonomy status of the Board.

8. Expectations towards Japan

- 8-1 Expectations towards Japanese Government and JICA:
 - Cordial relationship and conducive environment for knowledge sharing and technology transfer that will help to promote better management of water supply services in Nigeria through understanding water supply administration, management and operation in Japan.
- 8-2 Expectations towards Japanese Water Utilities:
 - To acquire knowledge as to have clear understanding of water leakage and water theft as a measure against Non-Revenue Water.

8-3 Expectations towards Japanese Private Companies:

- To acquire knowledge as to have clear understanding on monitoring and other operations & maintenance for better management through Performance Indicators and strategies to actualize SDGs.
- 9. Expectations lowards the Program
 - To ecquire knowledge on water supply administration in Japan for improved and efficient service delivery in FCT Water Board









Administration and management of Water supply services (B)

Inception Report Presentation

1. Country:	Nigeria
2. Name:	Musa Dan-Hamidu
3. Position:	Chief Scientific Officer/Head of Management Information System (MIS)
4. Organization:	FCT Water Board

1

ABU

Inception Report Content

- Brief Background Information on Nigeria and the Federal Capital Territory Administration (FCTA)
- → Outline of Water Supply Services of the FCT Water Board
- Success Story of Water Supply Services to the Federal Capital City by the FCT Water Board
- Recent Challenges to Improve Water Supply Services to the Federal Capital City by the FCT Water Board
- Expectation Towards the Water Supply Administration for Better Management of Water Supply Services (B) Programme

Background Information on the Federal Republic of Nigeria





Flag



- Geography of Nigeria: Nigeria is located in West Africa on the Gulf of Guinea and has a total area of 923.768 km²
- → Population: As of 2022. Nigeria's population was estimated at 230,842,743 (Source: World Factbook 2023)
- Capital: Federal Capital Territory Abuja
- → Coverage of Water Supply: About 70 per cent of Nigerians have access to basic drinking water supply services (source NBS 2019 WASH Norm Survey Findings)



Background Information on the Federal Capital Territory (FCT) - Abuja





- Geography: the FCT is geographically situated at the heart of Nigeria. It has total area of 1,476 km2 and elevation of 360m. The FCT has an estimated population of 3,564,126 as of 2022. (source: Wikipedia and World Data Atlas 2023)
- The Federal Capital Territory Administration (FCTA) was created on 31st December 2004 following the scrapping of the Ministry of the Federal Capital Territory (MFCT).
- The FCTA having a dual status as a Ministry and a State is in charge of administering physical and economic development to the Federal Capital Territory (the capital city of Nigeria.)
- The Administration is overseen by a Honorable Minister appointed by the President of Nigeria. The Minister is assisted by a Honorable Minister of State.

ABUIA

4

Outline of Water Supply Services of the FCT Water Board



Year	2023
Coverage Area	784,00(sq. km)
Population Served	1,073,840
Collection ratio	40.9(%)
Production capacity	720,000 (m3/day)
Supply duration	24(hr/day)
Non-Revenue Water	50.3(%)
Staff number	1,225
Number of connections	59,495
Staff/1,000 connections	20.6

The FCT Water Board was established in October 1989, first as FCT Water Resources Agency and changed to FCT Water Board in 1990. On 20th December 2017, its Establishment Act was promulgated and finally gazetted on 27th November 2020 with the objective of producing safe, adequate and affordable water supply services to the residents of the Federal Capital Territory, Abuja.



ABUJA

Outline of Water Supply Services of the FCT Water Board Continued...

The mandates of the FCT Water Board against others include the followings:

- Ensure the supply of adequate and potable water throughout the Territory at reasonable charges.
- Manage and maintain all capital works, water services facilities and new water services assets in the Territory either directly or pursuant to PPP agreements with private participants, or by raising necessary funds from other sources subject to the provisions of the FCTWB Act.
- Prepare for the approval of the Minister, plans for the maintenance and development of water supply services, water service assets and new water service assets in the Territory (Development Plans).
- Identify and implement projects for the delivery of water supply services which may be undertaken with private sector participation, pursuant to consultation with relevant authorities, to fulfil the water service obligations of the Board.
- To manage and maintain existing waterworks within the Territory particularly to the various Area Councils and maintaining limited supervising capacity.
- Manage and control waterworks for public, domestic, industrial and general purposes in the Territory.

Outline of Water Supply Services of the FCT Water Board Continued...

The FCT Water Board delivers its mandate through an organized government structure overseen by a Governing Board and lead by a General Manager who oversees 7 Units directly under his office, 5 Departments and 16 District Commercial Offices:



Outline of Water Supply Services of the FCT Water Board Continued...

Major activities of the Board are the production of potable water, its transmission, storage and distribution to various types of customers within the FCT who are billed for revenue collection.

The Board's relies on surface water from the lower Usuma Dam(LUD) which has a capacity of **100Mm³**. The LUD's raw water is also augmented through an Inter Basin Water Transfer from Gurara Dam with capacity of **880Mm³**. The inter basin transfer is achieved through a 75km DI pipe with diameter

Raw Water from the LUD is treated by 4 Treatment Plants with a combined capacity of **60,000m³/hr**. Treated water is transported through the Board's trunk mains to 4 Storage Tanks with combined capacity **133,000m³** which supply water to various districts of the FCT.

ABUJA

8

Outline of Water Supply Services of the FCT Water Board Continued...



Outline of Water Supply Services of the FCT Water Board Continued...



Lower Usuma Dam Reservoir (100Mm³ Capacity)



Lower Usuma Dam Reservoir GIS Imagry



Gurara Multipurpose Dam (880Mm³ Capacity)



Gurara Dam Water discharging directly into LUD through the outlet structure

Outline of Water Supply Services of the FCT Water Board Continued...



Phases 1 & 2 Water Treatment Plant



1.5m diameter ductile iron transmission trunkline to Tank 5



Phases 3 & 4 Water Treatment Plant

Water Storage Tank in the FCC

Water Supply Metrics of the FCT Water Board

INDICATORS	2022	2023	Goals for 2025
Staff/1,000 connections	20	20.6	15
Production capacity (m3/day)	720,000	720,000	720,000
Water quality	Good (meets WHO Standards)	Good (meets WHO Standards)	Good (meets WHO Standards)
Coverage area	784Km ²	784Km ²	784Km ²
Supply duration (hr/day)	24	24	24
Supply pressure	1MPA	1MPA	1MPA
Number of connections	58,926	59,495	70,000
NRW	52.5%	50.3%	39.9%
Collection ratio	36%	42%	70%
Staff number	1,225	1,225	1,225

FCT Water Board Water Supply Service Success Story

The FCT Water Board in its efforts to improve on its water supply services to the Federal Capital City (FCC), has achieved numerous successes especially with the support and cooperation of JICA. Through JICAs interventions, FCT Water Board has been able:

- 1. Create and implement its Medium-Term Strategic Plan on NRW Reduction (2023-2027) which has various operational activities
- 2. Carryout and implement key outputs from JICA Supported Business Advisory Project
- Develop and deploy SmartBills innovative technology platform to automate the FCTWBs 3-Business Cycle (Meter Reading, Billing and e-Collections.



Repairs of aged and faulty water infrastructure







Monitoring of Customers Payments and Revenue through SmartBills



Repairs of faulty data loggers and flow meters



69.2% Revenue Growth from 2019 to 2023 through SmartBills Implementation

Challenges Facing the FCT Water Board on Further Improvement of its Water Supply Service

Despite the numerous successes witnessed by the FCT Water Board there still exist a number of challenges that are retarding the Board from actualizing its full potential. A few of these include:

- 1. High number of Illegal connections to water infrastructure.
- 2. Lack of water metering policy, optimal metering and Billing methods
- 3. Under funding and little political will from Government
- 4. Lack of staff professional training and certification in area of operations
- 5. Aged water infrastructure
- 6. High NRW







Illegal Connections to Water Infrastructure





High NRW



Expectation Towards the Water Supply Administration for Better Management of Water Supply Services (B) Programme

The FCT Water Board's expectations towards the Water Supply Administration Program are as follows:

- 1. Acquisition of knowledge through mutual best practice sharing in the area of Human Resource Management:
 - Best practices and strategies for institutionalized human capital development and certification for all water utility staff in water supply administration and services
 - Best practices and strategies for staff mentoring and motivation to enshrine professionalism in staff conduct when discharging their duties
- 2. Acquisition of knowledge through mutual best practice sharing in the area of Sustainable Financing, Public Private Partnership and Investor/Investment Engagement:
 - ➡ Best practices, strategies and models for sustainable financing of water utility administration, operations and maintenance
 - ➡ Best practices and strategies on Public Private Partnership and Investor/Investment Engagement in the area of commercial operations, outsourcing of selected operation segments to enhance efficiency in service delivery if any
 - → Best practices and strategies in engaging investors/investment to augment financing for enhanced service delivery
- 3. Acquisition of knowledge through mutual best practice sharing in the area of Information Technology deployment for effective administration and operations management
 - Best practices, strategies and models for choice of technology in commercial operations ie metering, customer management, billing, revenue collection and management, GIS
 - Best practices and strategies on technology choice for distribution network monitoring and management for reduced NRW
 - Best practices and strategies on technology choice for production monitoring and management
 - Best practices and strategies on technology choice for overall data collection, management and analysis for planning and insight forecasting for Water Supply Administration and Services

15

- 4. Acquisition of knowledge through mutual best practice sharing in the area of Water Infrastructure Management and Maintenance:
 - ➡ Best practices and strategies in funding and carrying for water pipe maintenance and replacement of aging pipes
 - Best practices and strategies on surveillance of water infrastructure
 - ➡ Best practices and new innovation in reduction of NRW

4. SOUTH SUDAN

South Sudan

Administration and management of Water supply services (B)

Inception report

Gabriel Majok Bol

South Sudan

- 1) Geographical information of Juba city/town
- Juba is in former Central equatoria state currently known as Jubek State

Location: Juba Town is located at 4°52' north of the equator and 31°36' east longitude in Central Equatoria

It has an altitude of 460m above sea level

- Population: Above one (1) million.
- Population served: 1,900 plus.
- Water supply coverage:15%



Geographical features, total population, social and economic status, climate etc

Location: South Sudan is located in East Africa

Area: 644329km2

Population estimation:

9.1 Million People

Climate: tropical rainforest

Vegetation: Equatorial forest, Grassland region

Some of untapped Natural resources within the country

Petroleum, Iron ore, Zinc, Gold, Cupper, Chromium, Tungsten and Silver



Agro forestry

- Teak Trees, Mahogany Trees, Africa Gum, Mango fruits, Groundnuts, Papaya, Maize, Rice and Sorghum(Dura)
- 2) Name of organization: organization chart, number of employees etc

Ministry of Water Resources and Irrigation

- Established in 2006 during interim period of Comprehensives Peace Agreement (CPA)
- It has 296 staff, both classified and unclassified staff
- Six directorate namely Administration and Finance, Hydrology and Survey, Water Resources Management, Rural Water Supply, Hygiene and Sanitation, Irrigation and Drainage and Planning and programming.
- It has South Sudan urban water cooperation as one of its main branch and it had establish headquarter in each of state of South Sudan

Hierarchy of Ministry the bottom up approaches

Minister

Undersecretary

Director General from six directorates

Director

Deputy Director

Assistant Director

Specialist

Senior inspector

Inspector

Assistant

Technician

Supporting staff

SOUTH SUDAN URBAN WATER CORPORATION

Managed by an appointed Managing Director and assisted by a deputy.

Responsibility

 Undertakes the responsibility of providing clean water in all the urban towns of the Republic at Headquarter level.

Available utilities within the country

1, Jubek State Juba station 2. Wau Wau station 3.Western Nile Malakal and Renk station4. Jonglei Bor 5. Maridi State Maridi

 Please describe the relationship of your organization with Japan bilateral program (ex counterpart organization of technical cooperation program title)

Our ministry's relationship with Japan is cordial, the ministry have secure very important developmental program under JICA, e.g. Construction of only existing Water treatment plan in Juba and piping of water to the residential areas, construction of modern bridge known as Freedom bridge and others.

IDMP

IDMP stand for Irrigation Development Master was sponsored by people of Japan

The purpose is to enable the country identify the areas for agriculture potential for the country to have sufficient food production through well planned mean of irrigation in the near future.

