APPENDIX – H

PROJECT EVALUATION FOR MASTER PLAN

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H.1 Calculation Sheet of Operation and Maintenance Cost Estimation

Operation and Maintenance Cost (Master Plan)

(Cost in USD, Price Level of March 2009)

	[A] Total Treatment Cpacity (m3/day)	[B] NRW Ratio	[C] Annual Revenue Water (m3/year)	O&M Cost (USD/year)							[K] O&M cost per revenue water (USD/m3)
				[D] Personnel	[E] Electricity	[F] Chemical	[G] Spareparts	[H] Staff Training	[I] Others	[J] Total	
2009	7,000	60%	851,667	0 (0%)	165,669 (30%)	86,005 (16%)	158,474 (29%)	0 (0%)	135,149 (25%)	545,297 (SDG1,205,106)	0.64 (SDG1.41)
2012	14,000	52%	2,044,000	630,407 (40%)	462,998 (29%)	172,010 (11%)	106,540 (7%)	63,041 (4%)	143,500 (9%)	1,578,495 (SDG3,488,473)	0.77 (SDG1.70)
2015	77,000	44%	13,115,667	1,898,986 (28%)	2,696,612 (40%)	946,053 (14%)	421,472 (6%)	189,899 (3%)	615,302 (9%)	6,768,325 (SDG14,957,998)	0.52 (SDG1.15)
2020	174,000	36%	33,872,000	3,995,729 (25%)	6,989,012 (44%)	2,137,835 (14%)	783,079 (5%)	399,573 (3%)	1,430,523 (9%)	15,735,751 (SDG34,776,010)	0.46 (SDG1.02)
2025	237,000	28%	51,903,000	5,749,086 (26%)	9,519,517 (44%)	2,911,878 (13%)	1,066,608 (5%)	574,909 (3%)	1,982,200 (9%)	21,804,198 (SDG48,187,277)	0.42 (SDG0.93)

[B] NRW (Non-Revenue Water) Ratio: Assumed 60% in 2009, 100% - (Physical loss 20% x Revenue collection ratio) for 2012-2025
Revenue collection ratio: 60% (2012), 70% (2015), 80% (2020), 90% (2025)

[C] Annual Revenue Water: [A: Total treatment capacity] / 1.2 (max. daily factor) x (100% - [B: NRW ratio]) x 365

[D] Personnel cost Refere to attached "[D] O&M Cost: Personnel"

[E] Electricity cost Refere to attached "[E] O&M Cost: Electricity"

[F] Chemical cost Refere to attached "[F] O&M Cost: Chemical"

[G] Spareparts cost Refere to attached "[G] O&M Cost: Spare parts"

[H] Staff training 10% of [D: personnel cost] is assumed

[I] Others 10% of total of ([D]+[E]+[F]+[G]+[H])

[K] O&M cost per revenue water [J: Total O&M cost] / [C: annual revenue water]

[D] O&M Cost: Personnel

			Year	2009	2012	2015	2020	2025
[1]	Production Capacity	m3/day	as facility plan	7,000	14,000	73,000	164,000	223,000
[2]	No. House Connection	nos	2009: actual record of UWC (CES) Juba 2012: [population served] / 7.8 persons per family 2025: [population served] / 7.0 persons per family	2,153	2,866	24,410	70,255	116,100
[3]	No. Non-Dom. Connect	nos	2009: actual record of UWC (CES) Juba 2012-2025: assumed annual increase rate of 10%	276	367	488	787	1,268
[4]	No. Public Tap	nos		38	170	299	337	348
[5]	Total Connection	nos	Total of [1]+[2]+[3]+[4]	2,467	3,403	25,197	71,379	117,716
[6]	Staff Efficiency	staff per 1000 connection	2009: calculation [7: staff no.] / [5: connection] 2012-2025: efficiency assumed	68	60	15	10	7
[7]	Est. Total Staff No.	persons	2009: actual number 2012-2025: est. [5: connection] x [6: efficiency] / 1000	167	204	378	714	824
[8]	No of Managers	persons	2009: estimated from organization chart 2012-2025: assumed annual increase rate of 5%	6	7	8	10	13
[9]	No of Chief	persons	2009: estimated from organization chart 2012-2015: assumed annual increase rate of 15% 2016-2025: assumed annual increase rate of 10%	15	23	35	56	90
[10]	No of Staff	persons	2009: estimated from organization chart 2012-2015: assumed annual increase rate of 15% 2016-2025: assumed annual increase rate of 10%	100	152	231	372	599
[11]	No of Workers	persons	2009: estimated from organization chart 2012-2025: [7: total] - ([8]+[9]+[10])	46	22	104	276	122
[12]	Monthly salary (Manager)	SDG/month	2009: average salary estimated 2012-2025: annual growth of 3% is assumed	1200	1310	1430	1660	1920
[13]	Monthly salary (Chief)	SDG/month	2009: average salary estimated 2012-2025: annual growth of 3% is assumed	1000	1090	1190	1380	1600
[14]	Monthly salary (Staff)	SDG/month	2009: average salary estimated 2012-2025: annual growth of 3% is assumed	800	870	960	1110	1290
[15]	Monthly salary (Worker)	SDG/month	2009: average salary estimated 2012-2025: annual growth of 3% is assumed	600	660	720	830	960
[16]	Personnel cost (Manager)	SDG/year	[8] x [11]	86,400	110,040	137,280	199,200	299,520
[17]	Personnel cost (Chief)	SDG/year	[9] x [12]	180,000	300,840	499,800	927,360	1,728,000
[18]	Personnel cost (Staff)	SDG/year	[10] x [13]	960,000	1,586,880	2,661,120	4,955,040	9,272,520
[19]	Personnel cost (Worker)	SDG/year	[11] x [14]	331,200	174,240	898,560	2,748,960	1,405,440
[20]	Personnel cost (Total in SDG)	SDG/year	Total ([16]+[17]+[18]+[19])	1,557,600	2,172,000	4,196,760	8,830,560	12,705,480
[21]	Subsidy by GOSS	SDG/year	2009: 100% subsidised 2012: Decrease in order by 2015 2015-2025: No subsidy	1,557,600	778,800	0	0	0
[22]	Personnel cost after subsidy	SDG/year	[20]-[21]	0	1,393,200	4,196,760	8,830,560	12,705,480
[23]	Personnel cost (in USD)	USD/year	[22] / 2.21 SDG per USD	0	630,407	1,898,986	3,995,729	5,749,086

[E] O&M Cost: Electricity

			[1] Power output (kW)	[2] Power consumption (kWh)	[3] Unit power cost (USD/kWh, Grid)	[4] Power cost (USD, Grid)	[5] Unit power Cost (USD/kWh, Generator)	[6] Power Cost (USD, Generator)
				[1] x 24 / 1.2 x 0.8 x 365	Price as of 2009	[2] x [3]	Price as of 2009	[2] x [5]
[E-1]	MDTF Plant	Pump: 11.7kW x 2 = 23.4kW, Others: 2.34kW(10%)	26	150,322	0.362	54,415	0.325	48,824
[E-2]	Expansion of existing WTP	Pump: 18.5kW x 1 + 90kW x 2 =127kW, Others: 12.7kW(10%)	218	1,275,164	0.362	461,598	0.325	414,173
[E-3]	New West WTP	Pump: 110kW x 3 + 7.5kW x 3 + 1.5kW x 6 + 750kW x 2 + 500kW x 2, Others: 10%	3,148	18,382,276	0.362	6,654,218	0.325	5,970,563
[E-4]	New East WTP	Pump: 30kW x 2 + 5.5kW x 2 + 1.5kW x 2 + 315kW x 2, Others: 70.4kW (10%)	774	4,522,496	0.362	1,637,103	0.325	1,468,907
[E-5]	Pumping Station - 1	Pump: 200kW x 2, Others: 40kW (10%)	440	2,569,600	0.362	930,172	0.325	834,606
[E-6]	Pumping Station - 2	Pump: 160kW x 2, Others: 32kW (10%)	352	2,055,680	0.362	744,138	0.325	667,685
[E-7]	Pumping Station - 3	Pump: 55kW x 1, Others: 5.5kW (10%)	61	353,320	0.362	127,899	0.325	114,758
					Grid	Not adopted	Generator	Adopted

	Total system capacity (m3/day)	Calculation	Annual Cost (USD/year)
Year 2009	7,000	Actual expenditure of 2008	165,669
Year 2012	14,000	[E-1] + [E-2]	462,998
Year 2015	77,000	As referred to estimation in F/S	2,696,612
Year 2020	174,000	([E-1] + [E-2] + [E-3] + [E-4] + [E-5] + [E-6] + [E-7]) x 174000/237000	6,989,012
Year 2025	237,000	[E-1] + [E-2] + [E-3] + [E-4] + [E-5] + [E-6] + [E-7]	9,519,517

[F] O&M Cost: Chemical

		[1] Daily flow (m3/day)	[2] Chlrine dosing rate (mg/L)	[3] Chlrine consumption (kg/year)	[4] Chlorine unit price (USD/kg)	[5] Chlorine cost (USD/year)	[6] Alum dosing rate (mg/L)	[7] Alum consumption (kg/year)	[8] Alum unit price (USD/kg)	[9] Alum cost (USD/year)	[10] Total chemical cost (USD/year)
				[1] x [2] / 1000 / 1.2 x 365		[3] x [4]		[1] x [2] / 1000 / 1.2 x 365		[3] x [4]	[5] + [9]
[F-1]	MDTF Plant	7,000	5	10,646	0.68	7,226	20	42,583	1.850	78,779	86,005
[F-2]	Expansion of existing WTP	7,000	5	10,646	0.68	7,226	20	42,583	1.850	78,779	86,005
[F-3]	New West WTP	189,000	5	287,438	0.68	195,093	20	1,149,750	1.850	2,127,038	2,322,131
[F-4]	New East WTP	34,000	5	51,708	0.68	35,096	20	206,833	1.850	382,642	417,738

	Total system capacity (m3/day)	Calculation	Annual Cost (USD/year)
Year 2009	7,000	[F-1]	86,005
Year 2012	14,000	[F-1] + [F-2]	172,010
Year 2015	77,000	[F-1] + [F-2] + [F-3] / 3	946,053
Year 2020	174,000	([E-1] + [E-2] + [E-3] + [E-4] + [E-5] + [E-6] + [E-7]) x 174000/237000	2,137,835
Year 2025	237,000	[E-1] + [E-2] + [E-3] + [E-4] + [E-5] + [E-6] + [E-7]	2,911,878

[G] O&M Cost: Spareparts

		[1] Electrical & Mechanical Equipment Cost (USD)	[2] Ratio of maintenance cost	[3] Maintenance Cost
				[1] x [2]
[G-1]	MDTF Plant	1,775,666	3%	53,270
[G-2]	Expansion of existing WTP	1,775,666	3%	53,270
[G-3]	New West WTP	20,634,591	3%	619,038
[G-4]	New East WTP	7,208,233	3%	216,247
[G-5]	Pumping Station - 1	1,789,082	3%	53,672
[G-6]	Pumping Station - 2	1,803,736	3%	54,112
[G-7]	Pumping Station - 3	566,632	3%	16,999

	Total system capacity (m3/day)	Calculation	Annual Cost (USD/year)
Year 2009	7,000	Actual expenditure of 2008	158,474
Year 2012	14,000	[G-1] + [G-2]	106,540
Year 2015	77,000	As referred to estimation in F/S	421,472
Year 2020	174,000	([G-1] + [G-2] + [G-3] + [G-4] + [G-5] + [G-6] + [G-7]) x 174000/237000	783,079
Year 2025	237,000	[G-1] + [G-2] + [G-3] + [G-4] + [G-5] + [G-6] + [G-7]	1,066,608

H.2 Calculation Sheet of Annual Fund Requirement

Annual Fund Requirement (1/2)

(thousand USD)

		Total (2011 - 2025)			2011			2012			2013		
		Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total
I	Procurement/ Construction	230,508	48,150	278,658	12,234	2,541	14,775	12,234	2,541	14,775	25,663	5,998	31,661
					Ph-1: +7000m3/day (Total: 14,000 m3/day)						Ph-2		
(1)	Phase-1: Rehabilitation + Expansion of existing WTP	24,468	5,082	29,550	12,234	2,541	14,775	12,234	2,541	14,775	0	0	0
(2)	Phase-2: Construction of New WTP (1/3)	76,989	17,994	94,983	0	0	0	0	0	0	25,663	5,998	31,661
(3)	Phase-3: Construction of New WTP (2/3) + East	87,501	16,113	103,614	0	0	0	0	0	0	0	0	0
(4)	Phase-4: Construction of New WTP (3/3)	41,550	8,961	50,511	0	0	0	0	0	0	0	0	0
II	Administration Cost (2% of I)	4,612	963	5,575	245	51	296	245	51	296	513	120	633
III	Consulting Service (10% of I)	23,050	4,816	27,866	1,223	254	1,477	1,223	254	1,477	2,566	600	3,166
IV	Base cost (I +II +III)	258,170	53,929	312,099	13,702	2,846	16,548	13,702	2,846	16,548	28,742	6,718	35,460
V	Physical contingency (10% of IV)	25,816	5,394	31,210	1,370	285	1,655	1,370	285	1,655	2,874	672	3,546
VI	Project cost (IV+V)	283,986	59,323	343,309	15,072	3,131	18,203	15,072	3,131	18,203	31,616	7,390	39,006
VII	Price escalation (FC: 4.1%, LC:7.0% of IV) (Price Index, Price level of 2009 is [100])	88,903 -	35,157 -	124,060 -	1,147 [108]	412 [114]	1,559	1,755 [113]	640 [123]	2,395	5,012 [117]	2,088 [131]	7,100
VIII	Total Finance Required (VI+VII)	372,889	94,480	467,369	16,219	3,543	19,762	16,827	3,771	20,598	36,628	9,478	46,106
								Phase-1 total finance		40,360			