Urban Water Distribution and treatment plan

The urban water distribution system is a joyfully awaited developmental program funded by the people of Japan and engineered JICA under urban water cooperation main branches of ministry of water resources and irrigation.

The facility was meant to reduce water shortage face by the Juba city since the creation of South Sudan, it was due to be completed by September 2017 but the impact of current conflict may interfere with the time line.

3) Your present position

Assistant director for Database

 Technical issues your organization has and subject your organization particularly require you to learn in the course View of the ministry regarding water distribution within the country



Water distribution in Juba city

	Technical issues	Objective data to suggest issues	Expectation to the program	
Organization				
✓ Water resource There is inadequate distribution of clean water in the city and in the whole country at large.		See the above diagram of water distribution in Juba	The course will enable ministry gain human resource capable of putting in putting water infrastructure and optimal operation and maintenance of available resource	
✓ Water quality	The quality of water use by the country is	The price of drum of water according to	The acquire knowledge in the	

	mostly compromise due to water distribution facility shortage which made blue private water tankers as the only mean of water supply	water kiosks and mobile tankers is 100ssp and minimum wages of government of employee in grade 17 is less than 1000ssp	training will be use in the development of water facilities in the country hence reducing the gaps
✓ Water pollution control	There is no water pollution control mechanism in place neither do the country pass measures that will restrict the citizen from reckless waste disposal that contaminate water sources such as polluter pay principle	Nile river is the sources of water to the city but you could see waste water drained to the river without being treated though the source of pollution is known.	The course will address the knowledge gap on the danger of contaminated water use in public health concern and development of the country.
✓ Water treatment facility	Appropriate use of chemical on water treatment	Low amount and excessive use of chemical can have diverse effect as seen in blue tankers chlorine application	This is the most important aspect of the upcoming training for knowledge gain in the course will be use to rectify the some of the mistake
 ✓ Mechanical and electrical facility ✓ Measurement facility 	Juba city and other major town use generators to provide power for water pumping which insufficient due to fuel shortage and lack proper maintenance No technological guided type of water billing	9% of Juba city covered by urban water cooperation under JICA, with the following arrangement : pipeline connection, water tank filling station and water kiosk for quick water supply services	Suggestion of possible mean of efficient fuel use in power generation could be learn through the experience of Japan facilities if possible
Pipeline	Leakage of pipeline lead to further contamination of treated water	Evidently, when the pipe burst it take hours or days to repair due to several factors ranging from	The knowledge co creation training will provide break through on some of technical aspect of

	lack of committed trained staff, lack of repair materials or replacement pipe and technology to detect the damage pipe	pipe such as leakage detection.
--	---	------------------------------------

Organization viability

SWOT analysis of your organization

S (inte	ernal strength)	O (opportunities)		
***	Water resources availability Water utility Human resources	 ✓ Support from developmental partners (JICA, GIZ, USIAD, SUWASA and many more) ✓ Demand for services 		
W (int	ernal weakness) Lack of capacitated staff High water loose Low technology in term of water treatment and purification High rate of water contamination Poor operation and maintenance of facilities Lack of diversified economics on water Very low treated water coverage Lack of billing system	 T (external threats) ✓ Lack of diversify water pipes and metering system for services expansion ✓ Lack of reagent and laboratory equipment ✓ Insufficient power and or energy (Lack of Fuel) ✓ Low level of income ✓ Dependence on government subsidies 		
*	Dependency on government O&M and subsidies None payment of water bill by Government offices	 ✓ Climate change impact on water source 		





1

Water Source Maridi Micro Dam



Maridi Water Supply Station

Maridi water project was implemented by the Sino Hydro company (Chinese company), since 2009. Total capacity: 3000m³ per day. Total Cost: about 5.5million us dollar.





Chemical injection pumps

Two Chemical injection pump:

> capacity of 50 Litters per second pressure about 10 bars motor type y2j7114 speed of 1400rpm, power 0.2kw, current1.44/0.83, voltage220/380, frequency50, and IP55.





Power System

Two Generators for power supply 220KVA



Intake pump

Two centrifugal pumps capacity : 173 cubic meter per hour Speed: about1480rpm, Total head: about 24meter. Power: 18.5kw Motor speed: about 1470rpm





Disinfection

Hypochlorite Generator Capacity 500g per hour Producing chlorine from normal salt.





- 1









High lift Pumps

Three centrifugal pumps. Speed:1480rpm Capacity:100 cubic meters per hour





The integrated water purifier system New type equipment researched and developed by Chinese company, flocculation, sedimentation, draining, backwashing water purifier need no operator

South Sudan Inception Report



Administration and management of Water supply services (B) 21st January-3rd February 2024 Gabriel Majok Bol South Sudan

Map of South Sudan with 10 State according to centralized system of government



Geographical features, total population, social and economic status and climate

Location: South Sudan is located in East Africa Area: 644329km2 Population estimation: 12.1 Million People Climate: tropical rainforest Vegetation: Equatorial forest, Grassland region

Geographical information of Juba city/town

3

Juba is in Central equatoria state located at 4°52' north of the equator and 31°36' east longitude in Central Equatoria



Name of organization: organization chart, number of employees etc Ministry of Water Resources and Irrigation

Established in 2006 during interim period of Comprehensives Peace Agreement (CPA) It Ministry have 350 staff, both classified and unclassified.

Six directorate namely Administration and Finance, Hydrology and Survey, Water Resources Management, Rural Water Supply, Hygiene and Sanitation, Irrigation and Drainage and Planning and programming.

It has South Sudan urban water cooperation as one of its main branch in Juba and establish ed headquarter in each of state of South Sudan.

5

Juba population and Water Supply Systems (Tankers)

- * It has an altitude of 460m above sea level
- * **Population:** About 800,000.
- * Population served: 71,612
- Water supply coverage:15%



Some of untapped Natural resources within the country and Agroforestry

Petroleum, Iron ore, Zinc, Gold, Cupper, Chromium, Tungsten and Silver Agroforestry

Teak Trees, Mahogany Trees, Africa Gum, Mango fruits, Groundnuts, Papaya, Maize, Rice and Sorghum(Dura)

Other natural features of great important

River Nile, Water falls, and many other small stream both seasonal and perennial, Sudd, Wild life reserves, Game parks i.e. Nimule and Buma national parks

Available utilities within the country Juba Station

7

8

The government of South Sudan have a cordial relationship with Japanese people, the ministry of water resources and irrigation have secured very important developmental programs under JICA, e.g. Construction of only existing Water treatment plan in Juba, Modern bridges such as Freedom Bridge across the Nile River and piping of water to the residential areas expected to be implemented very soon, development of Agriculture development master plan (IDMP) and many more assistances of high values.

Urban Water Distribution and treatment plan

The urban water distribution system is a joyfully awaited developmental program funded by the people of Japan and engineered JICA under urban water cooperation main branches of ministry of water resources and irrigation.

The facility was meant to reduce water shortage face by the Juba city since the creation of South Sudan, it was due to be completed by September 2017 but the impact of current conflict may interfere with the time line.

9

South Sudan Urban Water corporation treatment plan



LEAKAGE RECORDING/MAPPING FOR JUBA DISTRIBUTION



Map of customers in Juba





Challenges

- Very expensive generators' power
- Flooding.
- Low food production.
- Climate change
- Low number of capacitated staff due to the turnover of skilled staff.
- High water loose due to lack none revenue water equipment
- Low technology in term of water treatment and purification
- High rate of water contamination
- Poor operation and maintenance of facilities
- ✓ Lack of diversified economics on water
- Very low treated water coverage
- Lack of billing system
- Dependency on government O&M and subsidies
- None payment of water bill by Government offices
- ✓ No modern water information database in the country.
- Insecurity, both tribal and political motivated violence across the states

Thank you

Questions?

5. SRI LANKA (1)



Inception report

Country Sri Lanka

Name K.T.T.K Premaratne

Outline of Water Supply Services

Ŧ

- T.T Legal Basis of water Supply Services From Law No 02 of 1974
 - 1.2 Demarcation of Water Supply Services Ministry of Water Supply and Infrastructure Development
 - 1.3 Main Actor of Water Supply Utilities Mainly Water Supply and Drainage Board
 - 1.4 Mission/ Vision of Water Supply Services Serve the nation by providing sustainable water and sanitation solutions, ensuring total use satisfaction
- 2 Water Supply Service Levels

2.1 main Performance Indicators

Coverage Area	7800 sq.km		
Population served	280,000		
Collection ratio	98-105%		
Production capacity	53,000 m3/ day		
Supply duration	24 hours		
Supply Pressure	4-0.6 bar		
Non-Revenue water	17.5%		
Water Quality	According to 5L5 614:2013		
	Microbiological 98%, Physical 67%		
Staff number	198		
Staff/ 1000 connections	2.9		

2.2 Any Monitoring by performance indicators

Operating ratio	10			
debt age	14 days			
water quality	Microbiologic	al 98%	Physical	67%
new connection given	5300 up to new			
delective meters per 1000 connections		8.5		
estimated bills per 1000 (connections	9		
WSP done		6 aut of 21		
Production		1.7 million	m3/month	
Billing		75 million/	month	
Collection		78 midlion/	month	

3. Water Quality Management

3.1 Sampling and testing by regional laboratory

Sampling in distribution as per the SLS and water quality testing 120 samples in September 2023

Sampling in each and every treatment process monthly and water quality testing

Sampling in intakes and water quality testing
	Trea	ated V Physic	Vater	Quality o Chemical	- Septer	SLS 6 mber 2	14:2013 2023		
Scheme	Unsi	Unstitifactory		Source	Water	No of Unsati sfactor	No of Unsati	Parameter	Remedial Measurement
	Full Treatment Plant	Partial Tr. Plant	Chilo rine only Tr. Plunt	Name	Туре	y Bacteri ology	Suggested		
Polgahawela	Polgahawe Ia Old WTP			Polgahawel a Old WTP	Fully TreatedW ater	ž	Turbidity 3 NTU	Intraduce Full Treatment Plant for this Water Supply Scheme	
Narammala			Chlo rine only Tr. Plant	Sumonotala	Chikarine only	1	Iron - 1 S nig 1, Mn- 0, 2nig 1	Maintaining of RCI 1.0 mg/l at New WTP & regular monitoring of storage tanks at distributio system in Alawwa & Polgahawela	
Giriulla & Dambadeniya	WTP ^b			Ginulla WIP	Fully Treated W ater	6	RCI- 2.5 mg/l Colour - 40, Turbidity 5 NTU	New Iron Removing Plan	
Pannala	WTP (Package)			Pannala WTP	Fully TreatedW ater	z.	RCI-1.6 mg/L	Proper maintaing of the WTP	
Wariyapola	WIP			Wariyapola. WTP	Fully TreatedW ater	1	RCI-2.2 mg/l, Turbidiry- 4 NTU, pH -3.5, Iron 1.8 mg/l, Mn- 0.2 mg/l,	New WTP	
Nikaweratiya	WIN.			Nikaweratiy ⁴ WTP	Fully TreatedW ater	2	RCI-1.2 mg/l Colour- 54, Turbidity	Cleaning of te Treated Water Sump	

			_			-10 NIU	
Dedara Oya	WIP		Deducs Oya W P	Fully Insteady sizer	6	RC1-12 mg1- 2.5mg1	Monitaining of RCFF is mg.1 atSump & Cleaning of the OIFI
Galgamuwa	ŴŦ₽		Galgamuwa WTP	Fully TreatedW aver	Ŧ	RET 4.9 mg/l Colour 16-32 Turbidity- 4 NTU IDS -512 mg/l	Maintaining of RCUL0 mg/Lat WTP & all Treated water storages in Distribution system
Dodángaslanda		Chilo tine only Tr Plant	Dodanđasla oda WTP	Chlorine. only	à,	REI-2.0 mg/l Colour-17	Improvement of exsisting WTP, New WTP & Maintaining of RC) 1.0 mg/Lat WTP
RambadagaHa		Chio tine only Tr. Plani	Rambadagal la WTP	C filenine only	4	Colour 17 -21 Turbidity -3 NTU Iron-1.2 mg/L Mn. 0.3 mod	New WTP & Mantaming of RCI10 mg1at WTP
Ogodapola		Chlo rine only Tr Plant	Ogođapoša WTP	Chlorine only	r	RCI-2.0 mgl. Colour- 76-36 Turbidity -21 NTU -6 NTU	New WTP

3.2 Sampling and water quality testing by plant technicians

RCL

Turbidity

PH

Residual alum

3.3Doing jar test for chemical dosing

when plant technician shift change and water quality change is seen

4 Reduction of Non revenue water

4.1 Monthly NRW calculations

Monthly take production data from bulk meters

Take consumption from Commercial billing IMS

Calculate and monitor monthly NRW for each zone, Scheme and for region



	IN	VS-5] For	mat-NP	aw c.	Industri		1.1.1		-
	R	egional Su	Innort C	Dated	culatio	n of Pa	nnala		
		Natio	rial Water	entern	North We	st}-NRW	Unit		
				suppy	& Urainag	e Board			_
NRW =	(1	A-TEM-2 +	PA-TEM-	3)	0	ONSUME	NON .		
			(PA-TFI	NS-2 +	PA-TEM-3)			-	
FW «	(F	PA-RFM-1)	 (PA-TER 	+ 1-34	PA-TEMI-2)	-			
			(PA-RFM	F-2)					
anothenal checks									
-TPNS-2 =		(St	orage of	T-1)	+ (PA+TE	M-3)			
Eline 1									
TE ALLANT TO ALLANT	5								
		MENENTRY OF	WATER Store	iv.		7		The	
		MENENTRY OF Noncolar Wyner Yng Off Cont C 2NRW & Co 340	WATER SUPP PV red Orchag M DW J Mr V200 Recording Docada y 2025	ty. • Rosenti		7		The	1
[ber] ter]	1	MENESTRY OF Names of Pipter Sag Unit Cont (C 2010 & Art 2010 - Art	WATER Starp off and Orchag Microwy Microwy Bootstary Database Caloring Database	ty. • Rapel		-		The	
The Last Salar		MENSTERY (I) Romonal Wester Sup (Ma) C-mil() DRW # (1) JRW # (1)	WATER Store off real Orchog Now 5200 Receive Decals y 2023	CV. • Rosenii Narui	Array. Trans.	-	4 1978	-	1
Dette Loni Lohan Pris Lonia Februargelo Brittan 1 2111 Projemite	200000000 0.752	MENSTRY OR National Water Sup Odd Cost(C) NRW & Cs NRW & Cs NRW (Cs) Actual Production (with Transfer and	WATAA Surp of rad During M (NV) M S200 monoting Durada y 2023 Annual Supply (ml)	tv. • Ruma Nerv	Annup Protocol 1004	Annual Inc.	4 19797	Property -	
Setting Logic Logic Price Logic Logic Person Logic Logic I S.11 Propicements I S.11 Propicements I S.11 Propicements	0.712 0.752	MENSTRY OR Descent Piper Tag Use Control SNRW & Co SNRW & Co SNRW (19900-1990 (1990) 2010-199000-19900-199000-19900	WATER Story off read Orieling M DW 2 M DW 2 M DVW 2 M	ti • Rand NW NUM	Arrage Posterior gain	Annue Sagar (La)	44 N97875	Progetter.	
Sector Solution NYS Evening Solution Hormorphil Bindmet 1 Scill Solution 1 Scill Programmet Solution 1 Scill Solution Solution	0.70 0.70 0.90 0.90	MENESTRY (p Number Rights Tag (M) Cont () SR(W # () SR(W # () Cont () SR(W # () SR(W # ())	WATEA Story off read Graduage for water Graduage for S200 necosing Docada y 2023 Annuel Separt India Contract	12 • Rans • Rans • 14 • 14 • 14 • 14 • 14 • 14 • 14 • 14	Arreige Postera gata (1).0(1) statistic (2).0(1)	Annuar Sugar Tudy	44 N/989	Emaths Security Security	THE PARTY
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4.2 Validate Bulk meters (using ultra sonic flow meter)

Total Bulk meter available	58
Defective	6
Checked for validation	48
Meters within 5%	39

4.3 Install DMA meters

Planned (for Giriulla & wariyapola WSS) Installed

6

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01 Reliabilitations of fee ef accommentation Process Process #1 Introducing of Delay Source Introducing of Delay Source Introducing of Delay Source #2 Introducing of Delay Source Introducing of Delay Source Introducing of Delay Source 11 Delay Source Introducing of Delay Source Introducing of Delay Source 12 Supply of Materials Introducing of Delay Source Introducing of Delay Source 12 Supply of Materials Introducing of Delay Source Introducing of Delay Source 13 Introducing of Delay Source Introducing of Delay Source Introducing of Delay Source 13 Introducing of Delay Source Introducing of Delay Source Introducing of Delay Source 14 Introducing of Delay Source Introducing of Delay Source Introducing of Delay Source 14 Introducing of Delay Source Introducing of Delay Source Introducing of Delay Source 14 Introducing of Delay Source Introducing of Delay Source Introducing of Delay Source 15 Introducing of Delay Source Introducing of Delay Source Introducing of Delay Source 15 Introducing of Delay Source Introducing of Delay Source Introducing of Delay Source 15 Introducing of Delay Source Introducing of Delay Source	1		Farmer!	COLUMN R	1.1.1.2.2.2	an tes S
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121 - Therefore Beneffren Mark	1.04	the ast of the of a stand and a stand	111		113	ALCORE STOR
	ister.	Collection of Barra Maran	1 3010°	1 2 1		L'ANNAL TH

4.5 Mapping of major leaks (110 mm above)

Leaked mapped (for this year) 78

4.6 Replacing old and highly bursting pipelines

Length Identified	18 km
Replaced	6 km
Ongoing	8.2 km

4.7 Replace defective meters

½" meters	4800
%",1',1 1/2:" meters	25

4.8 Replace bundle connections

ident ligh	380
Changed	280

4.5 Replace service connections with PE material and lockable valves

identified	28000
Replaced	2500

4.10 Night survey for leak detection

Prayned	12
Done	8
Leakes identified	30

4.11 Using latest instruments for leak detection

attend	6
successfully found	5

5 Accounting system of water supply services

5.1 water tanff



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EXTRAORDINARY

(1995) 2012年 2023 白山田田町 6日 02 ロ(赤 60月1) 2023(08,02) 30: 2343 28:WEDNESDAY AUGUST 02: 2023

(Parkdon's Conserved

PART I: SECTION (I) - GENERAL

Government Notifications

NATIONAL WATLE SUPPLY AND DRAINALL ROARD LAW, No. 2 OF 1974

Nusior under Section 64

NOTH 4 in territy growt in territy of Section 64 of the National Water Supply and Diamage Brand 1 on Nor 1014 (dotthe following tard): will be charged with effect from the filler day of August. 2003, from of the anisomery supplied with water from the water supply schemes of the National Water Supply and Diamage Heard.

This notice replaces the notice appearing in the Quarks Aperatoricities. No. 2294-51 dated 20th August 2002 on respect of the water tariffs with effect from the 01st day of September 2012 and applied able to all consistence who are supplied mater by the Sectional Water Samply and Decessor Recoil.

ALLAS THINGALLAS

Minutes of Wates Supply & Exists InEaster one University

Stonary of Wate Supply & Lone Information Development Information Track July 2803

(A. Galella, 1998 Scile Ventorie Amerikanismi Kalanismi Presidence and Presidence (2019)



Monito's water bill, of any premises includes in addition to the water charges, monthly service charges orbit charges and applicable news. Water bill generally displays only the total monthly charge and if necessary consumer can recover the water bill with separate VAT SVAT howness with prior registration with the National Water Supply and Dramay eBond.

All consenses are categorized as per following table for easy identification and adoption of different Faith-[Note: One Uwn thall be defined as one cuby meter [11000 Luers]]

Comunics Congory Group	type of promiles included	Consumer Turiff No. & Longf	Propasant Lable
Domestic - Summella Recipients & Tenement Gardena	Water provided to households of Samurdhi recipicits & Tenement Gouden for domestic purposes	 14 Tenemeni Gorden 17 Resentement Condonumium UDA 20 Domestic Samurdhi 34 Tenamant Samurdhi 	Taniff (able 0)
Domestic other than Samurdhi Recipients & Tenement Guiden	Water provided to households. Other than those of Samutdhi reerpicots & Tenencia Garden	 10 Demessic 11-Board Quarters 13-Grovernment Quarters 16-Board Quarters - Ambailale 18-Contonium 19-Embaisty Residence - Dumestic _Non VAT 	(ant) Table 02
Public Stored Posts	Water provided through Public Stand Posts and Garden Tapy	 S1: Stand Posts S2-Garden Taps S3: Stand Post (C.S.) 	kanff Table 0.1
Schools, Religious & Charmble Institutions	Water provided to essential purpose of Schools, Assisted Schools, Religious and Government Approved Charitable Institutions	 12 Schools 15 Assisted Schools 81 Religinus and Charnishle Instalations 85 Other Numprolit Organizations 	Fantî Table 04
Government Institution & Industries Other Than BOI Zone Industries	Water provided to Government Institutions & Industrial which are not categorized under BOI 20ne Industries	 60-Covernment Initiations 61-Anny 62-Police 64-Premises of Local Authority 75-Industries (Non SME) 75-Small & Medsum Industries (Under SME) 	Yandî Table Qê
Government Hospitals	Water provident to Government Respirals		Tariff Toble On

14

Longer driese. 3 provisionenenenenenenenenen Sievenenenenen vas mereten. Er i seiner server ververververver er andere van servere komidarier verververver merete.

11

Commerce (6) g = (Comp	tice of pressions included	Continue Diette Are de Dietel	Property Low
t immercial Instructions & BOLZone Industries	Water provaled VeSOL. Commencial Phenores: Journs Unitely Goress Houses: BOLZone Industries: Other Commercial and Process Jostitutions Commercial New YAL Institutions SWSDR Phenores and Box set Supply	 65 SOI 204 animeteod brattanas 24 BOI Zone Industrias 24 BOI Zone Industrias 25 Most d Developments 26 Anifectory Premises Commercial-Non VAI 804 ther Commercial and Provide Institutions 82 NW SDD premises 98 Houses 	ben lable 17
Pool & Shipping	Supply of water to Sleps calling, over at Ports, Thatbours & Port City	 72.8hipping 78.Port Cay 	Larin Table 08
Hidle Supply	Bolk supply of water to Local Authorities & CIMYs	 90-Balk (LA) 91-Balk (CBO) 	Taon Table 09

TARIEF TABLES FOR DITTERENT CATEGORIES OF WATER SUPPLY

TARIEF TABLE 01 - (Category 14, 17, 20, 24)

Tariff For Samurdhi Recipients & Tenement Garden

See of white	Usage Charge Ry (Unit	Monthly Service Charge Re
00-05	5.00	109.00
06-10	10.00	100.00
11.15	15 00	100.00
(6-20	40.00	100.00
21-25	58-180	100.00
26.30	88.00	700.00
31-40	105 (8)	-3(8) (8)
-31-50	(20.00)	650.00
51-75	130.00	1,000,001
User 75	140-00	1,600.00

74

TARIET TABLE 02.5 (Category 10, 13, 13, 16, 18, 19)

Tariff Fur Domestic Other Than Sumurable Recipients & Tenement Garden

No. of sames	Usuge't hunge R1. Unit	Monthly Service & hurge Br
00-05	60.00	300.00
06-10	S0.16)	300.00
11-15	100.000	300.00
16-20.	H0.00	400 tio
21-25	130,00	980.062
26-34	160.00	660.00
3) -40	180.00	1,500.00
41-598	210.00	3.000.00
51-75	240.00	3,500.00
76-100	270.00	4,000.00
Over 100	300.00	4,500.00

TARIFF TABLE 03 - (Category 51, 52, 53)

Tariff For Public Stand Posts, Garden Taps and Public Stand Posts (CS)

No. of anits	Duge Charge Rs (Duit	Mountily Service Charge Rs.
(8) - 2.5	60.00	400.00
26 - 50	60.00	500,00
\$1 - 100	60.00	1,000.00
101 - 200	60.00	1,600.00
Over 200	60.00	2,500,00

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TAMIFF TABLE 04 - (Category 12, 15, 81, 85)