		2014			2015			2016			2017		
		Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total
I		25,663	5,998	31,661	44,348	9,421	53,769	18,685	3,423	22,108	18,685	3,423	22,108
		Ph-2: +63000m3/day (Total: 77,000 m3/day)						Ph-3 (1): +34000m3/day (Total: 111,000 m3/day)					
(1)		0	0	0	0	0	0	0	0	0	0	0	0
(2)		25,663	5,998	31,661	25,663	5,998	31,661	0	0	0	0	0	0
(3)		0	0	0	18,685	3,423	22,108	18,685	3,423	22,108	18,685	3,423	22,108
(4)		0	0	0	0	0	0	0	0	0	0	0	0
II		513	120	633	887	188	1,075	374	68	442	374	68	442
III		2,566	600	3,166	4,435	942	5,377	1,869	342	2,211	1,869	342	2,211
IV		28,742	6,718	35,460	49,670	10,551	60,221	20,928	3,833	24,761	20,928	3,833	24,761
V		2,874	672	3,546	4,967	1,055	6,022	2,093	383	2,476	2,093	383	2,476
VI		31,616	7,390	39,006	54,637	11,606	66,243	23,021	4,216	27,237	23,021	4,216	27,237
VII		6,395 [122]	2,704 [140]	9,099	13,542 [127]	5,283 [150]	18,825	6,798 [132]	2,322 [161]	9,120	7,934 [138]	2,753 [172]	10,687
VIII		38,011	10,094	48,105	68,179	16,889	85,068	29,819	6,538	36,357	30,955	6,969	37,924
					Phase-2 total finance		144,417						

Base year for cost estimation: March 2009
Exchange rate: US$1 = SDG 2.21
Physical contingency: 10% of base cost
Price escalation (Foreign currency): 4.1%/annum
Price escalation (Local currency): 7.0%/annum

Annual Fund Requirement (2/2)

(thousand USD)

		2018			2019			2020			2021		
		Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total
I	Procurement/ Construction	10,482	1,948	12,430	10,482	1,948	12,430	24,332	4,935	29,267	13,850	2,987	16,837
		Ph-3 (2): +63000m3/day (Total: 174,000 m3/day)											
								Ph-4: +63000m3/day (Total: 237,000 m3/day)					
(1)	Phase-1: Rehabilitation + Expansion of existing WTP	0	0	0	0	0	0	0	0	0	0	0	0
(2)	Phase-2: Construction of New WTP (1/3)	0	0	0	0	0	0	0	0	0	0	0	0
(3)	Phase-3: Construction of New WTP (2/3) + East	10,482	1,948	12,430	10,482	1,948	12,430	10,482	1,948	12,430	0	0	0
(4)	Phase-4: Construction of New WTP (3/3)	0	0	0	0	0	0	13,850	2,987	16,837	13,850	2,987	16,837
II	Administration Cost (2% of I)	210	39	249	210	39	249	487	99	586	277	60	337
III	Consulting Service (10% of I)	1,048	195	1,243	1,048	195	1,243	2,433	494	2,927	1,385	299	1,684
IV	Base cost (I +II +III)	11,740	2,182	13,922	11,740	2,182	13,922	27,252	5,528	32,780	15,512	3,346	18,858
V	Physical contingency (10% of IV)	1,174	218	1,392	1,174	218	1,392	2,725	553	3,278	1,551	335	1,886
VI	Project cost (IV+V)	12,914	2,400	15,314	12,914	2,400	15,314	29,977	6,081	36,058	17,063	3,681	20,744
VII	Price escalation (FC: 4.1%, LC:7.0% of IV)	5,115	1,830	6,945	5,806	2,110	7,916	15,147	6,108	21,255	9,611	4,190	13,801
	(Price Index, Price level of 2009 is [100])	[144]	[184]		[149]	[197]		[156]	[210]		[162]	[225]	
VIII	Total Finance Required (VI+VII)	18,029	4,230	22,259	18,720	4,510	23,230	45,124	12,189	57,313	26,674	7,871	34,545
								Phase-3 total finance		178,881			

	2022			2023			2024			2025		
	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total
I	13,850	2,987	16,837	0	0	0	0	0	0	0	0	0
	Ph-4											
(1)	0	0	0	0	0	0	0	0	0	0	0	0
(2)	0	0	0	0	0	0	0	0	0	0	0	0
(3)	0	0	0	0	0	0	0	0	0	0	0	0
(4)	13,850	2,987	16,837	0	0	0	0	0	0	0	0	0
II	277	60	337	0	0	0	0	0	0	0	0	0
III	1,385	299	1,684	0	0	0	0	0	0	0	0	0
IV	15,512	3,346	18,858	0	0	0	0	0	0	0	0	0
V	1,551	335	1,886	0	0	0	0	0	0	0	0	0
VI	17,063	3,681	20,744	0	0	0	0	0	0	0	0	0
VII	10,641	4,717	15,358	0	0	0	0	0	0	0	0	0
	[169]	[241]		[176]	[258]		[183]	[276]		[190]	[295]	
VIII	27,704	8,398	36,102	0	0	0	0	0	0	0	0	0
	Phase-4 total finance		103,711									

Base year for cost estimation: March 2009
Exchange rate: US$1 = SDG 2.21
Physical contingency: 10% of base cost
Price escalation (Foreign currency): 4.1%/annum
Price escalation (Local currency): 7.0%/annum

H.3 Revenue Forecast Sheet

[A] Population Served

Year	[1] Total population in service area (persons)	[2] House connection (1000 people)	[3] Ratio	[4] Public Tap (1000 people)	[5] Ratio	[6] Water Tanker (1000 people)	[7] Ratio
2009	406,404	73.2	18.0%	20.3	5.0%	0	0.0%
2010	459,026	90.3	19.7%	23.0	5.0%	0	0.0%
2011	518,699	110.7	21.3%	25.9	5.0%	0	0.0%
2012	555,008	127.7	23.0%	33.3	6.0%	0	0.0%
2013	593,859	146.5	24.7%	35.6	6.0%	29.7	5.0%
2014	635,429	167.3	26.3%	38.1	6.0%	31.8	5.0%
2015	680,033	190.4	28.0%	149.6	22.0%	204.0	30.0%
2016	720,835	232.1	32.2%	153.5	21.3%	205.4	28.5%
2017	764,085	278.1	36.4%	157.4	20.6%	206.3	27.0%
2018	809,930	328.8	40.6%	161.2	19.9%	206.5	25.5%
2019	858,526	384.6	44.8%	164.8	19.2%	206	24.0%
2020	910,079	445.9	49.0%	168.4	18.5%	204.8	22.5%
2021	955,583	508.4	53.2%	170.1	17.8%	200.7	21.0%
2022	1,003,362	575.9	57.4%	171.6	17.1%	195.7	19.5%
2023	1,053,530	649.0	61.6%	172.8	16.4%	189.6	18.0%
2024	1,106,207	727.9	65.8%	173.7	15.7%	182.5	16.5%
2025	1,161,057	812.7	70.0%	174.2	15.0%	174.2	15.0%
2026	1,219,110	812.7	66.7%	174.2	14.3%	174.2	14.3%
2027	1,280,065	812.7	63.5%	174.2	13.6%	174.2	13.6%
2028	1,344,069	812.7	60.5%	174.2	13.0%	174.2	13.0%
2029	1,411,272	812.7	57.6%	174.2	12.3%	174.2	12.3%
2030	1,481,836	812.7	54.8%	174.2	11.8%	174.2	11.8%
2031	1,555,927	812.7	52.2%	174.2	11.2%	174.2	11.2%
2032	1,633,724	812.7	49.7%	174.2	10.7%	174.2	10.7%
2033	1,715,410	812.7	47.4%	174.2	10.2%	174.2	10.2%
2034	1,801,180	812.7	45.1%	174.2	9.7%	174.2	9.7%
2035	1,891,240	812.7	43.0%	174.2	9.2%	174.2	9.2%
2036	1,985,801	812.7	40.9%	174.2	8.8%	174.2	8.8%
2037	2,085,092	812.7	39.0%	174.2	8.4%	174.2	8.4%
2038	2,189,346	812.7	37.1%	174.2	8.0%	174.2	8.0%
2039	2,298,813	812.7	35.4%	174.2	7.6%	174.2	7.6%
2040	2,413,754	812.7	33.7%	174.2	7.2%	174.2	7.2%

[1] Total population in service area (persons); Based on population projection
[3],[5],[7] Rate of population served by service level (%): Estimated in the water supply plan for year 2015, 2020, 2025
[2],[4],[6] Estimated population served by service level (thousand people): [2]=[1] x [3]; [4]=[1]x[5]; [6]=[1] x [7]
Population served after year 2025 is to be constant, as the target year of the M/P is to be 2025.

[B] Unit Consumption

Year	[8] Domestic (house connection, lcd)	[9] Public Tap (lcd)	[10] Water Tanker (lcd)	[11] Non-domestic (commercial & business, % of total demand)	[12] Non-domestic (industry, % of total demand)	[13] Non-domestic (institution/ government, % of total demand)
2009	26	28	28	9%	0%	28%
2010	26	28	28	9%	0%	28%
2011	26	28	28	9%	0%	28%
2012	26	28	28	9%	0%	28%
2013	40	28	28	9%	1%	27%
2014	40	28	28	9%	2%	26%
2015	90	28	28	10%	3%	25%
2016	93	28.8	28.8	10%	3%	24%
2017	96	29.6	29.6	10%	3%	23%
2018	99	30.4	30.4	10%	3%	23%
2019	102	31.2	31.2	10%	3%	22%
2020	105	32	32	10%	3%	21%
2021	108	32.8	32.8	10%	3%	20%
2022	111	33.6	33.6	10%	3%	19%
2023	114	34.4	34.4	10%	3%	19%
2024	117	35.2	35.2	10%	3%	18%
2025	120	36	36	10%	3%	17%
2026	120	36	36	10%	3%	17%
2027	120	36	36	10%	3%	17%
2028	120	36	36	10%	3%	17%
2029	120	36	36	10%	3%	17%
2030	120	36	36	10%	3%	17%
2031	120	36	36	10%	3%	17%
2032	120	36	36	10%	3%	17%
2033	120	36	36	10%	3%	17%
2034	120	36	36	10%	3%	17%
2035	120	36	36	10%	3%	17%
2036	120	36	36	10%	3%	17%
2037	120	36	36	10%	3%	17%
2038	120	36	36	10%	3%	17%
2039	120	36	36	10%	3%	17%
2040	120	36	36	10%	3%	17%

[B] Unit Consumption
Values in 2009 is current status in the Study Report
[8] 90 l/c/d (2015), 105 l/c/d (2020), 120 l/c/d (2025)
[9], [10] 28 l/c/d (2015), 32 l/c/d (2020), 36 l/c/d (2025 onward)
[11] 10% of total demand (2015 onward)
[12] 3% of total demand (2015 onward)
[13] 25% (2015), 21% (2020), 17% (2025 onward)

[C] Average Daily Water Consumption (m3/day)

Year	[14] Domestic (house connection)	[15] Public Tap	[16] Water Tanker	[17] Non-domestic (commercial & business)	[18] Non-domestic (industry)	[19] Non-domestic (institution/ government)	[20] Total
2009	1,903	568	0	353	0	1,098	3,923
2010	2,348	644	0	427	0	1,330	4,749
2011	2,878	725	0	515	0	1,602	5,720
2012	3,320	932	0	608	0	1,890	6,750
2013	5,860	997	832	1,098	122	3,295	12,204
2014	6,692	1,067	890	1,236	275	3,570	13,729
2015	17,136	4,189	5,712	4,361	1,308	10,902	43,608
2016	21,585	4,421	5,916	5,083	1,525	12,301	50,831
2017	26,698	4,659	6,106	5,890	1,767	13,784	58,904
2018	32,551	4,900	6,278	6,790	2,037	15,346	67,903
2019	39,229	5,142	6,427	7,791	2,337	16,985	77,911
2020	46,820	5,389	6,554	8,903	2,671	18,697	89,033
2021	54,907	5,579	6,583	10,040	3,012	20,281	100,403
2022	63,925	5,766	6,576	11,282	3,385	21,887	112,820
2023	73,986	5,944	6,522	12,639	3,792	23,509	126,393
2024	85,164	6,114	6,424	14,119	4,236	25,132	141,189
2025	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2026	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2027	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2028	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2029	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2030	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2031	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2032	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2033	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2034	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2035	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2036	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2037	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2038	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2039	97,524	6,271	6,271	15,724	4,717	26,730	157,238
2040	97,524	6,271	6,271	15,724	4,717	26,730	157,238

[14] [2: population served by house connection] x [8: unit demand]
[15] [3: pupulation served by public tap] x [9: unit demand]
[16] [4: pupulation served by water tanker from UWC] x [10: unit demand]
[17] ([14]+[15]+[16]) / (1 - ([11]+[12]+[13]: non-domestic total)) x [11: rate of commercial demand]
[18] ([14]+[15]+[16]) / (1 - ([11]+[12]+[13]: non-domestic total)) x [12: rate of industry demand]
[19] ([14]+[15]+[16]) / (1 - ([11]+[12]+[13]: non-domestic total)) x [13: rate of institutional demand]

[D] No. of Connection (nos)

Year	[21] House connection (Domestic)	[22] House connection (Non-domestic)	[23] Public Tap	[24] UWC's Tanker Feeding Station
2009	2,153	276	38	0
2010	2,799	304	82	0
2011	3,639	334	126	0
2012	16,372	367	170	0
2013	18,782	404	214	5
2014	21,449	444	258	7
2015	24,410	488	299	10
2016	33,579	537	307	10
2017	42,748	591	315	10
2018	51,917	650	322	10
2019	61,086	715	330	10
2020	70,255	787	337	10
2021	79,424	866	340	10
2022	88,593	953	343	10
2023	97,762	1,048	346	10
2024	106,931	1,153	347	10
2025	116,100	1,268	348	10
2026	116,100	1,268	348	10
2027	116,100	1,268	348	10
2028	116,100	1,268	348	10
2029	116,100	1,268	348	10
2030	116,100	1,268	348	10
2031	116,100	1,268	348	10
2032	116,100	1,268	348	10
2033	116,100	1,268	348	10
2034	116,100	1,268	348	10
2035	116,100	1,268	348	10
2036	116,100	1,268	348	10
2037	116,100	1,268	348	10
2038	116,100	1,268	348	10
2039	116,100	1,268	348	10
2040	116,100	1,268	348	10