Tariff For Government & Assisted Schools, Beligious & Approved Charitable Institutions and Nauprofit Organizations

Six of units	Usage Charge Rs Unit	Monuble Service Charge Ry.
387 - 335	(40.00)	409.05
$\delta \theta t = T \partial t$	00.00	-409 (0)
11 - 15	n0.00	500.00
16 - 20	60.00	600.00
21 - 25	6(3.18)	00 0001,1
26 - 30	60.00	1,200.00
31 - 40	60.00	1,200.00
4150	60.(x)	2,400.00
5) -75	60.00	2,400.00
Over 75	60.00	3,500.00

TARIFF TABLE 05 - (Category 60, 61, 62, 64, 73, 75)

Tariff For Government Institutions & Industries Other Than BOI Zone Industries

No of unus	Usage Uharge Rs Unit	Alumihiy Service Charge Rs
00-25	110.00	500.00
26-50	110,00	750.00
51-75	110,00	(,500.00)
76-100	110.00	1,750.00
101-200	110.00	2,000.00
201-500	110.00	3,000,00
501-t,000	110.00	5,000.00
1,001-2,000	110.00	10,000.00
2,001-4,000	110.00	15,000.00
4,001-10,000	110.00	30,000.00
10,001-20,000	110.00	60.000.00
Over 20,000	110.00	130,000.00

M LETTER (III COLL \$ 1957) STREET CONSTRUCTED STREET OF ELSE ALSO BY 10231970 THE STREET AND AND AND AN ADDRESS OF THE DEPOSITE SOLATES ADVALLED ADVALLED AS A ADVALUATE OF ADVALUATE ADVA

No. of mate	Usings & Image. Ro & soil	Manufile Nervice Charge IIs
00-23	100.00	400.00
26-50	1 (8) (11)	500.00
51.75	100.00	1.000.00
76-100	100.00	1,009,000
001-200	100.00	1,600.00
201-500	100.00	2,500.00
501-1.000	100.00	4,000,00
1.001-2.000	(00.00)	2,500.00
2,001-4,000	00.00	12,500.00
4,001-10,000	100.00	25 000 00
10,001-20,000	100.00	50,000,00
Over 20:000	100.00	100,000 00

TARIEF TABLE 86 - (Category 63) Tariff for Government Hospirals

TARIFF TABLE 07 - (Category 65, 70, 71, 74, 77, 79, 88, 82, 98)

Dariff for SOE, Commercial Premises, Iourist Hotels/Guest Houses, BOI Zone Industries, Other Commercial and Private Institutions, Commercial Non VAT Institutions, NWSDB Premises, Mixed Developments and Bowyer Supply

No. of units	Usage Charge Rs./Unit	Monthly Service Charge Rs.
00-25	150.00	500.00
26-50	150.00	750.00
51-75	150.00	1.500.00
76-100	150.00	1,750.00
101-200	150.00	2.000.00
201-500	1.50.00	3,000.00
501+1,000	150.00	5,000.00

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Usage Usage Rs. Unit	Monthly Service Charge R
150.00	10,000,00
150.00	15 000 00
150.00	30,000.00
150.00	60,000.00
150.00	130,000.00
	Esuge Charge Rs. Unit 150:00 150:00 150:00 150:00 150:00

IARIFF TABLE 98 - (Category 72, 78)

Tariff For Ports City & Shipping

No. of units	Usage Charge Rs./Unit	Monthly Service Charge Rs.
00-25	750.00	500.00
26-50	750.00	750.00
51-75	750.00	1,500.00
76-100	750.00	1,750.00
101-200	750.00	2,000.00
201-500	750.00	3,000.00
501-1.000	750.00	5,000.00
1,001-2.000	750.00	10.000.00
2,001-4,000	750.00	15.000.00
4.001-10,000	750.00	30,000.00
10,001-20,000	750.00	60,000.00
Over 20,000	750.00	130,000.00

74

1.4 Constant of the second second

Sec of marts	Uniger Charges Excil int	Atomich Second Charge III
00.22	50.00	500.03
26:50	60.00	250.00
58-25	00.944	1,800-00
² 6-100	66000	1 75tr (k)
101-200	6000	2.089.00
201-500	60.00	3.0061.00
501-1,000	00.00	5 000 00
1.001-2.000	660.060	10,000,00
2,001-4.000	60.00	15,000 (A)
4,001-10,000	DODA -	30,000,00
10.001-20.000	5/11/0	60,000.00
Over 20:000	60.00	1 30,000 00-

TARIFF TARFE 09 - (Category 90, 91) Turiff for Bolk Supply

Miscellancous Charges and Conditions

New Service Connections.
 The cost of providing a new service connection will be levied from the consumer.

- 2 Usiomers who do not use water at all during a particular month are charged at numiniam monthly service charge and VAT Amount.
- 1 If a meter is found to be out of order or if it is removed for replace or calibration, the consamption, of water during the time that the meter is not available to accord consumption, shall be calculated according to the average rate of daily consumption obtained during any three no's of successive readings without numeduate month preceding the removal of meter or the meter becoming defective.
- Eviling of water meters at the request of consumers.

The fee for festing of water meters in the request of the consumers shall be determined by the General Manager of the National Water Sopply and Drainage Board, based on costs incurred for the testing of such meter. If on testing such meter it is proved that the meter had been invertionder registering by more than 02% of the correct consumption, this lies will be refunded and bill(s) should be revised based on complaint date. Incentive his prompt Payment.

Consumers paying them water fulls within 14 days from the date of some of the full will be given a refuse of 1.5% (Or animum determined periodically by the General Managar of the National Woler Supply and Dramage Bourd) on the value of the ball. Arrangements are available for consumers to deposit money with the Bourd in advance to meet the cost of water balls.

6. Surcharge for delay in Payment

Customers are expected to pay the bill, within a period of 14 days from the date of receipt of the bill. It consumers fails to settle the water bill within a period of 30 days from the date of receiving a bill, an additional charge of 2.5% (*In* amount determined periodically by the General Klasaper of the National Water Supply and Dramage Board) on the value of the bill per month shall be made for the balance mustanding from the date the bill was essed.

7 Disconnection of Service connections:

The General Manager of the National Water Supply and Dramage Board shall have the power to disconnect the service connection of consumers, whose bills are in artears for a period of more than 30 days.

8 Re-Connection Lec-

The fee for re-osumeeting the supply, after the service has been disconnected, shall be determined by the General Manager of the National Water Supply and Dramage Borrid, based on the custs mention for such re-connection

- 9 Bowser charge excludes costs incurred for transport and other overheads. As well as service charges in table No. 09 also are not be applied for howser supply.
- 10 A customer who is not registered for c-felling shall pay an amount determined periodwally by the General Manager of the National Water Supply and Dramape Board for the "Environmental Conservation Fund".
 - 11. If any officer/employee who authorized by the General Manager of the National Water Supply and Dramage Board visits to the customer house and collects the water hull fee, customer shall pay a "curvenience fee" determined periodically by the General Manager of the National Water Supply and Dramage Board.
 - 12 Electricity bill and any other cesis that are presently home by the National Water Supply and Dramage Board on secondary pumping systems that were developed by the government organizations, say National Housing Development Authority, Urban Development Authority, etc. in supply water to occupants of housing schemes shall be fully paid to National Water Supply and Drainage Board by the occupants of the particular housing scheme in addition in the water tariff.
- 13 Violation of Regulations

If any regulation, under which the water supply has been provided, is violated by any consumer, action will be taken under the relevant provisions of the Nasional Water Supply and Dramage Board Law No. 02 of 1974, the National Water Supply and Dramage Board (Amendment) Act, No. 13 of 1992 or any other subsequent amendment to the legislation

5.2Balance sheet of your organization Er/G 08 - 0021

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Print Date: 24/10/2020 driat 21448

Page 1111

E. Major recent achievement in improvements of water supply services/ management

Intake improvement by direct labour for partial water treatment facility plants by introducing low flow weirs, lateral pie lines, and sand covering (Dodangaslanda, Rambodagaile)

Rehabilitation of 1500 m3/day package plant at Gokarella | Sedimentation unit and Filters |

Completed 110 kms of pipe line extensions by direct labour using excavation and backfilling done by sharmadana basis

Provide 7500 water connections

Taking over Hettipola distribution system from Pradeshiya Saba

Faking over RWS schemes from Community Based Organizations

7 Recent Challenges to improvements of water supply Services

In the sever drought we faced during this year, water sources in three schemes were severely affected. Within Two day, we found alternative source for Hettipola Scheme did 2.2 km pipelaying by direct labour and arrange continuous water supply to consumers.

The Alawwa, Polgahawela Pothuhera Project was recently commissioned, but there is a huge list of balance work and defects. But the contractor is not attending them due to a financial issue. Therefore , the operation feam had to face and still operate the plant with much challenging work.

8 Expectations toward Japan

8.1 Expectations toward Japanese Government and JICA

As Japan is a well Developed country and Sri Lanka as a developing country which has low safe Wate: supply coverage, we expect financial and technical support from Japanese government and JICA.

8.2 Expectation towards Japanese water utilities

Dur expectations towards Japanese Water Utilities are to knowledge sharing in the water utility i organizations in Japan, to develop our Sir Lankan Water Utility organization (NWSDB) for a better officient and effective organization toward customer satisfaction

8.3 Expectation toward Japanese private companies

To share the knowledge in the technologies, Systems using in Japan to improve our NWSDB to finiti cost effective solution to cover the unserved population.

Find sustainable planning and designs towards to cover the unserved population and to enhance the quality of water producing.

find ways for renewable energy, material etc.

9 Expectations toward the program

9.1 Expectations of your supervisors toward your participation in the program

Share the knowledge and experience which I gained thorough the training, within the organization to reach for our organization's Vision and mission.

9.2 Your Expectations, any comments and requests are appreciated.

Sri Lanka is a developing country from a long period. It has very low safe water coverage. Specially it is the minimum in Kurunegala District. Lot of people suffering from lack of water, lack of quality water, during my training. I take the opportunity to share the knowledge, systems, methods, techniques, administration systems etc practicing in Japan, a developed county. And to share my experience and knowledge. I gained with the management and my staff to find possible isolutions overcome the problems currently we are facing.

Administration and management of Water supply services (B)

Inception Report Presentation

Country	:Sri Lanka
Name	:K.T.T.K Premaratne
Position	:Chief Engineer (civil)
Organization	:National Water Supply & Drainage Board

Outline of National Water Supply & Drainage Board (NWSDB)

The main functions of the NWSDB which presently functions under the ministry of water supply and state infrastructure are

- operation and maintenance of water supply schemes
- Operation and maintenance of sewerage schemes
- Implementation of new urban and rural water supply projects
- Carrying out sector planning, feasibility studies, detail designs tender documentation
- Contract administration, project supervision
- Research and development work in water and sanitation sector

Whole Country NWSDB Details

Area	:	65,610	km ²
Population	:	21,922	thousand Habitants
Coverage Water Supply	:	53 %	
Water supply connections	:	3,000,000	0
Monthly Production	:	66,180 th	iousands m3
Monthly Consumption	:	48,500 th	ousand s m3
NRW	:	23.15%	
Average production cost	:	Rs79/m3	
Operational ratio	:	0.87	
Staff /1000 connections	:	2.94	
Collection efficiency	:	94%	
Debt Age	:	2.2 mont	hs

Outline of Kurunegala Region, NWSDB

Area	:	7800 km ²		
Population	:	1,890 thousands		
Coverage Water Supply	:	12 %		
Water supply connections	:	68,000	No. B.	1 store
Monthly Production	:	58 thousands m3		A STA
Monthly Consumption	:	53 thousand s m3	N. Y	
NRW	:	17.5 %		The second
Average production cost	:	Rs 60m3		1-2-2-2
Operational ratio	:	1.1		
Staff /1000 connections	:	2.98		
Collection efficiency	:	105%		
Debt Age		1.3 months		

Outline of Kurunegala region

Kurunegala district is situated in north western province.

There are 10 Water Supply schemes

Some Schemes have full treatment facility, such as

	deduru oya	-15,000 m3/day
	Polgahawea	22,000 m3/day
	giriulla	4500 m3/day
	wariyapola	4000m3/day
	Nikaweratya	6000 m3/day
But som	ne schemes have or	nly partial treatment only
	Ibbagamuwa, bulu	uwala,dodangaslanda, redeegama,ogodapola

Outline of Water Supply Services of Kurunegala Region

INDICATORS	2010	2020	Goals for 2025
Staff/1,000 connections	6.8	3.0	2
Production capacity m3 /day	18,000	45,000	85,000
Water quality	partial	SLS 614 /partial	SLS 614
Coverage area	6%	11%	42%
Supply duration (hr/day)	12	24	24
Supply pressure	0.2 bar	2.5 bars	2.5 bars
Number of connections	22,000	50,000	150,000
NRW	28%	19%	16%
Collection ratio	40%	95%	105%
Staff number	125	145	300

Success stories

Intake improvements done under direct labour in Dodangaslana, Redeegama WSS

- Introduce low flow weir across river
- Introduce lateral pipe line with sand bedding
- Introduced lateral backwash system (water+ air)
- Could improve water quality
- Low cost

Rehabilitation of 1500 m3/day package plant at Ibbagamuwa WSS direct labour

- Rehabilitate sedimentation tank
- Rehabilitate RSFs

Construction of 1000 m3/day Roughing filter for Ibbagamuwa WSS

Success stories

Completed 110 kms pipe line extensions for water essential area

- Laying done by direct labour
- Excavation and backfilling done by villagers 100% willingness to pay
- 3000 new connections added
- Low cost
- Money save to the NWSDB

Completed 88 kms pipe line extension in CKDu disease area

- Funded by UNDP for new connection fee
- 1200 connections given
- Direct pipe laying
- Excavation and backfilling done by villagers/ CBOs

Success stories

Taking over Water Supply scheme operated under Hettipola P.S

- 1800 connections taken over
- Distribution improvements done after taking over
- Consumer satisfaction increased
- Taking over 3 CBO schemes at Mawathagama WSS
 - 800 connections taken over
 - Their Water quality/Quantity issues solved
 - Increased consumer satisfaction
- 7500 new connections given

Recent Challengers to improvements

- 1 Sever Drought
 - Faced In may,June ,July month
 - Lot of schemes affected
 - Hettipola , Kurunegala , Pannala severely affected
 - Hettopola WSS
 - found a new intake
 - Convince farmers
 - Done 2.2 kms pumping line from 2 day
 - Electricity taken
 - Kurunegala WSS
 - Field inspection done with AGA for clear temporary anicut done by unauthorised water users
 - Coordinate irrigation department, farmers for water sharing
 - Use alternative water sources
 - Pannala Wss
 - Temporary sand barrier constructed

Recent Challengers to improvements

2. Heavy rains/ floods

- Kurunegala WSS intake affected
 - Intake blocked
 - Removed blockages divers used
 - Used alternative sources
- Giriulla WSS
 - Intake lateral lines 100% blocked
 - Arranged a separate submersible pumps to river to pump water
 - High pressure compressor used for cleaning not success
 - Finally clean with a GI pipe, using divers and exposing gabions around lateral pipes

Recent Challengers to improvements

Taking over Alawwa, Polgahawela Project

- Contractor slow done the work due to payment delay
- Existing scheme facing long term water quality issue
- High new water demand fir industries
- Waiting long time for the new project (expected from 2020)
- Lots of defects outstanding
- Contractor not attending for defect rectification
- Urgent repairs done by operation team and submitted bills for reduction
- Extend the liability period from one year from completion of all defects and balance work

Expectation towards the program

My expectations toward this program

- share the knowledge, systems, methods, techniques, administration systems etc practicing in Japan (a developed county)
- Share the knowledge of other participants in this program come from other countries
- Share my knowledge and experience with other participants.
- share my experience and knowledge I gained, with the management and my staff to find possible solutions overcome the problems currently we are facing.
- Improve organizational KPII

Expectation towards the program

Expectation of your superior toward this program

- Share the knowledge and experience which I gained thorough the training, within the organization to reach for our organization's Vision and mission.
- Improve organizational KPIs

6. SRI LANKA (2)



INCEPTION REPORT

G.R AMARASINGHE CHIEF ENGINEER NATIONAL WATER SUPPLY AND DRAINAGE BOARD SRI LANKA

1. Outline of Water Supply Services

National water Supply and Drainage Board (NWSDB) is the main authority of providing safe drinking water and facilitation of provision of sanitation in Sri Lanka. This was established in January in 1975 by an act of the Parliament:

Sri Lanka has established the National drinking water policy with some amendments in 2008. Further, the Government of Sri Eanka has implemented the National Environmental regulations on water quality standards in 2019 by specifying "no pollutants shall be discharged into inland water surfaces in excess of the ambient water quality standards." Moreover, different water policies, such as rein water harvesting policy, rural water supply and sanitation policy has been established. The Sri Lanka standard for water quality has already established and functioning well.

At present, National Water Supply and Drainage Board is functioned under Ministry of Water Supply and Infrastructure development.

As the main actor of water supplying, NWSDB is operation 334 water supply schemes in 5ri Lanka by covering more than 50% of safe drinking pipe born water coverage. Many other local governments, community-based water supply systems are operation under the supervision of NWSDB and it has planned to take over these schemes and provide more facilities to the remained population in the country.

Vision

"To be the most prestigious utility organization in 5ri Lanka, through technological and service excellence"

Mission

"Serve the nation by providing sustainable water and sunitation solutions, ensuring total user satisfaction"

2. Water Supply Service Levels

Water supply levels of each district are measured monthly with respect to the Key Performance Indicators (KPI) of the organizations. The Regional Managers have established KPIs for their districts and monitor the performance accordingly. The water supply levels of Polennaruwa district in Sri Lanka is as follows.

Description	Value	Remarks
Coverage area	1125 sq.km	See Fig. 01
Population served	269,240	See Fig. 01
Collection ratio	. 105%	See Fig. 02
Production capacity	44,000 m ³ /day	
Supply duration	24 hr/day	
Supply pressure	a - 5 bar	
Non-Revenue water	15%	See Fig. 03
Water quality	Gaed	
Staff numbers	193	
Number of Connections	59831	
Staff/1000 connections	3.2	

Coverage area and Population served

At present, water supply coverage of Polonnaruwa district is 51%, more than 260,000 populations are covered up to September 2023. It has planned to improve the coverage with proposed projects in coming 5 years.



Fig. 01 : Water Supply coverage area and population served

Collection efficiency

The collection efficiency of Polonnaruwa district is more than the target in KPI. It was somewhat below the target within first three months and it was able to catchup after April, 2023.



Fig. 02: Collection efficiency and ratio in 2023

3. Management of Water quality

Water quality of the district is maintaining well with the laboratory team at regional laboratory, it contains following staff.

Chemist	- 03
Lab Assistant	- 02
Lab Attendant	- 01

All the samples are tested at the laboratory after collecting sample as per the pre-scheduled programme. Some parameters are tested at site

Sampling schedule is circulated at the start of each month and the Officer in Charge at site is attending the sampling programme with lab team. Sample locations are selected to cover the whole distribution system as well as the special locations identified with quality issues.

Water samples are tested at Water treatment Plants daily and reports to laboratory. Any of the emergency, cases on water quality issues, lab team is attended and collect samples and settle the issues.

Water sources are tested once in every three months and all tests are carried out including heavy metals. The sampling programme and the recently tested details of water quality parameters are attached in Annex 01.

4. Reduction of Non-Revenue water

Non-revenue water percentage was more than 25% at the beginning of the year. This was closely monitored and some illegal connections were identified in some schemes. Further, there are some leaks have been identified in old pipe lines at some locations.

With the use of allocated NRW budget in 2023, it was planned to replace old pipe lines and transfer existing connections to new lines. It was greatly helped to reduce NRW percentage. Further, several programmes were implemented to check illegal connections and rectified all with new connections, these programmes helped to reduce NRW percentage from 26% to 15%.



NBW%

3

5. Accounting system of water supply schemes

NWSDB has introduced a new tariff system to the water consumers in Sri Lanka. It has several categories and the billing system is differed from category to category. NWSDSB has introduced special rate system for new connection for low-income families. The consumers can pay their new connection charges with the monthly bill.

There are nearly three million customers in NWSDB. The water billing is mainly done through Revenue Assistants with three billing cycles. This is handled by the Commercial unit. The collection will be transferred to the Account unit. The details of billing in Polonnaruwa district is shown in Fig.04.



Fig. 04: Details of Billing



The details of income expenditure in Polonnaruwa district are shown in following.

Fig.05: Income, Expenditure, Loss & Profit

6. Major recent achievements in Improvements of water supply scheme

NRW reduction

NRW percentage in the district reduced more than 10% with the old pipe line replacement and illegal connection monitoring programme. The following was one of the programmes done at major Water supply scheme.

Pipe laying with community participation

With the limited budget allocation, there was no any provision to lay the pipe lines in new area. After the discussion with communities, it is planned to lay pipes with the community participation and 19.5km of pipe lines were completed and new connections were given to the customers with reasonable discounts.



Fig. D6: Pipe laying with community participation at Polonnaruwa district.

7. Recent Challenges to improve Water Supply Services

Recent changes were identified in major water sources, due to new improvement project in up stream. A Sudden changes of water levels at main intakes were recorded and additional tempory precautions had to be taken to settle the issues. This will be continued in next dry period too. Therefore, immediate improvement to be done to extract water in dry season.



Fig. 07: Water level changes in main intakes





Fig.08: Construction of sand barrier across river as tempory solutions

R. Expectation Inwards Japan

It is expected to study the present water policies in Japan Government and the challenges that are facing at the implementation stage. What amendment can be applied to ovr content.

How the Japanese water utilities are operating in water supply context. What are the key points they addressed. How consumers are handling and keep them very close to the organization.

It is expected to know about modern techniques on water treatment and what the private sector are planning to do for small scale water supply systems. How they are planned to invest in south Asian countries. What is their contribution on upgrading the collapse systems.

It is expected to share our knowledge with all sector including Japanese Government, Japanese water Utilities and Japanese Private Companies and get their thoughts and experience to better future of my country and share our experience and knowledge with them for the benefit of all.

9. Expectation towards the programme

It is expected to share the knowledge gained the programme with other executives. There are still some issues in water policy in Sri Lanka and it is to be improved with some amendments and it is expected to collect ideas on the improvements with respect to the water policy in Japanese government.

We are still struggling to reduce the NRW percentage in all the schemes of Sri Lanka. Still, we don't have any modern techniques to detect the leakages and find illegal connections. With the modern high technology used in Japan, we are expecting to collect the experience of your executives and get idea on how to apply them in to our country.

Further, I am involving in water sector more than 17 years in planning, designing, constructing, operating maintaining of water supply scheme. As a participant, I really wanted to know, how the Japanese water sector is running, how you are facing challenges, how you are finding solutions, what technology you are using, how to select them to appropriate work, what are the techniques used to reduce NRW. How leakages are monitoring and how you are attending the with a limited time, what are your KPIs other than us. I really liked to get your experience and apply them to my district, my province and also my country.



NATIONAL WATER SUPPLY AND DRAINAGE BOARD WATER QUALITY SUMMARY REPORT FOR SCHEMES - CLEAR WATER TANKS REGION: POLONNARUWA MONTH OF AUGUST 2023

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Attachment 2 Administration and Management of Water Supply (B) Inception Report Presentation

- 1. Country : Sri Lanka
- 2. Name : G. Ranjana Amarasinghe
- 3. Position : Regional Manager
- 4. Organization : National Water Supply & Drainage Board

1. Outline of Water Supply Services of your Organization

National Water supply & Drainage Board (NWS&DB) is the sole water supply organization which is operating under Ministry of Water Supply and Infrastructure development of Sri Lanka.





Vision

"To be the most prestigious utility organization in Sri Lanka, through technological and service excellence"

Mission

"Serve the nation by providing sustainable water and sanitation solutions, ensuring total user satisfaction"

Main functions of NWS&DB

The main functions of NWSDB are

- Operation and maintenance of water supply and sewerage schemes,
- Implementation of new urban and rural water supply projects,
- Carrying out sector planning, feasibility studies,
- Planning and design of water structures, Water Treatment plants and water supply schemes,
- Policy planning, corporate services,
- Development activities,
- Technical support for the improvements of rural WSS.