[21],[22],[23] Values for 2009 are from UWC's ledger book
[21] increase annualy 10% (2010-12), 50%(2013-14)
2015 [2:population served] / 7.8 persons per connection
2025 [2:population served] / 7.0 persons per connection
[22] increase annualy 10% (2010-2025)
[23] [4:population served] / 500 persons per tap
[24] 5 stations (2013), 7 stations (2014), 10 stations (2015-2025)

[E] Monthly Water Consumption per Connection

Year	[25] Domestic (house connection, m3/month)	[26] Public Tap (m3/month)	[27] Water Tanker (m3/month)	[28] Non-domestic (m3/month)
2009	27	449		158
2010	25	236		173
2011	24	173		190
2012	6	165		204
2013	9	140	4,990	335
2014	9	124	3,816	343
2015	21	420	17,136	1,019
2016	19	430	17,747	1,056
2017	19	440	18,319	1,088
2018	19	460	18,833	1,116
2019	19	470	19,282	1,138
2020	20	480	19,661	1,154
2021	21	490	19,749	1,155
2022	22	500	19,727	1,151
2023	23	520	19,567	1,143
2024	24	530	19,272	1,131
2025	25	540	18,814	1,116
2026	25	540	18,814	1,116
2027	25	540	18,814	1,116
2028	25	540	18,814	1,116
2029	25	540	18,814	1,116
2030	25	540	18,814	1,116
2031	25	540	18,814	1,116
2032	25	540	18,814	1,116
2033	25	540	18,814	1,116
2034	25	540	18,814	1,116
2035	25	540	18,814	1,116
2036	25	540	18,814	1,116
2037	25	540	18,814	1,116
2038	25	540	18,814	1,116
2039	25	540	18,814	1,116
2040	25	540	18,814	1,116

[25] = [14: daily demand] x 30 / [21]
[26] = [15: daily demand] x 30 / [23]
[27] = [16: daily demand] x 30 / [24]
[28] = ([17]+[18]+[19]: daily demand) x 30 / [22]

[F] Proposed Water Tariff

(SDG/m3, SDG/month for [29] and [35])

Year	[29] Domestic Base (house connection)	[30] Domestic (<15 m3)	[31] Domestic (15-30m3)	[32] Domestic (>30m3)	[33] Public tap	[34] Water tanker (UWC)	[35] Non-Domestic Base	[36] Non-domestic, Commercial (<50 m3)	[37] Non-domestic, Commercial (50-100m3)	[38] Non-domestic, Commercial (>100m3)	[39] Non-domestic, Industrial (<50 m3)	[40] Non-domestic, Industrial (50-100m3)	[41] Non-domestic, Industrial (>100m3)	[42] Non-domestic, Institution (<50 m3)	[43] Non-domestic, Institution (50-100m3)	[44] Non-domestic, Institution (>100m3)
2009	10.0	0.5	1.0	1.5	0.5	0.5	30.0	2.5	3.0	3.5	2.5	3.0	3.5	1.5	2.0	2.5
2010	10.0	0.5	1.0	1.5	0.5	0.5	30.0	2.5	3.0	3.5	2.5	3.0	3.5	1.5	2.0	2.5
2011	10.0	0.5	1.0	1.5	0.5	0.5	30.0	2.5	3.0	3.5	2.5	3.0	3.5	1.5	2.0	2.5
2012	10.0	0.5	1.0	1.5	0.5	0.5	30.0	2.5	3.0	3.5	2.5	3.0	3.5	1.5	2.0	2.5
2013	10.0	0.5	1.0	1.5	0.5	0.5	30.0	2.5	3.0	3.5	2.5	3.0	3.5	1.5	2.0	2.5
2014	10.0	0.5	1.0	1.5	0.5	0.5	30.0	2.5	3.0	3.5	2.5	3.0	3.5	1.5	2.0	2.5
2015	10.0	0.7	1.5	2.0	0.7	0.7	30.0	3.7	4.5	5.2	3.7	4.5	5.2	2.2	3.0	3.7
2016	10.3	0.7	1.5	2.1	0.7	0.7	30.9	3.8	4.6	5.4	3.8	4.6	5.4	2.3	3.1	3.8
2017	10.6	0.7	1.6	2.1	0.7	0.7	31.8	3.9	4.8	5.5	3.9	4.8	5.5	2.3	3.2	3.9
2018	10.9	0.8	1.6	2.2	0.8	0.8	32.8	4.0	4.9	5.7	4.0	4.9	5.7	2.4	3.3	4.0
2019	11.3	0.8	1.7	2.3	0.8	0.8	33.8	4.2	5.1	5.9	4.2	5.1	5.9	2.5	3.4	4.2
2020	11.6	0.8	1.7	2.3	0.8	0.8	34.8	4.3	5.2	6.0	4.3	5.2	6.0	2.6	3.5	4.3
2021	11.9	0.8	1.8	2.4	0.8	0.8	35.8	4.4	5.4	6.2	4.4	5.4	6.2	2.6	3.6	4.4
2022	12.3	0.9	1.8	2.5	0.9	0.9	36.9	4.6	5.5	6.4	4.6	5.5	6.4	2.7	3.7	4.6
2023	12.7	0.9	1.9	2.5	0.9	0.9	38.0	4.7	5.7	6.6	4.7	5.7	6.6	2.8	3.8	4.7
2024	13.0	0.9	2.0	2.6	0.9	0.9	39.1	4.8	5.9	6.8	4.8	5.9	6.8	2.9	3.9	4.8
2025	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2026	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2027	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2028	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2029	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2030	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2031	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2032	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2033	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2034	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2035	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2036	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2037	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2038	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2039	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0
2040	13.4	0.9	2.0	2.7	0.9	0.9	40.3	5.0	6.0	7.0	5.0	6.0	7.0	3.0	4.0	5.0

[Domestic (house connection)]

Base	SDG 10.0 (-2015), +3%/year grwoth (-2025)
<15 m3	SDG0.5 per m3 (2015), +3%/year growth (-2025)
15-30 m3	SDG1.0 per m3 (2015), +3%/year growth (-2025)
>30 m3	SDG1.5 per m3 (2015), +3%/year growth (-2025)

[Domestic (public tap, taner)]

Base	Not charged
Rate	0.5 SDG/m3 (2015), +3%/year growth (-2025)

[Non-Domestic (commercial, industrial)]

Base	SDG30.0 (2015), +3%/year growth (-2025)
<50 m3	SDG2.5 per m3 (2015), +3%/year growth (-2025)
50-100 m3	SDG3.0 per m3 (2015), +3%/year growth (-2025)
>100 m3	SDG3.5 per m3 (2015), +3%/year growth (-2025)

[Non-Domestic (institution)]

Base	SDG30.0 (2015), +3%/year (-2025)
<50 m3	SDG1.5 per m3 (2015), +3%/year
50-100 m3	SDG2.0 per m3 (2015), +3%/year
>100 m3	SDG2.5 per m3 (2015), +3%/year

[G] Monthly Water Charge per connection (SDG/month)

Year	[45] Domestic (house connection)	[46] Public Tap	[47] Tanker Feeding Station (UWC)	[48] Non-domestic (commercial & business)	[49] Non-domestic (industry)	[50] Non-domestic (institution/ government)
2009	29.5	224.5	0.0	508.0	508.0	350.0
2010	27.5	118.0	0.0	560.5	560.5	387.5
2011	26.5	86.5	0.0	620.0	620.0	430.0
2012	13.0	82.5	0.0	669.0	669.0	465.0
2013	14.5	70.0	2,495.0	1,127.5	1,127.5	792.5
2014	14.5	62.0	1,908.0	1,155.5	1,155.5	812.5
2015	29.5	294.0	11,995.2	5,218.8	5,218.8	3,690.3
2016	26.8	301.0	12,422.9	5,613.3	5,613.3	3,933.7
2017	27.5	308.0	12,823.3	5,900.8	5,900.8	4,160.0
2018	29.3	368.0	15,066.4	6,269.0	6,269.0	4,381.8
2019	30.1	376.0	15,425.6	6,623.0	6,623.0	4,688.4
2020	32.1	384.0	15,728.8	6,833.8	6,833.8	4,872.0
2021	34.7	392.0	15,799.2	7,066.8	7,066.8	4,987.8
2022	38.4	450.0	17,754.3	7,268.3	7,268.3	5,191.5
2023	41.4	468.0	17,610.3	7,441.8	7,441.8	5,270.1
2024	44.5	477.0	17,344.8	7,584.9	7,584.9	5,327.9
2025	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2026	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2027	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2028	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2029	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2030	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2031	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2032	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2033	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2034	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2035	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2036	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2037	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2038	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2039	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3
2040	46.9	486.0	16,932.6	7,702.3	7,702.3	5,470.3

[45] [29: base] + [25: consumption] x tariff ([31] upto 15m3, [32] for 15-30m3, [33] for 30m3 or more)
[46] [26: consumption] x [33: tariff]
[47] [27: consumption] x [34: tariff]
[48] [35: base] + [28: consumption] x tariff ([36] upto 50m3, [37] for 50-100m3, [38] for 100m3 or more)
[49] [35: base] + [28: consumption] x tariff ([39] upto 50m3, [40] for 50-100m3, [41] for 100m3 or more)
[50] [35: base] + [28: consumption] x tariff ([42] upto 50m3, [43] for 50-100m3, [44] for 100m3 or more)

[H] Water Charge Collection Ratio

Year	[51] Domestic (house connection)	[52] Public Tap	[53] Water Tanker	[54] Non-domestic
2009	60%	60%		50%
2010	60%	60%		50%
2011	60%	60%		50%
2012	60%	60%		50%
2013	70%	70%	100%	60%
2014	70%	70%	100%	60%
2015	70%	80%	100%	70%
2016	72%	84%	100%	72%
2017	74%	88%	100%	74%
2018	76%	92%	100%	76%
2019	78%	96%	100%	78%
2020	80%	100%	100%	80%
2021	82%	100%	100%	82%
2022	84%	100%	100%	84%
2023	86%	100%	100%	86%
2024	88%	100%	100%	88%
2025	90%	100%	100%	90%
2026	90%	100%	100%	90%
2027	90%	100%	100%	90%
2028	90%	100%	100%	90%
2029	90%	100%	100%	90%
2030	90%	100%	100%	90%
2031	90%	100%	100%	90%
2032	90%	100%	100%	90%
2033	90%	100%	100%	90%
2034	90%	100%	100%	90%
2035	90%	100%	100%	90%
2036	90%	100%	100%	90%
2037	90%	100%	100%	90%
2038	90%	100%	100%	90%
2039	90%	100%	100%	90%
2040	90%	100%	100%	90%

[D] Water Charge Collection Ratio
Ratio of paid amount (SDG) to billed amount (SDG)
[51] 60% (2009-12), 70%(2013-14), 80%(2015), 90%(2020), 100%(2025 onward)
[52] 60% (2009-12), 70%(2013-14), 80%(2015), 100%(2020-onward)
[53] Assumed to be 100%
[54] 50% (2009-12), 60%(2013-14), 70%(2015), 80%(2020), 100%(2025)

[I] Annual Revenue from Water Sales (SDG/year)

Year	[55] Domestic (house connection)	[56] Public Tap	[57] Water Tanker	[58] Non-domestic (commercial & business)	[59] Non-domestic (industry)	[60] Non-domestic (institution/ government)	[61] Total
2009	457,297	61,423	0	204,628	0	438,616	1,161,964
2010	554,202	69,667	0	248,680	0	534,876	1,407,425
2011	694,321	78,473	0	302,225	0	652,112	1,727,131
2012	1,532,419	100,980	0	358,331	0	774,866	2,766,596
2013	2,287,648	125,832	149,700	797,758	88,640	1,682,190	5,131,768
2014	2,612,488	134,366	160,272	898,517	199,670	1,825,200	5,830,513
2015	6,048,798	843,898	1,439,424	5,629,712	1,688,914	9,952,156	25,602,902
2016	7,775,285	931,463	1,490,748	7,001,053	2,100,316	11,873,033	31,171,898
2017	10,439,062	1,024,531	1,538,796	8,507,657	2,552,297	14,034,865	38,097,208
2018	13,873,053	1,308,196	1,807,968	10,438,942	3,131,682	16,489,944	47,049,785
2019	17,210,125	1,429,402	1,851,072	12,736,714	3,821,014	19,655,486	56,703,813
2020	21,649,781	1,552,896	1,887,456	15,185,508	4,555,652	22,734,930	67,566,223
2021	27,119,166	1,599,360	1,895,904	18,138,347	5,441,504	25,860,404	80,054,685
2022	34,291,870	1,852,200	2,130,516	21,549,702	6,464,911	29,860,908	96,150,107
2023	41,768,619	1,943,136	2,113,236	25,470,173	7,641,052	33,549,473	112,485,689
2024	50,249,016	1,986,228	2,081,376	29,984,193	8,995,258	37,490,271	130,786,342
2025	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2026	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2027	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2028	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2029	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2030	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2031	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2032	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2033	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2034	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2035	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2036	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2037	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2038	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2039	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120
2040	58,806,972	2,029,536	2,031,912	35,159,459	10,547,838	42,450,403	151,026,120

[55] [21:No. of connection] x [45: Monthly Charge] x 12 months x [51: Collection ratio]
[56] [23:No. of connection] x [46: Monthly Charge] x 12 months x [52: Collection ratio]
[57] [24:No. of connection] x [47: Monthly Charge] x 12 months x [53: Collection ratio]
[58] ([22:No. of connection] x rate of commercial) x [48: Monthly Charge] x 12 months x [54: Collection ratio]
[59] ([22:No. of connection] x rate of industrial)x [49: Monthly Charge] x 12 months x [54: Collection ratio]
[60] ([22:No. of connection] x rate of institution)x [50: Monthly Charge] x 12 months x [54: Collection ratio]
Rate of commercial/ industrial/ institution: Rate of consumption among total non-domstic water consumption ([17]+[18]+[19])

[J] Service Revenue by New Connection (SDG)

Year	[62] Incremental house connection (Domestic)	[63] Incremental house connection (Non-domestic)	[64] Connecting fee (Domestic)	[65] Connecting fee (Non-Domestic)	[66] Service Revenue Total
2009					
2010	646	28	255	500	178,730
2011	840	30	255	500	229,200
2012	12,733	33	255	500	3,263,415
2013	2,410	37	400	1,000	1,001,000
2014	2,667	40	400	1,000	1,106,800
2015	2,961	44	400	1,000	1,228,400
2016	9,169	49	412	1,030	3,828,098
2017	9,169	54	424	1,061	3,944,950
2018	9,169	59	437	1,093	4,071,340
2019	9,169	65	450	1,126	4,199,240
2020	9,169	72	464	1,159	4,337,864
2021	9,169	79	478	1,194	4,477,108
2022	9,169	87	492	1,230	4,618,158
2023	9,169	95	507	1,267	4,769,048
2024	9,169	105	522	1,305	4,923,243
2025	9,169	115	538	1,344	5,087,482
2026	0	0	538	1,344	0
2027	0	0	538	1,344	0
2028	0	0	538	1,344	0
2029	0	0	538	1,344	0
2030	0	0	538	1,344	0
2031	0	0	538	1,344	0
2032	0	0	538	1,344	0
2033	0	0	538	1,344	0
2034	0	0	538	1,344	0
2035	0	0	538	1,344	0
2036	0	0	538	1,344	0
2037	0	0	538	1,344	0
2038	0	0	538	1,344	0
2039	0	0	538	1,344	0
2040	0	0	538	1,344	0

[62] Annual increase of [21: No. of connection]
[63] Annual increase of [22: No. of connection]
[64] Current fee (2009-12), SDG400 (2013-onward)
[65] Assumed SDG500 (2009-12), SDG1000 (2013-onward)
[66] ([62] x [64]) + ([63] x [65])

[K] Total Revenue

Year	[67] Revenue Total (SDG/year)
2009	1,161,964
2010	1,586,155
2011	1,956,331
2012	6,030,011
2013	6,132,768
2014	6,937,313
2015	26,831,302
2016	34,999,996
2017	42,042,158
2018	51,121,125
2019	60,903,053
2020	71,904,087
2021	84,531,793
2022	100,768,265
2023	117,254,737
2024	135,709,585
2025	156,113,602
2026	151,026,120
2027	151,026,120
2028	151,026,120
2029	151,026,120
2030	151,026,120
2031	151,026,120
2032	151,026,120
2033	151,026,120
2034	151,026,120
2035	151,026,120
2036	151,026,120
2037	151,026,120
2038	151,026,120
2039	151,026,120
2040	151,026,120

[67] =[61] + [66]

H.4 Millennium Development Goals and Water and Sanitation Services in Southern Sudan

The Millennium Development Goals and related Targets in case of Southern Sudan are listed below.

1. **Goal 1: Eradicate extreme poverty and hunger**
   Target 1: Halve, between 1990 and 2015, the population whose income is less than USD 1 a day
   Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger

   It is reported that although chronic hunger has been reduced from 48 to 33% between 1995 and 2006, more than 90% of the population in Southern Sudan currently live on less than one dollar a day. According to a Study in 2003, there exist high proportion of poor households in Upper Nile, Equatoria and Bahr el Ghazal

2. **Goal 2: Achieve universal primary education**
   Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

   Over 75% of an estimated 1.4 million children of age 7-14 years do not have access to education.

3. **Goal 3: Promote gender equality and empower women**
   Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015

   It is reported that a total of 84% of girls in Southern Sudan have no access to education and girls constitute only 27% of primary school enrolment.

4. **Goal 4: Reduce child mortality**
   Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

   Although the under-five mortality rate has been reported to decrease from 250 (per 1000 live births) in 2001 to 135 in 2006, one in eight children dies before they are five years old.

5. **Goal 5: Improve maternal health**
   Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio

   Southern Sudan has relatively higher maternal mortality rate – 1,700 per 100,000 live births and health infrastructures are in poor condition.

6. **Goal 6: Combat HIV/AIDS, malaria and other diseases**

Target 7: Have halted by 2015, and begun to reverse the spread of HIV/AIDS
Target 8: Have halted by 2015, and begun to reverse the incidence of malaria and other major diseases

Although there is limited information on HIV/AIDS in Southern Sudan, reports show yearly increases in the prevalence rate and limited knowledge among the population about prevention. Also, malaria is considered to be endemic at a high level, in all age groups.

7. Goal 7: Ensure environmental sustainability

Target 9: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources
Target 10: Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation
Target 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers

Although Southern Sudan has vast amounts of surface and groundwater, it is reported that by 2005, only about 27% of the population (about 8 million) had access to improved water supplies, while only 15% has access to basic sanitation. Many communities use unsafe water during the rainy season and need to travel long distances when surface water dries up in the dry summer. Due to lack of safe water and absence of sanitation, many endemic diseases such as diarrhea, guinea worm, and trachoma, are prevalent.

The condition of urban water supply, where a considerable population settles down due to major economic activities and job opportunities, is also very poor. Juba is one of the most important urban centers of Southern Sudan, still the water supply services in the city and its surrounding is in pathetic condition. Upon the construction of new water treatment plant by MDTF, only a fraction of the population is served by clean treated water. The remaining mainly depend on private water tank trucks and other venders for domestic water needs and the water tank trucks and vender distribute untreated river water only with the application of chlorine.

To improve the condition of access to safe water in line with the MDGs, in this Study, the target coverage of treated water supply has been set as 80% by 2015, 90% by 2020 and 100% by the year 2025. If the proposed projects under this Study are undertaken, it is expected that access to safe water and the living condition of informal settlements shall be improved.

8. Goal 8: Develop a global partnership for development

Target 12: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system
Target 13: Address the special needs of the least developed countries

Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for the youth.

Target 17: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications.

APPENDIX – I

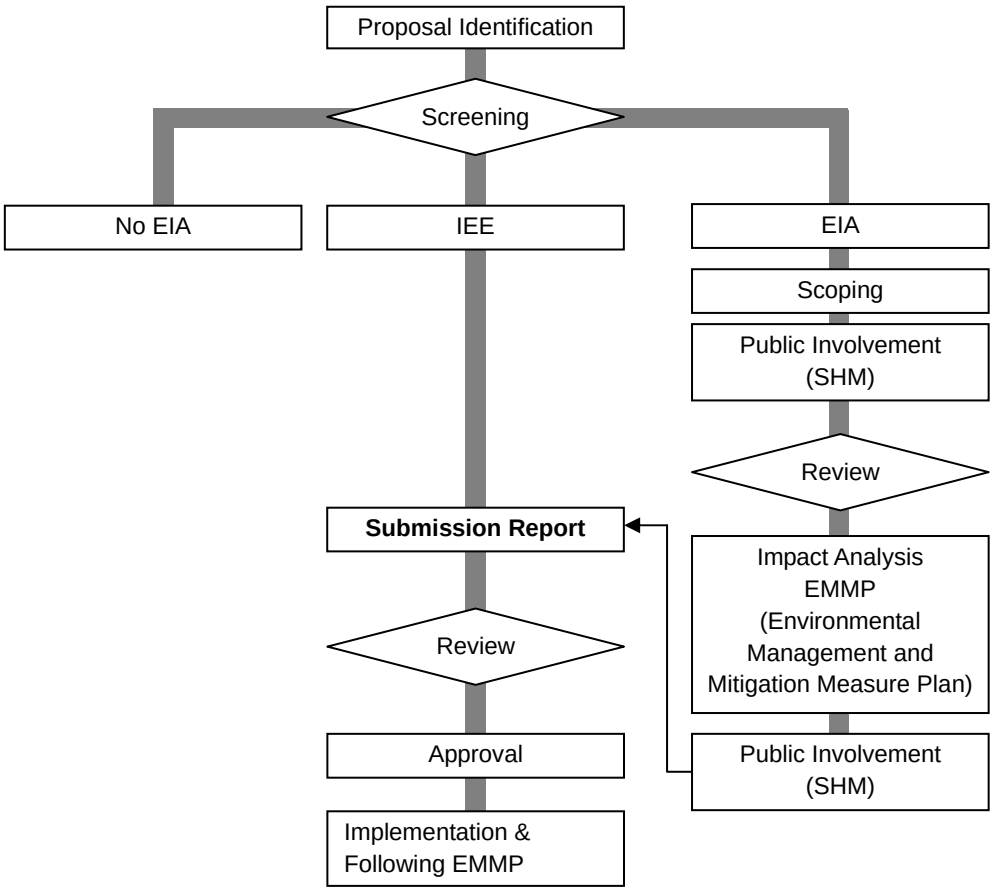
INITIAL ENVIRONMENTAL EXAMINATION AND ENVIRONMENTAL IMPACT ASSESSMENT

APPENDIX - I INITIAL ENVIRONMENTAL EXAMINATION AND ENVIRONMENTAL IMPACT ASSESSMENT

Table of Contents

I.1 Environmental impact Assessment Process

According to the Directorate of Environmental Affairs, new EIA policy and guidelines will be issued in 2009, and draft EIA process is shown in the following figure.



Source: JICA Study Team prepared base on the interview from Directorate of Environmental Affairs 25th March 2009

Figure 1.1 Law-based EIA Process (Draft)

I.2 Terminology of Environmental Impact Assessment

1) SEA: Strategic Environmental Assessment

The SEA means an assessment being implemented at the policy, planning and program level rather than a project-level EIA. This methodology has three pillars, the first is a definition of natural and social critical issues, the second is assessments upstream plans, and the third is a formulation of consensus by stakeholders through information disclosure generally. In this study, critical issues will be defined in social and natural area due to time constraints based on the policy of the SEA.

2) IEE: Initial Environment Examination

The IEE is a study including analysis of alternative plans, prediction and assessment of environmental impacts, and preparation of mitigation measures and monitoring plans on the basis of secondary data and simple field surveys.

3) Pre-EIA: Preliminary Environmental Impact Assessment

The pre-EIA means evaluating environmental and social impacts that projects are likely to have, analyzing alternative plans and preparing adequate mitigation measures and monitoring plans based on the simple site survey and analysis of the data in accordance with the JICA's guidelines.

4) Full-scale EIA: Full scale Environmental Impact Assessment

The EIA means evaluating environmental and social impacts that projects are likely to have, analyzing alternative plans and preparing adequate mitigation measures and monitoring plans based on the detailed site survey in accordance with laws or guidelines of the recipient governments.

I.3 Other Laws and Regulations on Environment and Activities

(1) Other Laws and Regulations on Environment

The other environmental related laws and regulations are listed in the following table.

Table I.1 Other Laws and Regulations on Environment

Area	Title of Law	
1. Pollution Control, Public Sanitation	Food Control Act	1973
	Pesticides Act	1974
	Environmental Health Act	1974 Amended 1993
	Public Health Act	1975
	Environmental Protection Act	2001
	Organization of Higher Education Act	1990
2. Landowning, Land use, Land Acquisition	Land Act (See next article)	2009 Feb.
3. Agriculture and Conservation of Soil	Mining and Quarries Act	1972
	Mechanized Farming Public Corporation Regulations	1975
	Plant Diseases Act	1913
	Agricultural Pest Control Act	1919
	Seeds Act	1990
4. Plant and Forest Conservation	Forest National Corporation Act	1932
	Central Forest Act	1932
	Provisional Forest Act	1972
	Forest Act	1989
5. Wildlife Conservation	Preservation of Wild Animals Act	1935
	Wildlife Protection Act	1936
	National Parks, Sanctuaries and Reserves Regulation	1939
	Wildlife Conservation Forest Act	1981
	Wildlife Conservation and National Park Act	1987
6. Water Resources Conservation	Nile water Pump Control Act	1939
	Fresh Water Fisheries Ordinance	1954
	Water Hygienic Control Act	1960
	Rural Water Development Corporation Act	1966
	Irrigation and Food Control Act	1990
	Regulations in Inland Navigation Act	1980

Source: JICA Study Team prepared based on preliminary Study and interviews

(2) Major Activities on Environment and Social Consideration Study by Donor

Major activities on environment and social consideration study by donor project are listed below.

Table I.2 Major Activities on Environment and Social Consideration Study

Project/Program Title (Duration)	Main Objectives	Main C/P	Donor
Establishment of Environmental Policy (Feb. 2008-)	Establishment of environmental policy for GOSS. Some field surveys and stakeholder meetings will be carried out in 2008. Draft policy will be prepared after these activities.	Ministry of Housing, Physical Planning & Environment	USAID/ STEP (Sudan Transitional Environment Program)
Preparation of Environmental Impact Assessment Guideline -Road Sector (November 2007)	Preparation of Environmental Impact Assessment Guideline for Road Sector based on World Bank Safety Guard.	Ministry of Transport / GOSS (confirmation is needed)	USAID/ STEP (Sudan Transitional Environment Program)
Preparation of Environmental Impact Assessment Guideline -Water Resources Sector (Ongoing Project)	Preparation of Environmental Impact Assessment Guideline for Water Resources Sector based on World Bank Safety Guard.	Ministry of Water Resources & Irrigation/ GOSS (confirmation is needed)	World Bank

Source: JICA Study Team prepared by interviews in Ministry of Housing, Physical Planning and Environment

I.4 Land Acquisition Law and Process

(1) Current Situation of Landowning

According to the interview of Ministry of Physical Infrastructure, Central Equatoria State (MOPI/CES), more than 85% of the land in Juba suburb area including study area belongs to local communities, and is called as customary land. Such landowning is allowed by “Land Settlement and Registration Act 1925”, and in general, these customary lands are managed by the same blood society. In the study area, most of the land belongs to Bari community.

(2) Land Acquisition Law

The major laws concerning land acquisition are summarized in Table I.3.