Water Supply Coverage - Sri Lanka

NWSDB is operating 334 water supply schemes in Sri Lanka by covering more than 50% of safe drinking pipe born water coverage.

Area	: 65610 km ²
Population	: 22.16 Mn Habitants
No. of connections	: 3,011,069
Coverage Water Supply	: 53 %
Monthly quantity sold	: 48.65 Mn Cum
Monthly billing with VAT	: Rs. 7012.98 Mn
Monthly collection with VAT	: Rs. 6538.86 Mn
Average Consumption	: 16.2 Cum
Debt age (With/Without CM)	: 0.5/1.65

Existing Water coverage - Polonnaruwa district - Sri Lanka



Water Supply Service level of Polonnaruwa district

INDICATORS	2006	2016	2023	Goals for 2025
Staff/1,000 connections	5.41	3.66	3.4	2.9
Production capacity (m3/day)	8750	35,000	44,000	58,500
Water quality	None	WHO Guidelines	WHO Guidelines	WHO Guidelines
Coverage area	9.3%	32 %	51 %	64 %
Supply duration (hr/day)	12	24	24	24
Supply pressure	1.5 bar	2.5 bars	3- 5 bars	3- 5 bars
Number of connections	8862	33275	60735	70000
NRW	38%	30%	17%	15%
Collection ratio	70%	89.8%	92 %	99.9%
Staff number	45	125	204	203

COLLECTION - 2023 (TARGET & ACTUAL) - POLONNARUWA



Income & Expenditure of Polonnaruwa district





2. Success Story of your Water Supply Services

Many activities had planned to make improvements to the water supply facilities of the district. The following activities were very successful and many benefits gained.

NRW Reduction campaign (Illegal connection monitoring)

Leak detection programme (Leak survey/ day & night)

Defective meters monitoring programme (Periodical)

On-line billing (E mail/ SMS)

Mobile campaign for new connection programme

Energy saving programmes (Solar panel Installation)

Implementation of WSP for whole schemes

3. Recent Challenges to Improvement of Water Supply Services

- Water level fluctuation in main intakes
 - July October (Drought situation)
 - From December (Flood situation)
- Water extraction issues
 - From Irrigation tanks (with farmers protest)
- Low cost Water Treatment systems
- Issues on catering demand and implementation of new WSS
 - Funding issues
- Water purification issues with Slow Sand Filters

Drought situations



Flood situations



12.08.2023



02.11.2023

28.12.2023



4. Expectations toward the Program My expectation toward this program

- Collect the water supply experience in Japan and adopt to Sri Lanka in suitable way as per the requirements.
- Find the solutions for the present issues of WSS in Sri Lanka by knowledge sharing.
- Study the modern water Treatment systems
- Find the ideas for implementation of water policy in Sri Lanka.
- Collect the data for the management of NRW.
- Find the best way of implementation of WSPs in WSSs.
- Leak monitoring and repairing systems
- Consumer handling and treatments

- Identify the best Water Treatment system for existing WSS
- NRW management and maintaining system
- Implementation of Water safety Plan in best manner
- Get the water supply experience from Japan water utilities and implement as per the suitable
- Knowledge sharing and implementation of best ideas

Thank you!

7. TANZANIA

<u>Tanzania</u>

Inception Report

Country: Tanzania

Name: Hassan Khamis Hassan

1. Outline of Water Supply Services

1-1. Legal Basis of Water Supply Services.

The Act. no 4 of 2006 of Zanzibar Water Authority as Legal Basis Water Supply Services in Zanzibar.

1-2. Demarcation of Water Supply Services.

Unguja and Pemba Islands are Demarcation of Water Supply Services in Zanzibar and Ministry of Water, Energy and Minerals is in charge of field of water.

1-3. Main Actor of Water Supply Utilities.

The main Actor of Water Supply Utility is Zanzibar Water Authority (ZAWA) which is a government utility for serving water to the community in Zanzibar.

1-4. Mission/Vision of Water Supply Utilities.

• Mission of ZAWA is "To support socio-economic development through provision of accessible, affordable and quality water services in a modern, sustainable and environmentally friendly manner within Zanzibar".

• Vision of ZAWA is "To become a leading water service provider in the region that addresses socio-economic needs of the society for sustainable development."

1-5. Your Mission/Vision in your organization

• Mission of organization is "To support socio-economic development through provision of accessible, affordable and quality water services in a modern, sustainable and environmentally friendly manner within Zanzibar".

• Vision of organization is "To become a leading water service provider in the region that addresses socio-economic needs of the society for sustainable development."

2. Water Supply Service Levels

2-1. Main Performance Indicators (PI)

Coverage area	2,580km ²	
Population Served	Around 988,334 People	
Collection ratio	An average of 50%.	
Production capacity	An average of 143,404,735 litre/day	
Supply duration	In Urban area an average of 14 hr/day and in Rural area 24hr/day.	
Supply pressure	Around 2bar – 10bar	
Non-Revenue Water	Around 35%	
Water quality	An average compliance to water quality from 80% for bacteriological and 91% for physical and chemical quality.	
Staff number	509	
Number of connections	128,850	
Staff/1,000 connections	-	

2-2. Any Monitoring by Performance Indicators (PI)

No, there is no any Monitoring by Performance Indicators (PI).

3. Management of Water Quality

3-1. Current Situation and Major Challenges/Problems.

The current situation of water quality whereby ZAWA has, is an average compliance to water quality from 80% for bacteriological and 91% for physical and chemical quality as indicated in the *Five Years Rolling Strategic Plan* 2020 - 2025 and major Challenges/Problems facing are Modern equipment to get data in a very quick and budget itself.

3-2. Current Actions against Those Challenges/Problems

The current actions against those challenges, ZAWA has already started the

implementation of the rehabilitation of the laboratory room and procured some

reactions through the support of (Centre for Disease Control American Society for

Microbiology (CDC and ASM) as a stockholder of water quality. Furthermore, it needs

the financial budget for the construction of new modern laboratory.

3-3. Any Achievements.

Among achievements whereby ZAWA started to get is implementation of the

rehabilitation of the laboratory room and procured some reactions through

the aid of CES as a stockholder of water quality.

3-4. Water Quality Standards for Drinking Water.

ZAWA use Zanzibar Bureau of Stands (ZBS) having number ZNS 57:2015 for a Quality Standards for Drinking Water.

3-5. Monitoring System or Plans for Safety of Drinking Water in Your

Organization / Regulatory Body / Independent Institution / Others.

ZAWA use its Work Plan which is planed within it is budget to monitor

drinking water monthly.

3-6. Implementation of Water Safety Plans or Similar Efforts.

ZAWA as an organization government for providing Safe and Clean water to the community, make an effort to make sure that the community receive the appropriate clean and safe water plans by constructing the new project such Exim Bank India and IMF Covid Funds Project.

4. Reduction of Non-Revenue Water

4-1. Current Situation and Major Challenges/Problems

The major means that ZAWA use as an effort in the reduction of current of NRW is to replace the old network water pipe infrastructure such as AC pipe in order to reduce the NRW.

The major challenge is *Financial Capacity (Budget)* of the replacement of the old network water pipe infrastructure.

4-2. Current Actions against Those Challenges/Problems.

ZAWA has started to replace some old network pipe infrastructure such as Michenzani Block No. 6.

4-3. Any Achievements

The achievement of this action is the improvement of water supply to the community for the area in which the old network water pipe infrastructure replaced.

Authorized consumption	Revenuewater	Billed authorized consumption	91%
	Non-RevenueWater	Unbilled authorized	
	(NRW)	consumption	9%
		(ex. firefighting, cleaning)	270
Water losses		Apparent losses	
		(Unauthorized	
		consumption (i.e., Illegal	30%
		use), Customer metering	
		inaccuracies)	
		Physical losses	
		(Leakage)	31%

4-4. Constitution of NRW (If you have the data, please fill in the table)

4-4. Situations about Leakage Detection Measures (DMA etc.)

Unfortunately, there is no leakage detection measure. Instead ZAWA use the information in which people send to the responsible department (Technical Operation Department).

Moreover, ZAWA has already established the app called *zawa kidigitali* which will assist to get the information of leakage etc. in easy way and take an action of fixing the leakage within short time.

.....

5. Accounting system of Water Supply Service

5-1. Water Tariff in your Organization

Based on the Water **Act. No. 4 of 2006** Under Section **31(1)** ZAWA Water Tariff are divided as shown below: -

METERED TARIFF CHARGES			
Customer Category	Blook (m ³)	Tariff (Tsh. / m²)	
Water Kiosks / Standpipes /Domestic connections	0-8 m ⁺ per month	667.45	
Domestic	8>12 m ¹	821,48	
	12>15 m ³	1.026.45	
	15>17 m ¹	1,232.22	
	>17 m ^s	1,540,28	

Water Tariffs of Zanzibar Water Authority (ZAWA)

SCHEDULE 1

SCHEDULE 2 METERED TARIFF CHARGES

Customer Category	Blook (m ²)	Tariff (Tsh. / m ³)
	0-15 m ³	924.17
	15>30 m*	1,026.85
Institutional	31>50 m ³	1,129,54
	50>100 m ¹	1,232.22
	100>250 m ³	1,437.60
	250>500 m ³	1,642,97
	500>1000 m ³	1,951.02
	>1,000 m ³	2,259.08

Customer Category	Blook (m ¹)	Tariff (Tsh. / m²)
	0-15 m ¹	821.48
	15>30 m ³	924.17
	31≥50 m ³	1.062.85
Commercial? Industrial	50>100 m ⁴	1,212.22
	100>250 m ⁴	1,437,60
	250>\$00 m ³	1.642.97
	500>1000 m*	1,951.02
	>1,000 m ¹	2.259.08

SCHEDULE 3 METERED TARIFF CHARGES

SCHEDULE 4 METERED TARIFF CHARGES

Customer Category	Blook (m ³)	Tariff (Tsh. / m3)
	0-15 m*	1,129,54
Guest Houses	15>30 m ³	1,437.60
	31>50 m ³	1,848.34
Hotels	50>100 m*	3,080.56
	100>250 m ³	4,107.42
	250>500 m ⁴	5,647.70
	500-1000 m ²	6,161.12
	>1,000 m ⁴	7,167.98

SCHEDULE 5

		C. C.
METERED	TARIFF	CHARGES

Customer Category	Blook (m ³)	Tariff (Ish. / m ³)
Agriculture	0-50 m ¹	718.80
	50>200 m ³	872.83
	>200 m ³	1.026.85

Customer Category	Descripti categ	on of the ary	Tsh. per month
Water Klosks / Standpipes	-		
Domestic	82		6.000.00
Institution / department	Less than 5	0 staffs	20,000.00
	>50<100 st	afīs	\$0,000.00
	>100 staffs		200.000.00
	Community NGOs	and religious	3,000.00
Industrial / commercial	Guest houses	0 to 10 rooms	20.000.00
		>10<20 rooms	40,000.00
		>20 rooms	75,000.00
	Hotels	Grade B	500,000.00
		Grade A	700.000.00
		1 Star	2,000,000.00
		2-3 Star	3.000,000.00
		4-5 Stars	5,000,000.00
	Restaurant	Restaurant/bakery	
	Building co	Building constructor	
	Small scale	Small scale industry	
	Patrol stati	0th	20.000.00
	Car wash s	Car wash station	
Agriculture	Small scale		20,000.00
	Medium se	ale	90.000.00
	Large scale		150,000,00

SCHEDULE 6 FLAT RATE WATER FEES

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Category of service	Description	Tariff (Ish. / m ²)
	Pipe size of 14," - 14,"	46,000.00
Water connection fee-	Pipe size of 1" - 11/3"	\$6,000.00
	Pipe size of 2"or more	126,000.00
Water application form	All applicant	2.000.00
Water registration fee	All customer	2,000.00
Water reconnection fee	All customer	10,000.00
Application for change of costomer name	All applicant.	10.000.00
Application of a license for construction of well	Dritler	500,000.00
	Other well digger	100,000.00
Well registration fee	All category	50,000.00
Well owner construction permit fee	Domestic	20,000.00
Recommenders	Other category	30,000.00
Service charge for metered customer	size of water meter $\mathcal{V}_{i} = \mathcal{V}_{i}^{\alpha}$	1,000 per month
-	1"-14,"	1,200.00
	2" - 3"	2,500.00
The second se	4" and above	4.000.00

1	SCHEDULE 7
SF	BVICE CHADCES

309

310

SCHEDULE 8 0THER CHARGES

Item .	Description	Tsh.
Well water abstraction remain	Domestic	\$0.000.00 per year
fee	Industrial/commercial/ agriculture	500,000,00 per year
Renewal of license	Driller	500.000.00 per year
well	Other well digger	100.000.00

5-2. Balance Sheet of your Organization

Unfortunately, ZAWA is Service Organization and it provides the service according to **Act. No. 4 of 2006** whereby there is no balance sheet so far. Although, the water regulations are in improvement to make ZAWA as business organization.