Table I.3 Major Laws concerning Land Acquisition

Name	Description
Land Settlement and Registration Act, 1925	Any person has right of landowning and registration
Land Acquisition Act, 1930	The government is able to acquire and required land for public utility purpose from land owners through appropriate compensation and resettlement
The Civil Transaction Act, 1984	Any person can secure land based on deal law
Disposition of Lands and Physical Planning Act, 1984	The government can designate land use category for required purpose and urban planning
SOUTHERN SUDAN LAND ACT, 2009	This Land Act is established by GOSS (Explanation will be give in below)

Source: Prepared by JICA Study Team based on preliminary study and interviews

Draft land act in Southern Sudan was established in January 2009 and following table describes compensation for land acquisition.

Table 1.4 Compensation in the Land Act, 2009

Article	Description
5. Objectives	- Recognizing customary law and practices related to land owned by communities as part of the normative system of land regulation as long as they are consistent with the provisions of the Interim Constitution of Southern Sudan 2005, this Act and laws; - Facilitating the reintegration and resettlement of Internally Displaced Persons, Returnees and other categories of persons whose rights to land were or are affected by the civil war: - Guaranteeing a fair and prompt compensation to any person whose right of occupancy, ownership or recognized long standing occupancy of customary use of land is revoked or otherwise interfered with by the government under this Act or any other law.
30. Rights of the usufructuary	Any natural fruit attached to the land at the end of the usufruct shall be to the benefit of the owner without mutual compensation for ploughing, harrowing and harvesting of the seeds.
64. Compensation for the community	Notwithstanding the provision of section 72 of the Act, any community or persons affected by such activities in the area of investment shall be compensated in accordance with the provision of section 75 of this Act and Article 180(7) of the Constitution.
80. Compensation	(1) The compensation shall be just, equitable, and shall take into account the following factors: a) the purpose for which the land is being utilized; b) the land market value; and c) the value of the investment in it by those affected and their interest. (2) The compensation shall be in cash or in kind or both according to the agreement. (3) Where any land expropriated for public purpose is necessary to remove any person there from in customary occupation, compensation shall be paid as may be agreed upon. (4) Where any land expropriated for public purpose is the subject of a lease under this Act, compensation shall be paid to the lessee as may be agreed upon. (5) No transfer of ownership or rights over land shall be made until the type, amount, method and timing of the payment of compensation has been agreed upon with those affected. (6) Subject to the provisions of sub-section (1) herein, if no agreement is reached in the compensation modalities, the case may be determined by the Southern Sudan Land Commission ascribed until such compensation is fully paid. (7) Where payment of compensation is not made within sixty days of transfer of the property, the affected persons shall, in addition, receive interest on the sum due at commercial rates, recoverable until such compensation is fully paid.

Source: The Land Act 2009 (16th February 2009) / Ministry of Legal Affairs & Constitutional Development

(3) Relevant Organizations and Functions

The organizations related to land acquisition are summarized in Table I.. The organization chart of MOPI/CES related to land acquisition is shown in Figure I.5 .

Table I.5 Organizations related to Land Acquisition and their Functions

Organization Name			Functions/Responsibility
Directorate of Housing and Construction (Department of Survey)	Ministry of Physical Infrastructure (MOPI)	CES	Contact section from applicants Measurement section based on application
Directorate of Lands and Town Planning (Department of Lands)	MOPI	CES	Negotiation and compensation with landowners and registration
South Sudan Land Commission	Ministry of Housing, Physical Planning & Environment (MHPPE)	GOSS	Establishment of laws regarding land, and adjustment & mediation of conflicts regarding land issue.
Allocation Committee	Juba County	CES	The committee to be organized by Juba mayor from the GOSS.

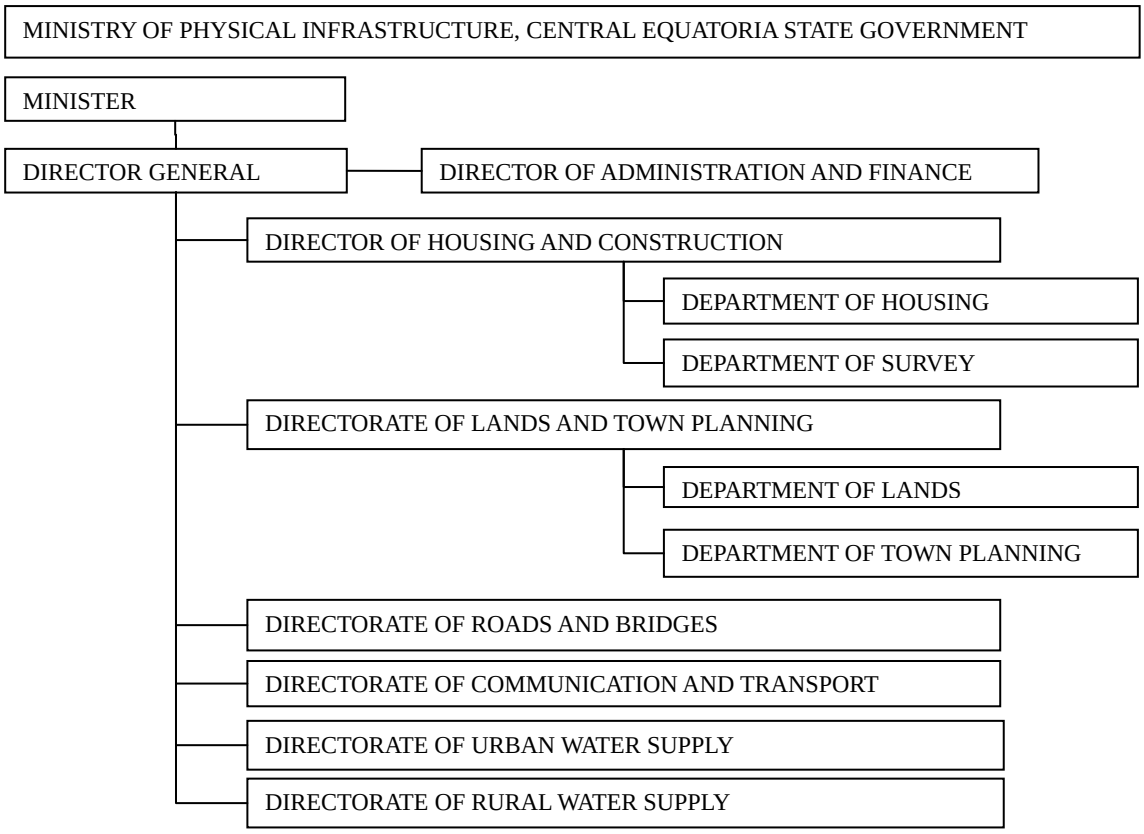


Figure I.5 Relevant Section regarding Land Acquisition in MOPI/CES

(4) Process of Land Acquisition

The process of land acquisition is understood through interview survey and is explained in Table I.3

and Table I..

This flow chart was made based on interviews from MoPI and Southern Sudan Land Commission. According to South Sudan Land Commission, this process will be taken after declaration of new land act. This process was explained in the Stakeholder meetings and understood by all participants.

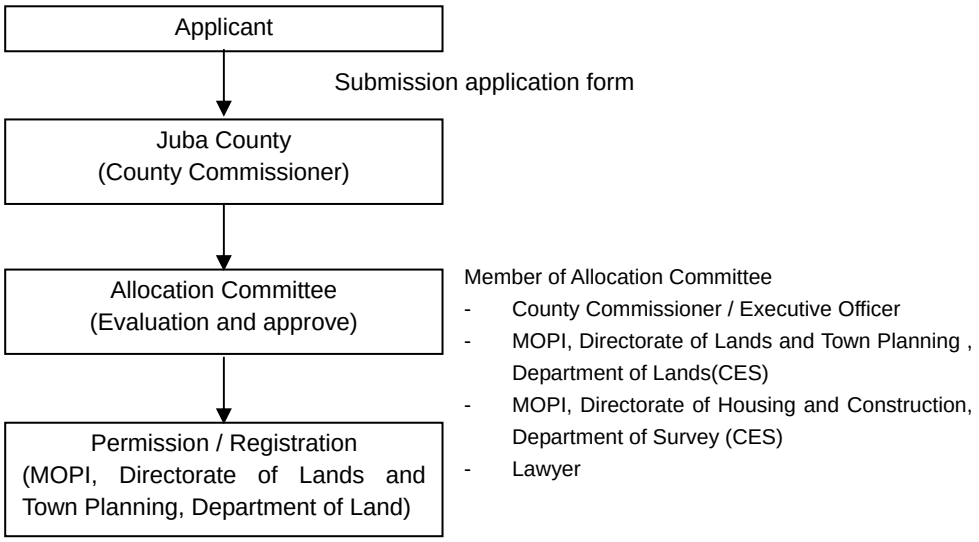
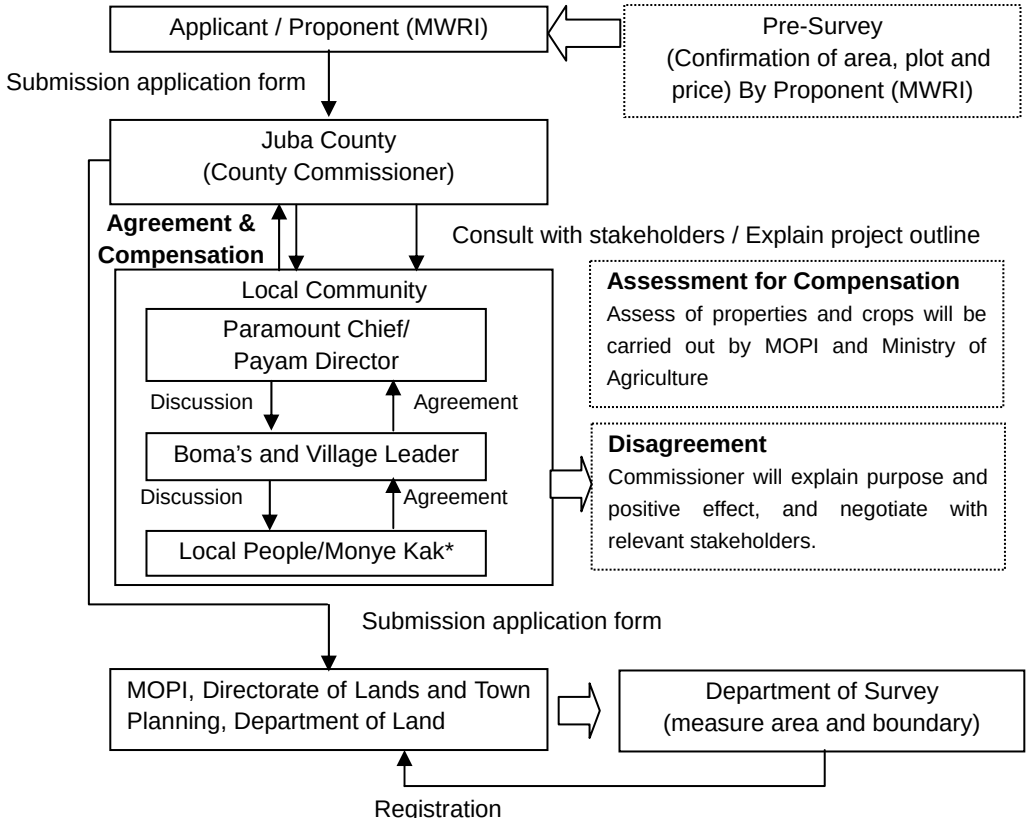


Figure I.6 Land Acquisition Process for Private Use



Source: JICA Study Team prepared based on interviews from MOPI and Southern Sudan Land Commission

Note) Monye Kak : Land owner in the village

Figure I.7 Land Acquisition Process for Public-Use

(5) Compensation System, Items and Price

According to Department of Lands of Ministry of Physical Infrastructure, compensation for loss of lands and any properties shall be done by government based on the Land Acquisition Act, 1930. Such compensated price of lands is assessed by the MOPI, and agricultural product and crop field is done by the Ministry of Agriculture. With regard to agricultural products, there is no standard price list, all compensation price is concluded through a assessment by the compensation committee in the Ministry of Agriculture. Therefore price of agricultural products are not same price, but most expensive property is Mango Tree. One Mango tree is approximately 20,000-50,0000 SDG in accordance with the Ministry of Agriculture.

I.5 Result of Scoping for Master Plan

Impact Items				Impact Factors by stages														
				Planning Phase		Construction Phase								Post Construction				
	No	Likely Impacts	**Overall Rating**	Land acquisition/Compensation	Change of Land use plan, Control of various activities by regulations for the construction	Reclamation of Wetland, etc.	Deforestation/Land Clearance	Alteration to ground by cut land, filling, etc.	Operation of Construction Equipment and Vehicles	Construction of facilities	Traffic Restriction in construction area	Influx of construction workers, construction of base camp	Removal old pipelines	Increase of Water Supply	Increase of Discharged Water	Appearance/ Occupancy of Facility and related building structures	Operation of Facility	Operation of Water Tankers
Social Environment	1	Resettlement (or Loss of Properties)	**B**	B			B											
	2	Local economy such as employment and livelihood, etc.																
	3	Land use and utilization of local resources	**B**	B			B											
	4	Social institutions such as social infrastructure and local decision-making institutions																
	5	Social infrastructures and services																
	6	Poor, indigenous and ethnic people (inclusive IDPs and refugees), gender and children rights																
	7	Misdistribution of benefits and damages	**B**											B				
	8	Cultural heritage (ex. Burial grounds)	**C**															
	9	Local conflict of interests																
	10	Water Usage, Water Rights or Common Rights																
	11	Sanitation	**B**												B			
	12	Hazards (Risks) Infectious diseases such as HIV/AIDS	**B**									B	B	B	B			
	13	Accidents	**B**						B									B
Natural Environment	14	Topography and Geographical features																
	15	Soil Erosion																
	16	Underground water																
	17	Hydrological Situation																
	18	Coastal Zone																
	19	Flora, Fauna and Biodiversity	**B**				B											
	20	Meteorology																
	21	Landscape	**B**													B		
	22	Global Warming																
Pollution	23	Air Pollution (dust)	**B**					B	B									B
	24	Water Pollution	**A**					B							A			
	25	Soil Contamination																
	26	Waste	**B**				B										B	
	27	Noise and Vibration	**B**					B	B	B							B	B
	28	Ground Subsidence																
	29	Offensive Odors																
	30	Bottom sediments																

Rating: A: Serious adverse impact is expected. B: Some adverse impact is expected. C: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progresses.) No Mark: Few impacts are expected and IEE/EIA is not necessary.