5-3. Profit and Loss Statement of your Organization.

Unfortunately, ZAWA is Service Organization and it provides the service according to **Act. No. 4 of 2006,** therefore there is no Profit and Loss Statement in Organization.

6. Major Recent Achievements in Improvement of Water SupplyServices/Management

ZAWA as a main Water Supply Services in Zanzibar, the major recent achievements in Improving Water Supply Services by construction of the water storage tanks (**25** tanks) having storage water capacity of **144,000,000** liters.

Furthermore; another major recent achievement in Improvement of Water Supply Services is laying of the transmission and distribution network of **705**km.

7. Recent Challenges to Improve Water Supply Services

The most and recent challenges to improve water supply services which faces in ZAWA is the constructions of the new road projects which are going on in Zanzibar Regions by damaging the existing and new pipes whereby ZAWA has no budget.

8. Expectations toward Japan

8-1 Expectations toward Japanese Government and JICA.

The expectations toward Japanese Government and JICA in this cause is gaining the knowledge of new technology that Japanese Government and JICA use to supply water services to the community.

8-2. Expectations toward Japanese Water Utilities.

The expectations toward Japanese Water Utilities are gaining the knowledge of new technology that Japanese Water Utilities use to supply water services to the community, increasing the revenue etc.

8-3. Expectations toward Japanese Private Companies

The expectations toward Japanese Water Utilities are gaining the knowledge of new technology that Japanese Water Utilities use to supply water services to the community, increasing the revenue etc.

9. Expectations toward the Program.

9-1. Expectations of your supervisors toward your participation in the program.

Expectations of my supervisors toward my participation in the program is gaining knowledge of new technology that Japan use to supply water services to the community through different area in the water services especially in supplying of water services.

9-2. Your expectation; Any comments and requests are appreciated. My expectation in this requests that I do appreciate is learning the new technology that the Japanese Government and JICA has, so that ZAWA will achieve their goals.

END.



- **2. Name: HASSAN KHAMIS HASSAN**
- **3. Position: TECHNICAL AND OPERATION DIRECTOR**
- **4. Organization: ZANZIBAR WATER AUTHORITY**

Introduction

- The Zanzibar Water Authority (ZAWA) was established by the Water *Act No. 4 of 2006* as a follow-up to the recommendations of the Zanzibar National Water Policy of 2004, giving the Authority to manage water resources and the provision of clean, reliable and quality water services for Zanzibar.
- ZAWA is responsible to provides water supply services to both Islands (Unguja and Pemba) with estimated population 1,889,773 (2022 census).
- Water demands 264,568,220 l/day.

Zanzibar Location and Population



Zanzibar \Rightarrow Unguja & Pemba About 50 Smaller Islets.

3

4

Capital: Zanzibar Town

Total Area : 2,580 km² Unguja : 1,600 km²

Pemba : 980 km²

Population: 1,889,773 (2022 Census).

Location : 5 – 6°S Of Equator 40 km East Coast Of Africa

Water Supply Services

The principal source of water supply in Zanzibar is groundwater, which is found in various places under differing aquifer conditions, amongst which are:-

Natural springs,

Boreholes and

Caves.

Exploitation has been through drilled boreholes and hand dug wells.

Currently, there are 408 operational boreholes 245 - Unguja and

5

6

163 - Pemba.

5 main springs

2 - Unguja and

3 - Pemba.

3 main caves in Unguja.

Water Supply Services...

Whole Country:

Water

Sources

in

Zanzibar

Area : 2,580km² [Unguja - 1,600 km² and Pemba - 980 km²].
Population : 1,889,773 ¹ Habitants
Coverage Water Supply: ≈85% for Financial year 2023/2024
after completion of the Project [Exim India & IMF Covid-19
Projects].

Water Supply System/City:

Service Area : ≈ **1,573** km² out of **2,580** km²

Population Served: About **1,152,762** people out of **1,889,773** people.

Current Situations of Water Supply Services – Water Production Due to the increasing Population (*Census 2022*)

Currently; ZAWA managed to offer water services to the community by **61%** with the gap of **39%**.

WATE	WATER PRODUCTION DUE TO THE INCREASING POPULATION (CENSUS 2022)					
Regions	Total water Production (lpd) in 2023	Estimated Water Demand (lpd) due to the census 2022	Water Production in (%)	Deficit in Demand (lpd) due to the census 2022	Deficit Demand in (%) due to the census 2022	
Urban West	57,928,880	125,043,660	46%	67,114,780	54%	
North - Unguja	24,323,500	36,020,600	68%	11,697,100	32%	
South - Unguja	17,310,348	27,422,220	63%	10,111,872	37%	
North - Pemba	20,336,467	38,092,740	53%	17,756,273	47%	
South - Pemba	28,660,800	37,989,000	75%	9,328,200	25%	
Total	148,559,995	264,568,220	61%	116,008,225	39%	

Water Supply Services of ZAWA

INDICATORS	2021/2022	2023/2024	Target by 2025
Staff/1,000 connections	-	-	
Production capacity (liter/day)	143,404,735	148,559,995	345,388,735
Water quality	WHO, ZBS &TBS Guidelines	WHO, ZBS &TBS Guidelines	WHO, ZBS &TBS Guidelines
Coverage area	≈ 55%	≈ 85%	95%
Supply duration (hr/day)	14	24	24
Supply pressure	2 bar	≈ 2.5 bars	≈ 2.5 bars
Number of connections	110,000	128,850	168,850
NRW	60%	≈40%	≈30%
Collection ratio	≈40%	50%	80%
Staff number	445	525	1644

Completed ZAWA Strategic Projects

• Currently Success Story of Water Supply in Zanzibar.

IMF Covid-19 Project

The Project is completed on **December**, **2023** and about **96** Shehia/Wadi benefited.

On Going ZAWA Strategic Projects

Exim India Project -- Expectation to be Completed by *March* **2024** for *all Schemes*.

Furthermore; other Schemes such *Dimani Scheme*, *Masingini Scheme and Dole Scheme* are completed and the beneficiaries started to get the water services. About **13** Shehia/Wadi are getting water services from this project out of **36** Shehia/Wadi as a scope of the Project. Other schemes are continue.

On Coing ZAWA				
Strategic Projects	BORI	CHOLES	WATER PRODUCTION (1/h)	WATER PRODUCTION (1/d)
	BOREHOLES - EXIM INDIA PROJECT	64	7,393,000	177,432,000
The completion of two ongoing projects the water production will be increase from	BOREHOLES – IMF COVID -19 PROJECT	38	1,023,000	24,552,000
143,404,735 l/d to	EXISTING BOREHOLES	308	5,975,197	143,404,735
o ro,oco, roo ya.	TOTAL	410	14,391,197	345,388,735
Moreover weter			NUMBERS OF TANK	S TOTAL CAPACITY (LTR
storage capacity	EXIM BANK IND PROJECT	A	15	134,000,000
will be increased	IMF COVID-19 PROJECT		10	10,000,000
46,915,000 litre	EXISTING TANK	s	64	46,915,000
to 190,915,000	TOTAL TANKS CAPACITY		89	190,915,000
litre.				

EXISTING+EXIM TANKS+COVID TANKS CAPACITY (ltr)

123

190,915,000

9

Typical Example of Completed Schemes



Recent Challenges to Improve water Supply Services in Zanzibar



Challenges ...

Nam.	Challenges	Steps to be taken to Solve the Challenges
1	High Operation Cost about Tzs 600 Millions/month (about 308 Boreholes).	To introduce an alternative source of energy (Solar, etc.). Stages of negotiations with some solar installation companies are ongoing (SCAN Group of Companies and NEC)
2	Power fluctuation	To install the electrical components which will protect the pumps such as Stabilizer.
3	Non Revenue Water	To install smart meter and to introduce Integrated Water Management System – for Year of The Budget 2023/2024.
4	Old water networks	Replacements of old water networks.
5	Insufficient of water storage tanks	To constructs the efficient water storage tanks.
6	Less responsive to pay for water service	To Continue awareness to encourage the people to pay water service
7	Insufficient of professionals and experts.	To Continue to recruits for the required professionals.

13

Expectation toward this program

To get knowledge of new technology that used to supply water services to the community through different area in the water services especially in supplying of water services

- To get knowledge on how ZAWA will increasing the revenue Collections.
- * To Learn new technology so that ZAWA will achieve their goals.



8. UGANDA

<u>Uganda</u>

Inception Report

Country: UGANDA Name: ATUHWERA LOVELINE

1. Outline of Water Supply Services

1-1. Legal Basis of Water Supply Services

Water Act 1995 chapter 317, THE NATIONAL WATER AND SEWERAGE CORPORATION ACT

1-2. Demarcation of Water Supply Services

Ministry of Water and Environment

1-3. Main Actor of Water Supply Utilities

National water and Sewerage corporation

1-4. Mission/Vision of Water Supply Utilities

To promote and ensure the rationale and sustainable utilization, development and effective management of water and environment resources for social economic development of the country

1-5. Your Mission/Vision in your organization

To sustainably and equitably provide cost effective, quality water and sewerage services while conserving the environment and enhancing stakeholder trust

2. Water Supply Service Levels

2-1. Main Performance Indicators (PI)

Coverage area	4605 (sq. km)
Population Served	2193
Collection ratio	70(%)
Production capacity	5000(m3/day)
Supply duration	3600(m3/day)
Supply pressure	10
Non-Revenue Water	28(%)
Water quality	
Staff number	38
Number of connections	2193

Staff/1,000 connections	17.3 (people/1,000connections)
,	

2-2. Any Monitoring by Performance Indicators (PI)

This is based on productivity level per month and daily individual accountability results

3. Management of Water Quality

3-1. Current Situation and Major Challenges/Problems

Customers adopted to quality of water supplied given the location and the water source

Challenges

- Physical chemical characteristics: Color is above the WHO standard 15 PtCo
- Turbidity High -Above 5 NTU
- Inefficiency of chemical dozers
- Water level fluctuations from the sources
- Surface water runoffs
- 3-2. Current Actions against Those Challenges/Problems
- Continuous engagement of Management to provide dozers fit the purpose
- Regular laboratory experiment tests on chemical dozing Jar Test and chlorine demand test
- Protecting the obstruction points by constructing artificial wetlands and terraces

3-3. Any Achievements

- Reduction of Turbidity levels from 20 NTU to 7 NTU
- Reduction for the color from200 PtCo to 70 PtCo
- Achievement of the zero Fecal coliforms in final water supplied to Public
- Reduced the level of contamination at the abstraction source with wetland acting as a natural filter
- Sludge management disposal to the environment thus complying with recommended standards

3-4. Water Quality Standards for Drinking Water

Physical requirements

i)Colour (TCU* max)1550ISOii)Turbidity (NTU max)525ISOiii)pH6.5 - 8.55.5-9.5ISOiv)TasteNot objectionableNot objectionableNot objectionablev)OdourOdourlessOdourlessOdourlessvi)Conductivity (uS/cm/max15002500ISO	SI. No.	Characteristic	Treated potable water	Natural potable water	Method of test
III) Turbidity (NTU max) 5 25 ISO III) pH 6.5 – 8.5 5.5-9.5 ISO IV) Taste Not objectionable Not objectionable ISO V) Odour Odourless Odourless ISO VI) Conductivity (uS/cm/max 1500 2500 ISO	ŋ	Colour (TCU ^a max)	15	50	ISO 7887
iii) pH 6.5 - 8.5 5.5-9.5 ISC iv) Taste Not objectionable Not objectionable Not objectionable v) Odour Odourless Odourless Odourless ISC vi) Conductivity (uS/cm/max 1500 2500 ISC	li)	Turbidity (NTU max)	5	25	ISO 7027
IV) Taste Not objectionable Not objectionable V) Odour Odourless Odourless Vi) Conductivity (uS/cm/max 1500 2500 IS0	iii)	рН	6.5 - 8.5	5.5-9.5	ISO 10523
v) Odour Odourless Odourless vi) Conductivity (uS/cm)max 1500 2500 IS0	iv)	Taste	Not objectionable	Not objectionable	
vi) Conductivity 1500 2500 ISo (uS/cm)max	v)	Odour	Odourless	Odourless	-
	vi)	Conductivity (µS/cm)max	1500	2500	ISO 7888
vii) Suspended matter Not detectable Not detectable ISC	vii)	Suspended matter	Not detectable	Not detectable	ISO 11923