I.6 Result of Filed Survey for Confirmation of Landowners with Community Leaders

Location	Proposed facility	Location	Comments from Paramount Chief and payam representatives	
1. UWC compound	Water treatment plant	Juba Payam	This site is located inside the existing UWC compound and there is no issue on land acquisition.	-
2. Memorial Ground near parliament	Service reservoir	Juba Payam	This site belongs to government and there is no issue for land acquisition. But proponent should confirm its use with the presidential office.	Commented by Paramount Chief and Director of Juba Payam
3. Northeast of Mt. Jebel Körök	Service reservoir	Northern Bari Payam	Mt. Jebel Körök (Kujur) and its surrounding area within 100 m including the proposed site belong to community of Nyaing Boma in Northern Bari Payam.	Commented by Paramount Chief and Munuki Boma Chief
			Northern Bari Payam representatives in the other field trip explained that the fence surrounding the site was constructed by a person but the land is owned by community and the community welcomes a reservoir.	Northern Bari Payam representatives
4. Tokiman crossing over Khor Roml River	Intake and water treatment plant	Rejaf Payam	This land belongs to Tokiman traditional community. Basically there is no problem but community meeting at site is required.	Commented by Paramount Chief and Gumbo chief.
5. South of Mt. Jebel Körök	Service reservoir	Rejaf Payam	This land belongs to Tokiman traditional community. There is no problem to construct a reservoir. The resident also benefit from the reservoir.	Commented by Paramount Chief.
6. Along the Yei road	Service reservoir	West Side: Rejaf Payam, East Side: Kator Payam	According to department survey, the west side is registered house plots area or market.	Explained by JICA Study Team
			The west side belongs to government land and is planned as 1st class house plots, and east side may be same plots.	Commented by Paramount Chief
7. Gumbo in East Bank	Intake and water treatment plant	Gumbo Boma, Rejaf Payam	This land belongs to Tokiman traditional community.	Commented by Deputy Director of Rejaf Payam and Gumbo Boma Chief.
8. Center of Gumbo in East Bank	Elevated tank	Gumbo Boma, Rejaf Payam	This land belongs to Rejaf Payam office compound. There is no plan for development in the compound at the moment. Planned facility can be constructed in this compound.	Commented by Deputy Director of Rejaf Payam.

Note) This field survey was conducted in 8th April, 2009.
Participants: Paramount Chief Tokiman, Representatives of Kator, Rejaf and Munuki Payam.

I.7 Proposed Mitigation Measures and Monitoring Items for Master Plan

Items		Mitigation Measures	Monitoring Items *except confirmation of implementation of mitigation measures
Social Environment	1. Resettlement (or loss of properties)	1-1. No selection of residential and forest areas for project site 1-2. Holding of stakeholders meeting 1-3. Establishment of a complaint window by the relevant bodies in implementation stage 1-4. Appropriate compensation for land acquisition	- Observation of ~~a~~dequate land acquisition process and compensation during construction
	2. Local economy, employment and livelihood	2-1. Hiring of inhabitants as construction workers	- Number of hired construction workers from inhabitants during construction
	3. Land use and local resources utilization	3-1. In the case of cutting the water vein for drinking water, the set up of a new well by the proponent	- Groundwater level at nearest well during construction
	4. Social institutions such as social infrastructure and local decision-making institutions	4-1. With regard to land acquisition, traditional process and decision making must be made between the GoSS and communities under observation with relevant persons such as landowners, Boma, villages, Payam and Juba county.	-Observation of adequate land acquisition process and compensation during construction
	5. Existing social infrastructures and services	5-1. No selection of infrastructure's area for project site 5-2. Holding of stakeholders meeting 5-3. Reconstruction of social infrastructure in the case of displacement	Not required
	6. The poor, indigenous and ethnic people (inclusive IDPs and refugees), gender and children rights	6-1. Holding of stakeholders meeting inclusive women's group 6-2. Establishment of a complaint window by the relevant bodies	Not required
	7. Misdistribution of benefit and damage	7-1. Hiring of inhabitants as construction workers 7-2. Securing ~~of~~ employment for inhabitants who are affected by projects such as the water transporter from Bahr el-Jebel. 7-3. Provision of water supply for inhabitants where facilities are located.	- Number of hired construction workers from inhabitants during construction
	8. Cultural heritage	8-1. Avoid cultural sites, sanctuaries and tombs for project site	Not required
	9. Local conflicts of interests	9-1. Holding of stakeholders meeting 9-2. Appropriate compensation for land acquisition	-Observation of adequate land acquisition process and compensation during construction
	10. Water usage and rights	10-1. In the case of cutting the water vein for drinking water, the set up of a new well by the proponent	- Groundwater level at nearest well during construction
	11. Public sanitation	11-1. Installation of drainage and sewerage system	Not required
	12. Infectious diseases such as HIV/AIDS	12-1. Healthcare education for workers and inhabitants 12-2. Control of prostitution by the police department 12-3. Installation of drainage system for prevention of malaria	-Number of HIV, Malaria and other infection disease cases during and post construction
	13. Traffic accidents	13-1. Education on traffic rules for construction workers, drivers of water tankers and inhabitants 13-2. Staffing of traffic control during construction	- Number of traffic accidents during and post construction
Natural Environment	14. Geographical features	Not required	Not required
	15. Soil erosion	15-1. The set up of slope protection measures for embankment	- Visual observation of embankment condition during construction
	16. Underground water	16-1. In the case of cutting the water vein for drinking water, set up of a new well by the proponent	- Groundwater level at nearest well during construction
	17. Hydrological situation	Not required	Not required

Items		Mitigation Measures	Monitoring Items *except confirmation of implementation of mitigation measures
	18. Coastal zone (mangroves, coral reefs, tidal flats, etc.)	Not required	Not required
	19. Biota and ecosystems	19-1. Minimization of destroying trees, such as community's forests and mango trees 19-2.The contractor must set up marking ~~on~~ of the boundary of construction area	-Observation of adequate compensation by government during construction
	20. Meteorology	Not required	Not required
	21. Landscape	21-1. Minimization of destroying trees 22-2. Adoption of earth colors for facilities and plants (no use of strong colors)	Not required
	22. Global warming	Not required	Not required
Pollution	23. Air pollution	23-1. Sprinkling water near residential areas to reduce suspended particle matter during construction	- Visual observation of the condition of dust distribution during construction
	24. Water pollution	24-1. Setting up of treatment facilities for sedimentation of turbid water and discharged water from base camp during construction 24-2. Setting up of the sewage system	- Visual observation of water quality from earthwork area and base camp site during construction
	25. Soil contamination	25-1. No use of polluted soil from borrow pits and quarry during construction	Not required
	26. Waste Solid	26-1. Education on waste separation and appropriate disposal for workers during construction 26-2. Adequate solid waste management for sludge from water treatment plants in operation	- Visual observation of management store for waste machine oil or other hazardous material during construction - Solid waste management by manifestation system during and post construction for garbage from base camp and sludge from the water treatment plant
	27. Noise and vibration	27-1. Adjustment of work time (limited work time during the daytime) 27-2. Avoidance of residential areas for the construction of yards or pumping stations	- Equivalent sound levels at the boundary and nearest residence before, during and post construction
	28. Ground subsidence	Not required	Not required
	29. Offensive odors	29-1. Appropriate management of solid and liquid waste from the base camp and project site	- Visual observation of solid and liquid waste management in the base camp during construction
	30. Bottom sediment in sea and rivers	Not required	Not required

APPENDIX – J

MUNUKI COMMUNITY WATER AND SANITATION MANAGEMENT

APPENDIX - J MUNUKI COMMUNITY WATER AND SANITATION MANAGEMENT

Table of Contents

J.1 Overall Activity Schedule

	Activities	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Task 1	*WATER MANAGEMENT COMMITTEE ("WMC")*										
[1]	To assist in establishing water management committee and formulating a plan of action to maintain and operate tap stands										
[1.1]	Selection of the committee										
[1.2]	Formulation of Water management committee's Plan of Action for O&M										
[2]	Study and setting of water use tariff										
[3]	To prepare O&M manuals										
[3.1]	Workshop on making manual outline										
[3.2]	Training of committee members for O&M										
[3.3]	Water users training										
[4]	To assist in developing a hygiene and sanitation education program and an action plan to improve behavior										
[4.1]	1. Formulating a Plan of Action to change hygiene behavior and practice										
	2. Producing a program to support hygiene and health education and to raise awareness										
[4.2]	1. Training to those who execute the Plan of Action that is made at sec[10.4.1]-1										
Task 2	*SCHOOL LATRINE*										
[5]	Installation of latrine at a school and make O&M manual										
[5.1]	Latrine construction preparation										
[5.2]	To prepare O&M manual										
[6]	To formulate and empower school's latrine management body										
Task 3	EVALUATION										
[7]	To conduct evaluation and workshop of above activities										
[7.1]	Analyze and evaluate the activity and report serults and reccomendation/suggestion										
[7.2]	Participatry project evaluation and information sharing										
	Prepare Final Report to JICA										

J.2 Water Management Committee

J.2.1 Summary of Committee Meetings

Working paper on Creating of Water Management Committee
Of Block A, B, and C
in Munuki
As of June 20, 2009

Cooperative work of Munuki Payam, Urban Water Corporation, and Japan International Cooperation Agency

Introduction

In January 2009, three water management committees were formed in Block A, B, and C of Munuki that have received communal tap stands from the Government of South Sudan in corporate with Japan International Cooperation Agency, JICA.

Constitutions

The constitutions of water management committee are as follows.

① To serve the community voluntarily with dignity and fairness
② To be elected democratically and recognized with respect by the community who receives a benefit from the tap stand directly
③ To be accountable to manage and operate each tap stand properly
④ To collect and remit water tariff
⑤ To coordinate and cooperate with Urban Water Corporation, the water supplier
⑥ To represent the community in water contact with UWC
⑦ To organize proper operation and maintenance of tap water stand
⑧ To keep accurate records of all payments and expenditures
⑨ To promote hygienic and effective use of the tap stands
⑩ To be accountable to operation and management of tap stand system and finance
⑪ To hold mandatory quarterly meeting and report the result to the community

Amendments made by each block in the meeting on February 14, 2009

Block A

- Cleaning (all tap stand properties)
- Others for caring the tap
- Committee to check all side of the water management

- Committee have right to change the side which does not work well
- The community member can be consulted when making decision
- Every Saturday they will attend a meeting to see the running cost of the work
- Chairman can be changed according to his work performance(if he is good/bad)
- Daily remittances of tariff to the treasurer
- Weekly remittances to the bank
- Daily remittances to the treasurer will be receive by receipts with a copy to the treasurer
- Monthly evaluation of the activities by the committee(chairman)
- Meetings and evaluation of the activities to see in every side of the committee members
- Reports can be done in the following (Finance-Activities- Incidents)
- System of tariff collection by the rates can be presented by receipts
- General assembly can be done after six months
- Penalty can be punish according to the type of crimes

Block B

- Contract Period Three Years
- General Assembly Once A Year After Three Years
- Executive committee Meeting To Be Decided by the Committee
- Emergency meeting Defending on Arriving Matters
- Penalty To Punish Defaulters

Block C

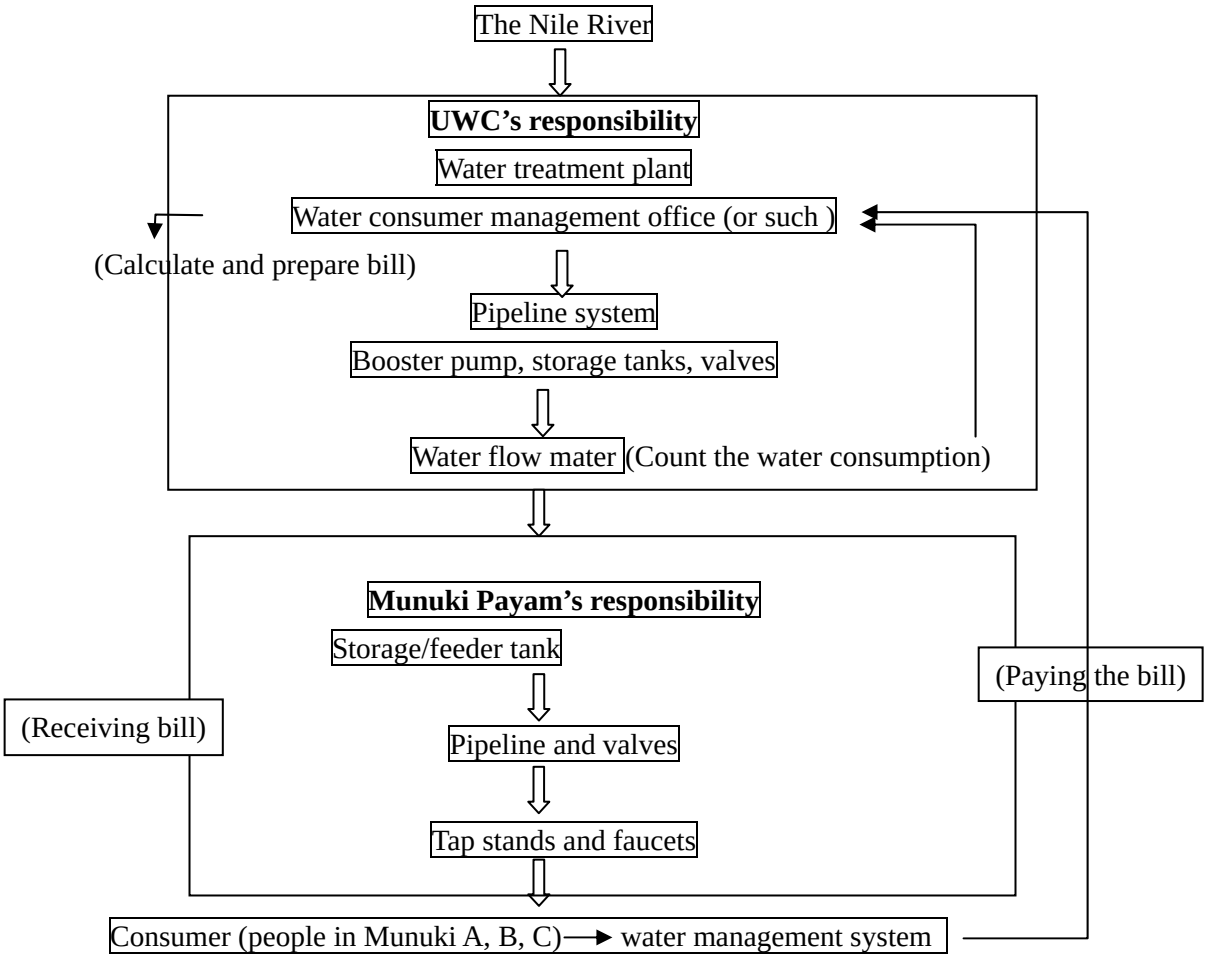
- To serve as committee to the community for the assigned period of three years
- Need to define contract period after three months
- To hold meeting at each block periodically after every month
- To attend and participate in a meeting every two weeks
- To report to community members results of meetings and share information in three months
- To consult with the community members and councilors before making decision on everything concerning management and operation of the tap stands general meeting of three months
- To submit a written report to Payam Office director every month on finances and activity
- To evaluate activities in three months
- To have auditor to check finance statements every month
- To replace a member if he/ she is incapable to perform his/ her duty after careful performance evaluations by the chairman