Chemical Characteristics

SI. No.	Substance or characteristic	Treated potable water (mg/L max.)	Natural potable water (mg/L max.)	Method of test
9	Total dissolved solids	700	1500	ASTM D 5907
ii):	Total hardness, as CaCO ₃ ,	300	600	ISO 6059
iii)	Aluminium, as Al***,	0.2	0.2	ISO 12020
iv)	Chloride, as Cl	250	250	ISO 9297
v)	Total Iron as Fe	0.3	0.3	ISO 6332
vi)	Sodium, as Na ⁺	200	200	ISO 9964-1
vii)	Sulphate SO ₄	400	400	ISO 22743

Microbiological

SI. No.	Type of micro-organism	Potable water	Method of test
i)	Total viable counts at 22 °C, in mL, max. a)	100	
	Total viable counts at 37 °C, in mL, max. ^{aj}	50	ISO 6222
ii)	Total Coliforms b) in 100 mL	Absent	ISO 4832
iii)	E. coll ^{b)} in 100 mL	Absent	ISO 9308-1
iv)	Staphylococcus aureus in 100 mL	Absent	ISO 6888-1
V)	Sulphite reducing anaerobes in100 mL	Absent	ISO 6461-2
vi)	Pseudomonas aeruginosa fluorescence in 100 mL	Absent	ISO 16266
vii)	Streptococcus faecalis in 100mL	Absent	ISO 7899-2
viii)	Shigella in 100 mL	absent	ISO 21567
ix)	Salmonella in 100 mL	Absent	ISO 6785

^b During the bacteriological quality control for different types of water supply, refer to Annex A.

3-5. Monitoring System or Plans for Safety of Drinking Water in Your Organization /

Regulatory Body / Independent Institution /Others

Refer to Power Point attached

3-6. Implementation of Water Safety Plans* or Similar Efforts

(* Water Safety Plans: refer to the following URL and review before participating in the Course, the Chapter 4 "Water Safety Plans" of the "Guidelines for drinking-water quality, third edition"

URL: http://www.who.int/water_sanitation_health/dwq/gdwq3_4.pdf)

4. Reduction of Non-Revenue Water

4-1. Current Situation and Major Challenges/Problems

Non-Revenue water stands at 14% in Kiruhura District Vs the target of 10%

Challenges

- Illegal water use
- Leakages and Bursts
- Long distances as Minor losses in the Pipe line
- Defective Meters
- Unfunctional district Metered Areas
- Misuse of Fire hydrants
- Aged Pipes (Galvanized Iron)
- Poor Quality fittings

4-2. Current Actions against Those Challenges/Problems

- Utilization of Monitoring tools like Mapkit,customer Relationship management
- Illegal Monitoring team squad deployment
- Informants are deployed in different trading centers to report any waters leaking or outbursts
- Regularly replacement of defective/aged meters
- Mobile clinics for meter servicing to improve meter efficiency
- Metering all fire hydrants so as to quantify water loss
- Replacement of GI pipes with high density polyethylene pipes (HDPE)

4-3. Any Achievements

- Reduction of NRW from 20% to 14% with 10% target
- Improvement of meter efficiency and consequently improving water sales, Billing and Revenue collection
- Reduction of Illegal water user in the district
- Improved working environments for Key stakeholders and customers/end users

Authorized	Revenue	Billed authorized	
consumption	water	consumption	(m3 /year)
			80(%)
	Non-Revenue	Unbilled authorized	
	Water (NRW)	consumption	(m3 /year)
		(ex. firefighting, cleaning)	10(%)
Water losses		Apparent losses	
		(Unauthorized	(m3 /year)
		consumption (i.e., Illegal	2(%)
		use), Customer metering	
		inaccuracies)	
		Physical losses	
		(Leakage)	(m3 /year)
			2(%)

4-4. Constitution of NRW (If you have the data, please fill in the table)

4-4. Situations about Leakage Detection Measures (DMA etc.)

All DMA are currently efficient and are being Monitored

5. Accounting system of Water Supply Service

5-1. Water Tariff in your Organization

- Public stand Pipe (PSP)
- Domestic
- Commercial
- Institutions
- 5-2. Balance Sheet of your Organization
- 5-3. Profit and Loss Statement of your Organization

(*[Public Utilities] (1) Profit and Loss Account

Profit(loss) for the year Ugx: 47,789,165,000/=

(2) Capital Income and Expenditures of your Organization)

Capital Income -Ugx:46,818,731,000/=

Expenditure -Ugx: 354,377,299,000/=

Reference as at 30th June 2021 global NWSC

6. Major Recent Achievements in Improvement of Water Supply

Services/Management

With increment in demand, NWSC constructed a new water treatment plant that serves two districts .

7. Recent Challenges to Improve Water Supply Services

Power outages due to climate change

Operating costs on generators have increased, it's not cost effective

8. Expectations toward Japan

- 8-1. Expectations toward Japanese Government and JICA
- Exposure and Networking
- Raising challenges at hand and coming up with possible solutions to improve Ugandan Government
- Introduced to Systems peculiar in Managing challenges and apply them in Uganda

8-2. Expectations toward Japanese Water Utilities

- Treatment Process from the intake to the final end user
- Different water supply sources and management
- How to cub Non-Revenue Water Monster and systems in Place .
- Improvement of Water Quality Standards
- Like to like understanding of water sources in Japan and Uganda
- Management of Public Utilities in Japan
- 8-3. Expectations toward Japanese Private Companies

Understanding the coordination between private and public sectors in service delivery to

the people of Japan

9. Expectations toward the Program.

- 9-1. Expectations of your supervisors toward your participation in the program.
 - Improvement in service delivery
 - Empowering Management skills and knowledge to better performance

9-2. Your expectation; Any comments and requests are appreciated.

• Personal growth and career development

END.

Administration and Management of Water Supply Services (B) Inception Report Presentation

- 1. Country: Uganda
- 2. Name: Atuhwera Loveline
- 3. Position: Area Manager
- 4. Organization: National Water And Sewerage Corporation (NWSC)

Inception Report Presentation

Each applicant is kindly requested to make presentation of Inception Report (M/S Power Point file with <u>less than</u> <u>15 slides</u>) which cover the following 7 topics about the individual water supply company/public water supply authority to which the participant belongs.

Presentation time: 15 minutes including Q/A

3 topics:

- Outline of Water Supply Services of your Organization
- 2. Success Story of your Water Supply Services
- 3. Recent Challenges to Improvement of Water Supply Services

2
1. Outline of Water Supply Services of your Organization

The NWSC was established In 1972 with operations in 3Towns of Kampala, Jinja and Entebbe. Over years, we have expanded our geographical coverage to reach more Ugandans.

By 2013,the corporation was operating in 27 Towns. The period of 2013 to 2023, a rapid growth witnessed from 27 to 273Towns

The corporation planned to grow the customer base from 584210 to 770340 by June 2021 with actual growth of 33%

Whole Country:					
Area :	241,551 km ²				
Population :	32.9 million Habitants				
Coverage Water Supply: 71 % ~29% Under Government and development partners					
Your Water Supply System/City:					
Service Area : 4,605 km ²					
Population Serve	ed: 17,508 million/ thousand				

3

1. Outline of Water Supply Services of your Organization

INDICATORS	2006 or 2007	2016 or 2017	Goals for 2025
Staff/1,000 connections	0	38	20
Production capacity (m3/day)	65,000	49.4667	5049
Water quality	None	WHO Guidelines	WHO Guidelines
Coverage area	%	70%	100%
Supply duration (hr/day)	0	16	24
Supply pressure	0.2 bar	2.5 bars	2.5 bars
Number of connections	0	525	17508
NRW		10%	11%
Collection ratio			
Staff number		18	24

2. Success Story of your Water Supply Services

The corporation extended services data tabled

A 1973 I DOLLAR A REAL PROPERTY OF A 1979 A 1970		and the second se	and the second second		
Water Services					
Number of Towns (Nos)	25.5	256.	255	202	2/3
Water Service Coverage (%)	64	- 34	50	64	84
Water Production (Million m3)	135	136	1.44	165	170.781
Water supply (William m3)	451	135	1,97	158	181.559
Water Sales (Million m3)	90	87	90	102	105.155
Non Reseaue Water Cal	29%	3566	3500	35%	35.76
New Water Connections (New.)	69215	51,521	52,012	54,697	20.591
Connections taken over with New Toware	2.679	3,328	-	10.017	2,501
Total Water Connections (Nos.)	659,157	724 006	775 794	840,508	8 03,600
New Public Stand Pipes (Non.)	3,556	4,429	3,795	2,141	2,008
Total Public Stand PipesiNos J	17.188	21.600	24.857	28,858	29,177
New water mains extensions (km)	2,727	2,135	4.39	1,30.5	554
Extensions taken over in New Towns (km)	36.1	28.1	n	-	346
Total vestor pipe network (Kne)	17.623	19.974	20,496	21.794	22,591
Servertally Sevential	-				-
Severage Service coverage (%)	42	23	2	23	23
New Sever Connection (Nos)	368	277	214	575	237
Total Sever Connections (Nos.)	22,656	23,914	25,180	28,0107	28,703
New Sewer extensions (km)	59	30	23	36	17
Total Sever Extensions (Km)	551	693	715	744	762
Weterschaft Property and Co.		-			
Turnover (Billion) - (UShe) (Net VA1)	442	46.5	461	519	543
Billing (Billion) - (USha J. VAT Inc.	437	424	430	457	540
Cohections (Billion) - (UShs) - VAT Inc	457	381	435	40.9	492
Collection Efficiency [%]	150.96	92%	10196	969%	9194
Dubt Age (Months)	23	3.6	3,3	A.C.	27
EBITDA (Billion) - (UShs.)	50	103	105	251	
Staff Number (Nos.)	3,778.	4,082	4,244	4.467	4.600
Stall Departments in Mon. 1	6	6		5	5

5

Success Story cont'

 In Kiruhura District, Year 2006 the only water source was borehole water with average production capacity of 27m3/hr. Currently improved supply using surface waters from lake Kacheera to 5 Million liters/day
Billing in the District increased from average 16Million FY2006/2007 to 102 Million FY 2022/2023

3. Recent Challenges to Improvement of Water Supply Services

Non Revenue water stands at 35% Globally. And in

Kiruhura district it ranges from 15-10%

- Climate change that affects underground water sources
- Misuse of authorized draw off points (Fire hydrants) by police and unauthorized persons
- Illegal water use by unauthorized users
- Water quality: Contamination level is high due to surface runoff that constitutes a lot of animal waste making it costly to treat case in point: Lyantonde/Kiruhura plants.
- Alternative water sources: People opt to utilizing rain water especially during winter season for both domestic and animal use





4. Expectations toward the Program

Your expectation toward this program

- Understanding and comparing different water sources and how best Japanese utilize the available water to ensure every resident is on supply
- Modernized technologies applied in water Management and administration
- Attaining vast experience in best practical measures to deploy in reduction of Non Revenue Water Monster(NRW)
- Networking and implementing Knowledge acquired grow business and ensure Ugandans are served better

Expectations toward the Program

Expectation of your superior toward this program

Best NRW practices to deploy in reduction of NRW

- To ensure a positive return investment through
- Water sales and Billing growth.
- Discussing with Management and NRW committee on Areas of improvement having attained the training

Thank you



Q & A Session

10

出典: 2023 年度 JICA 課題別研修「水道管理行政及び水道事業経営(B)」カントリーレポート

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発行日 2024年3月1日



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