Additional Amendments:

- Mandatory attendance to committee meetings
- List up penalties and fines against breaching of duty

Management Structure

Flow of Water and Payment (money)



1. UWC's role and responsibility

- Making of policies, guidelines, regulations regarding drinking water
- Operate and maintain water supply system and service up to a water flow mater
  - Ensuring of safe drinking water quality
  - Ensuring of integrity of water supply line
  - Pipes with a diameter of up to 4" are UWC's responsibility. Pipes under 4" such as PVC pipe to connect the tap stands are Munuki's responsibility
  - Provide a watch man for the over head tank build by JICA in 2006
  - Provide technical supports upon request. For example, if water stops call UWC immediately.
  - Inform any event of accident, damage, or anything that concerns customers
- Manage tariff collected from the consumers
  - The tariff is used to repair and maintain the pipes, valves, storage tanks, pumps, and water treatment plant, including the chemicals to treat water
  - The tariff is used for salary of those who work on operation and management of the water

distribution system

- Audit and annual finance report must be disclosed to the Public

2. Payam's role and responsibility

① Management structure (Water management committee)

- Collect and remit water use tariff
- Manage and maintain tap stands, building fence and hire night guards
- Coordinate with UWC to receive safe and sufficient water supply
- Report condition and state of water system
- Ensuring dignity and proper use of the tap stands
- Support enhancement of health associating water use in payam
- Cover cost of water used by those who are not able to work or earn income
- Report of Audit result to UWC and the community

② Consumer/water user

- Pay water use tariff
- Protect tap stands and their own health

Tariff Collection

5 different options to collect water tariff can be considered.

Option 1: Cash for Water

Concept: This option allows people to buy water at the tap stand and fill water by themselves in exchange to cash payment.

Pro: Tariff is collected on site and without time delay.

Con: Cash income and changes must be at tap stand always that induces security issue.

You have to give credits to those who can not fill 10 jerrycans at once. The credit can be used to exchange to water according to the remaining amount of credit. This option requires a good record keeping skill to the tariff collectors.

Option 2: Token /Pre-paid system

Concept: Tokens are sold to water users by Treasures, for example 10 tokens for 10 jerry cans can be sold for 1 SDG. One token is collected at a water point in exchange to filling one jerry can. All collected tokens are then returned to the Treasure at the end of a day.

Pro: Tariff payment is guaranteed and easier to count and keep truck balance at Treasure. No security issue such as loss of cash is expected at water point. Less burden for tariff collectors at water stands

Con: Tokens must be prepared and they might be costly. Counter-fit tokens can be fabricated and water can be stolen.

Option 3: Billing system

Concept: Pay tariff at the end of month as UWC sends a bill according to a water mater.
Pro: Exact amount can be remitted to UWC. Tariff does not have to be paid each time as jerry can is filled.
Con: It is difficult to identify individual use of water from one bill unless each user is equipped with a water mater. Some user might not pay at the end of month due to financial problem, or moving away from the area.

Option 4. Cost sharing system
Concept: A membership is issued to water users to pay flat rate for water use for billing period.
Pro: Evenly shared the cost of water use. Guarantee of payment.
Con: You might pay more than actually you use. Some member might drop out and reduce amount of tariff.

Option 5. Water Kiosk system
Concept: You buy water from a Water kiosk and pay there for water collection service and tariff. Water containers with your name tag are left at Kiosk for water filling service. Payment scheme can be decided by the kiosk owner.
Pro: You do not have to wait on a line for water but the Kiosk fills water for you. The Kiosk manages and maintains tap stand and no need of water management committee.
Con: Community does not own the stand and no control over its use.

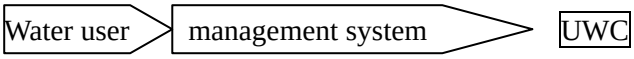
Among all the options stated above, Option 2: Token /Pre-paid system was selected by the committee member on their meeting on February 21, 2009.

Amount of Tariff

- The amount was agreed to be 1 pound for 10 jerry cans (200L)
- UWC is proposing 0.5 SGD for 40L, i.e. 2.5 SDG for 200L (10 jerry cans). The tariff must be raised to 3 SGD for 200L (10 jerry cans) to yield minimum revenues for maintenance and operation etc.
- Current cost of water form a tanker truck is 5 pounds for 200L
- By setting the price of water 1/5 of tanker price it can prevent people from going back to cheap/free but dangerous water

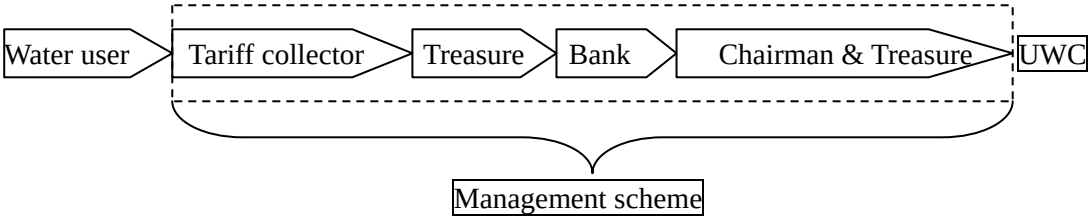
Tariff remittance

General flow of cash

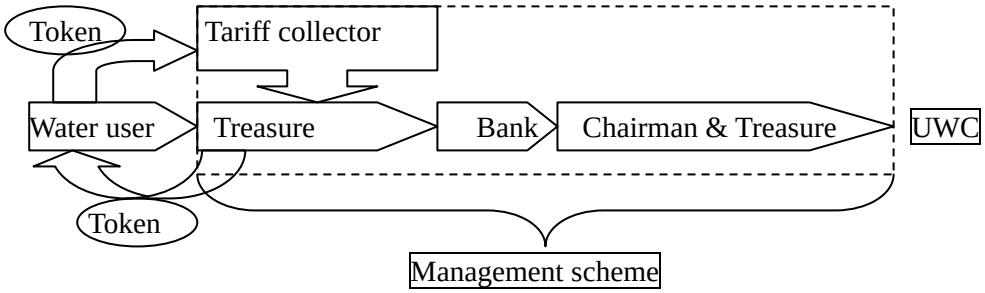


Scheme 1. Tariff remittance through a water management committee

Variation 1.1 Cash for Water, Billing system, Cost sharing system

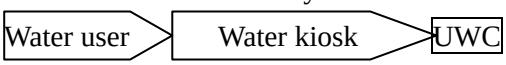


Variation 1.2 Token /Pre-paid system



Scheme 2. Tariff remittance through a private business

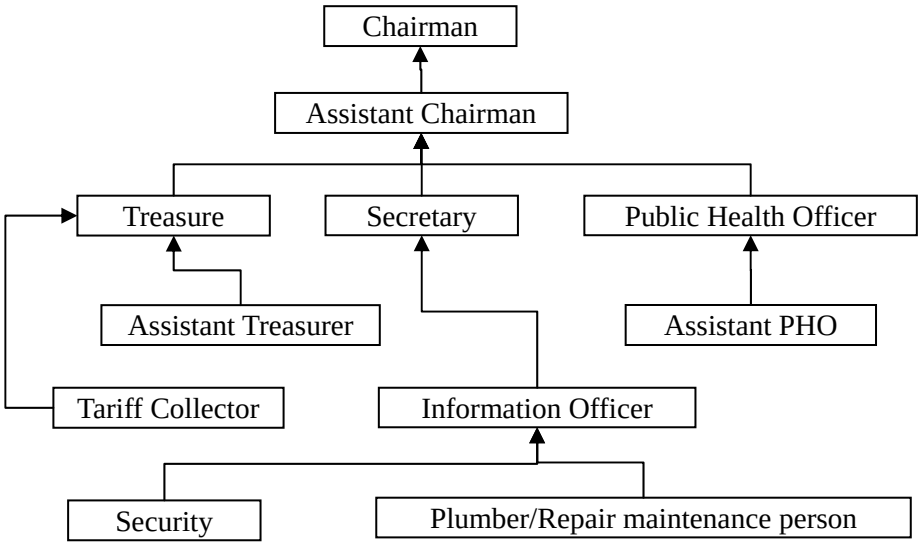
Version 2.1 Water kiosk system



	Block A	Block B	Block C
The exact location of a treasure to sell token	Behind a tap stand	Behind a tap stand	Behind a tap stand
The exact location of a tariff collector to collect tokens	At front of a tap stand	At front of a tap stand	At front of a tap stand
Time to open / close the shop for token exchange	6am-12pm, 1pm-5pm	6am-12pm, 1pm-5pm	6am-12pm, 1pm-5pm
Time to open /close tap water stands	6am-12pm, 1pm-5pm	6am-12pm, 1pm-5pm	6am-12pm, 1pm-5pm
Route to transfer tokens to Treasure			
Meeting point with chairman and payam accountant	Munuki payam office	Munuki payam office	Munuki payam office
Meeting point with water users to discuss issues	Munuki payam office	Munuki payam office	Munuki payam office

Water Management Committee

1. Flow of Report



2. Positions and job descriptions of the water management committee

Chairman (1 position)

- Directs and manages the committee members
- Links Payam to community and UWC
- Calls for meeting
- Assigns replacement of a committee member if he/she does not perform his/her duty as agreed
- Over sees accounting and finance part
- Makes a final decision and take an accountability
- Approve and sign for a payment

Assistant chairman (1 position)

- Assists chairman
- Acts as a chairman when the chairman is not able to perform his/her duty

Secretary (1 position)

- Keeps records, takes notes
- Assists the chairman
- Sends out invitations

Treasure (1 position)

- Keeps money, responsible of transaction and remittance of money

- Makes sure money is secure
- Book keeping
- Reports expense periodically to the community
- Maintains bank account
- Sell token for water collection

Assistant treasure (1 position)

- Advises the treasure
- Acts as the treasure if he/she is not able to perform his/her duty

Information officer (1 position)

- Communicates between the committee and the rest of the community
- Coordinates activities

Tariff collector

- Collects tokens for use of water
- Submits collected token to the treasure

Public Health Officer (1 woman)

- Makes sure of clean tap stand environment
- Check the water use counter/flow mater
- Disseminates hygiene information to the community
- Opens and closes the valve to the tap if the tap area is clean
- Makes sure of a fence around a tap stand be intact

Assistant Public Health officer (1 man)

- Locks /closes the fence
- Acts as PHO if PHO can not perform her duty

Plumber/Repair/maintenance person

- Repairs the tap leakage, broken parts
- Requests money to buy parts, for maintenance

Assistant Plumber/Repair/maintenance person

- Assists the plumber/Repair/maintenance person

Security (4 positions)

- Makes sure of a queue
- Makes sure that the tap stands are not vandalized

- Arrests those who vandalize tap stands
- Stops disputes at tap stands

List of water management committee members

A list of the members of water management committee in Block A	
Position	Name
Chairman	David Graver
Assistant Chairman	Mujamil Lado
Secretary	Satimon Lado Jukeria
Assistant Secretary	
Treasure	Susan Lazarous
Assistant Treasure	Jackson Gogonya
Information officer	Rajaf Bunduki
Head tariff collector	Semira Mohammed Dislerem
Tariff collector	Gabriel Juma Bendere
Tariff collector	Grace Nyoka Moses
Tariff collector	John Walla
Tariff collector	Martha Koropo
Tariff collector	Timon Modi
Tariff collector	Grace Sadia
Public health officer	Jerisa Kongo
Public health officer	Jozaila Ali
Public health officer	Joseph Jantana
Public health officer	Alice Manaseh
Assistant public health officer	Gabriel Lado
Repairman	Joseph Bera
Assistant repairman	Elizabeth Apu
Securities	Chaplain Soro
Securities	Rita Juan
Securities	Godfrey Khamis
Securities	James Wani
Securities	Gabriel Lomu

Committee members of block A who received their ID cards at the end of the project: Jerisa Kongo(PHO), James Wani(PHO), David Graver(Chairman), Laila Juru (PHO), Dian Loro(Security), Joseph Bera(repairman), Elizabeth Apu (repairman), Jerisa Juru(Tariff collector), Noel Nyoma(Assistant secretary), Susan Lazarous(Treasure), Lona Lurit(Tariff collector), Zermano Okello(Assistant chairman)

A list of the members of water management committee in Block B	
Position	Name
Chairman	Joseph Abuk
Assistant Chairman	Nura Mathew
Secretary	Thomas Nyarji
Assistant Secretary	Monica Angelo
Treasure	Dentila Kongo
Assistant Treasure	Lomeling Joseph
Information officer	James Laki

Tariff collectors	Racal Elizara
Tariff collectors	Mary Gala
Tariff collectors	Jenina Koropo
Tariff collectors	Mary John
Tariff collectors	Apai James
Tariff collectors	Alice Kiden
Public health officer	Joseph Mathia
Public health officer	Hawa Ramadhan
Public health officer	Ester Juan
Public health officer	Charles Sabura
Public health officer	Mary Selvino
Public health officer	Joseph Lagu
Assistant public health officer	
Repairman	Nelson Oliver
Assistant Plumber	Joseph Yata
Securities	John Khamis
Securities	James Wani
Securities	Lona Kani
Securities	Jacob Moro

Committee members of block B who received the ID cards at the end of the project: Mary Gala(tariff collector), Hawa Ramadhan(PHO), Roponi Alice(Assistance chairman), Reisa Ezanil(tariff collector), Apai James(tariff collector), Joice Paul(tariff collector), Naliso Madau (repairman)

A list of the members of water management committee in Block C	
Position	Name
Chairman	Jackson Konyo
Assistant Chairman	Athoni Mure
Secretary	Lucy Juwa
Assistant Secretary	
Treasure	Santina Kiden
Assistant Treasure	Julius Kilong
Information officer	Silivas Ahim
Tariff collectors	Paibe Jesitin
	Erika Kiko
	Fati Jastin
Public health officer	Viola Sadia
	Marcelina Kapului
	Justine Swiday
	Deuska William
Plumber	Alupos Laki
Assistant Plumber	
Securities	Scopas Jame
Securities	Jimi
Securities	Joseph Leju
Securities	Jackson Busi

Committee members of block C who received the ID cards at the end of the project: Selina Rom(Treasure),Tansar William(PHO), Silivas Akim(Information officer), Viola Sadia(PHO), Papar Justine(Tariff collector), Dina Jackson(PHO), Anthoni Mure(Assistant chairman)

Rules and Penalties regarding water use at the tap stands

Rule	Responsible party	Penalty
To follow water collection schedule; 6am to 12 pm, 2pm to 5pm	Public health officer	Open a case against the person Fine 100SDG
To close taps in the night (except time of child delver)	Public health officer Security	Call the police Fine 100SDG
To close the gate/fence after 5pm until 6am next morning	Assistant Public Health Officer	Committee meeting will be held/give the violator fine 100SDG
To have an ID card	Public health officer	ID theft is taken to the police
To respect queue	Public health officer Security	Fine is imposed to the violator; Fine 100 SDG
To buy token before collecting water	Tariff collector Treasure	Ban to use the tap after warning, Fine 100SDG
Not to break taps	Assistant Public Health Officer Security	Compensate the damage, pay the cost of repair
To prevent animals to enter the tap area	Public health officer	The animal is removed and tied if its owner is not know Give a warning their owners
To practice hygiene and sanitation messages that were given by the committee; a soak pit will be made to clean water containers	Public health officer	To confiscate dirty containers after two warnings were given, To impose fine to violators

Auditing

- All the committee members examine the account book, receipts and bank record
- The following measures must be taken to keep transparency of cash flow

Action	Responsible party	Checked by
Recording system is established and functional at tariff collection point	Tariff collector	Security
Collected tariff is counted and checked by all the committee members before submitting the treasure	All committee members	Chairman
Account book is recorded, checked, and signed	Treasure	All the committee members
Vouchers and receipts are kept	Treasure	Assistant treasure
Collected tariff is deposited and kept in the bank	Treasure	Chairman, Security
Finance report is given to the public periodically	Secretary, Treasure	Chairman, assistant chairman

J.2.2 Contract and Handing Over Letter

(1) Agreement on Relocation of Public Tap Stand

18 February 2009

MEMORANDUM OF UNDERSTANDING
ON
RELOCATION OF WATER TAP IN MUNUKI AREA

Japan International Cooperation Agency (JICA) constructed 8 public water taps in Munuki area under "Emergency Study on the Planning and Support for Basic Physical and Social Infrastructure in Juba Town and the Surrounding Areas in the Southern Sudan". However, some of the taps are posed risks due to new road construction, and it was found out that some were located in private land.

Accordingly, joint members among government officers, Munuki community and JICA Study Team conducted final survey for the appropriate location of public water tap stand in consideration with the utility, safety and land use issue on 13th February 2009.

The Joint Survey Members are as follows

- Mr. Joseph Ebere Amosa, Area Manager, Urban Water Cooperation
- Mr. Wani, Acting Director of Filed, Survey Department, CES
- Mr. Juma Nathama, Munuki Payam Engineer
- Mr. Hirotaka Sato, Team Leader, JICA Water Supply Study Team

As a result, the survey members agreed that 6 water taps stand should be relocated, 1 tap stand should be changed the direction of faucet, and remaining one should be repaired as attached drawing. The relocated site of water taps were also confirmed by the members, as there are no problems of land issue and safety.

Thus, JICA will start above mentioned works from middle of February 2009. Government of South Sudan as well as Central Equatoria State shall authorize the works and take necessary supports for it.

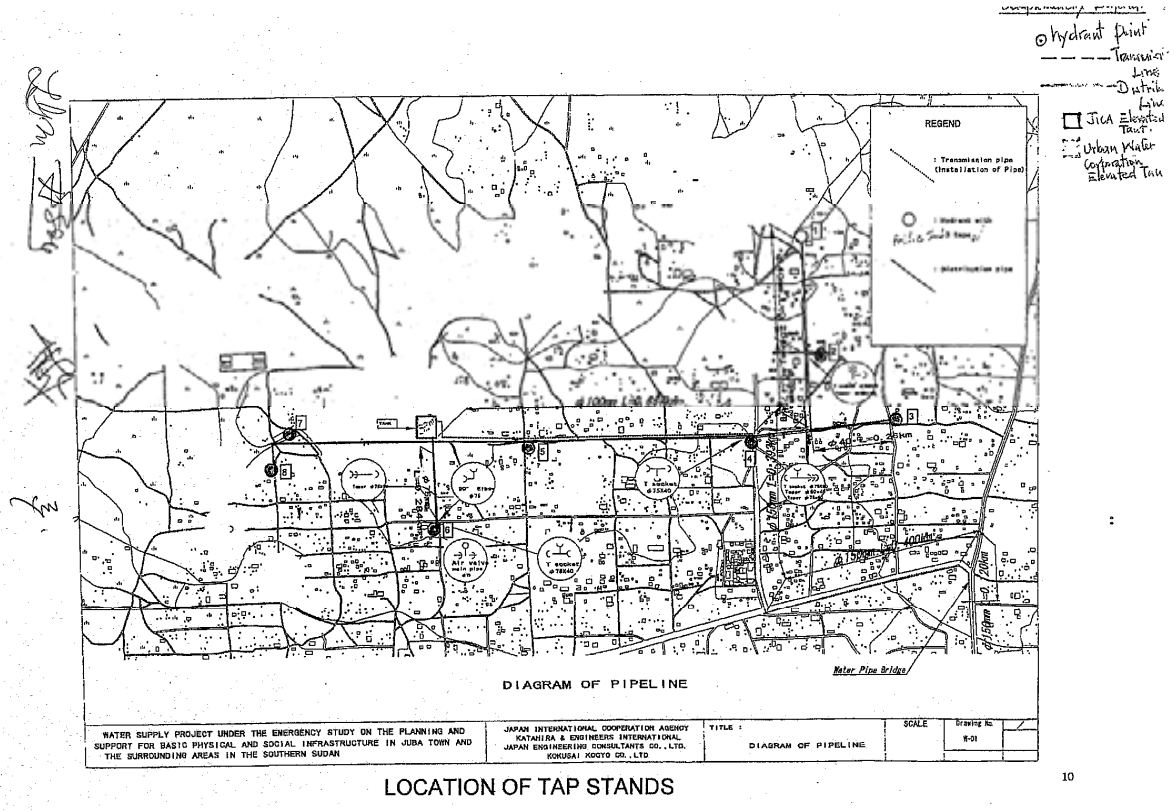
Munuki Payam shall cooperate with the community members for the works such as demolishing tap stands and existence fence on the tap relocation site, and take responsibility of maintain and manage the water taps after completion of work.

Eng. Isaac Liabwel C. Yol,
Undersecretary
Ministry of Water Resources and Irrigation
Government of Southern Sudan

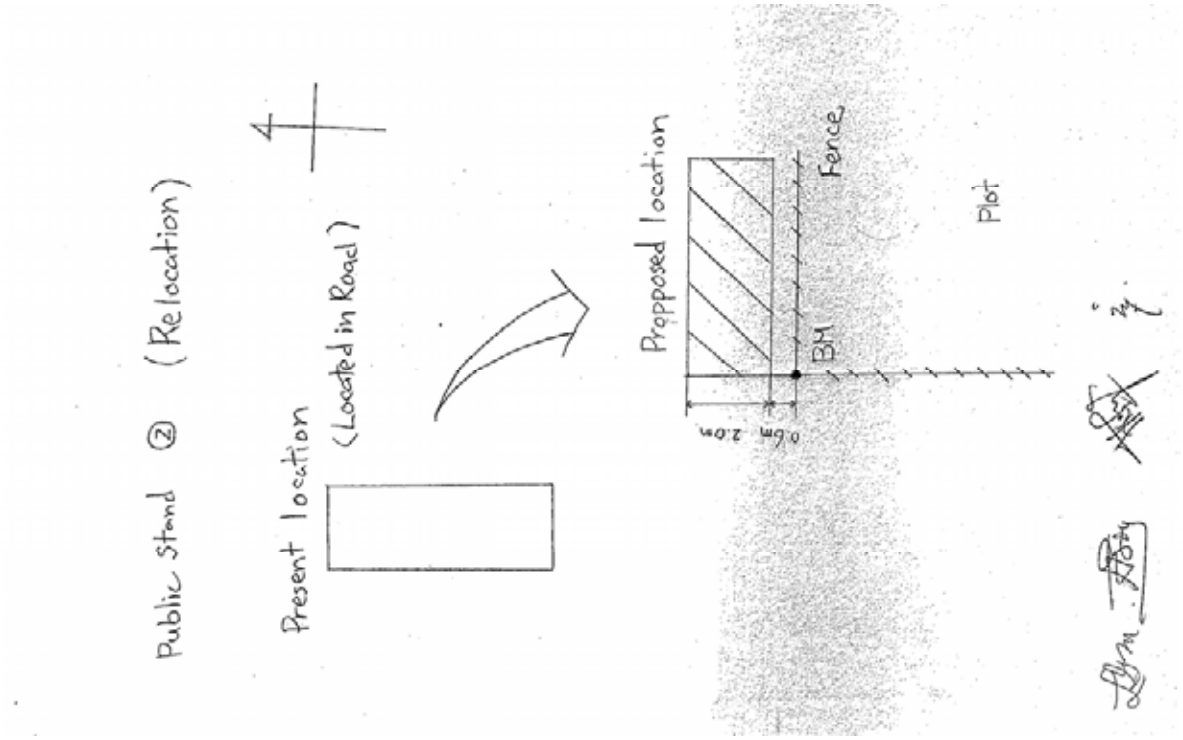
Mr. Kenichi SHISHIDO
Resident Representative
JICA Sudan Office

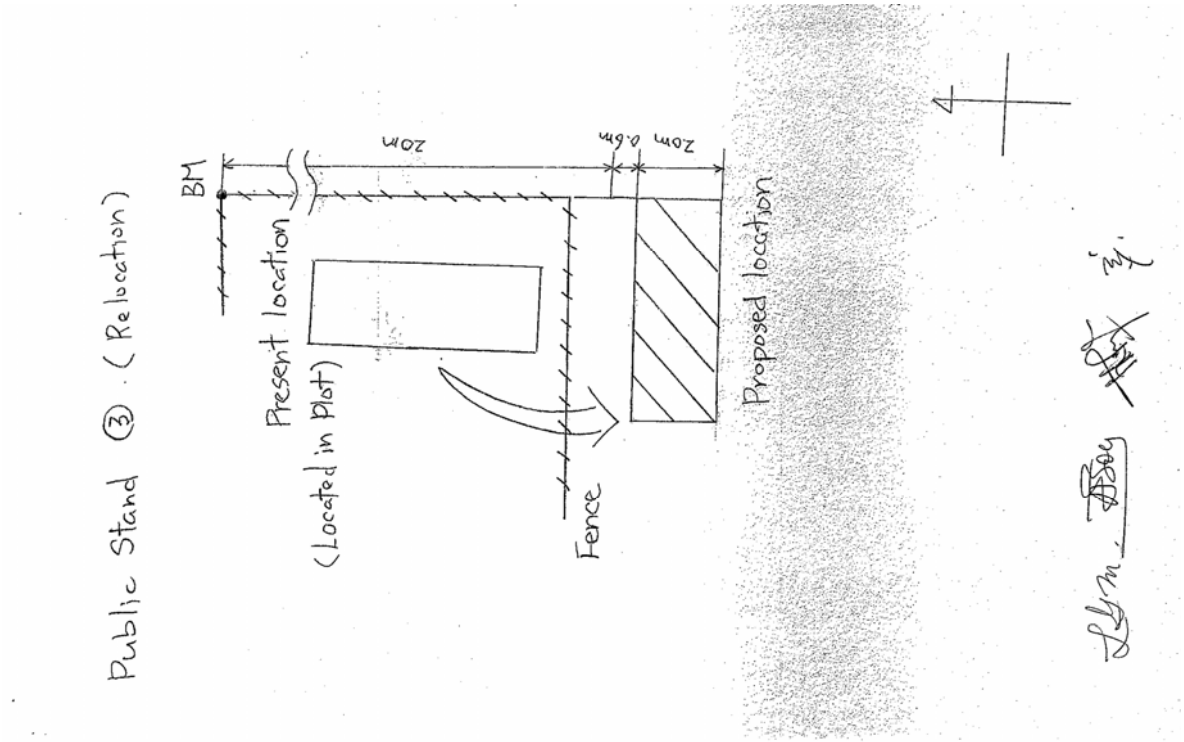
Eng. Lewis Gore George
Director General
Ministry of Physical Infrastructure
Central Equatoria State

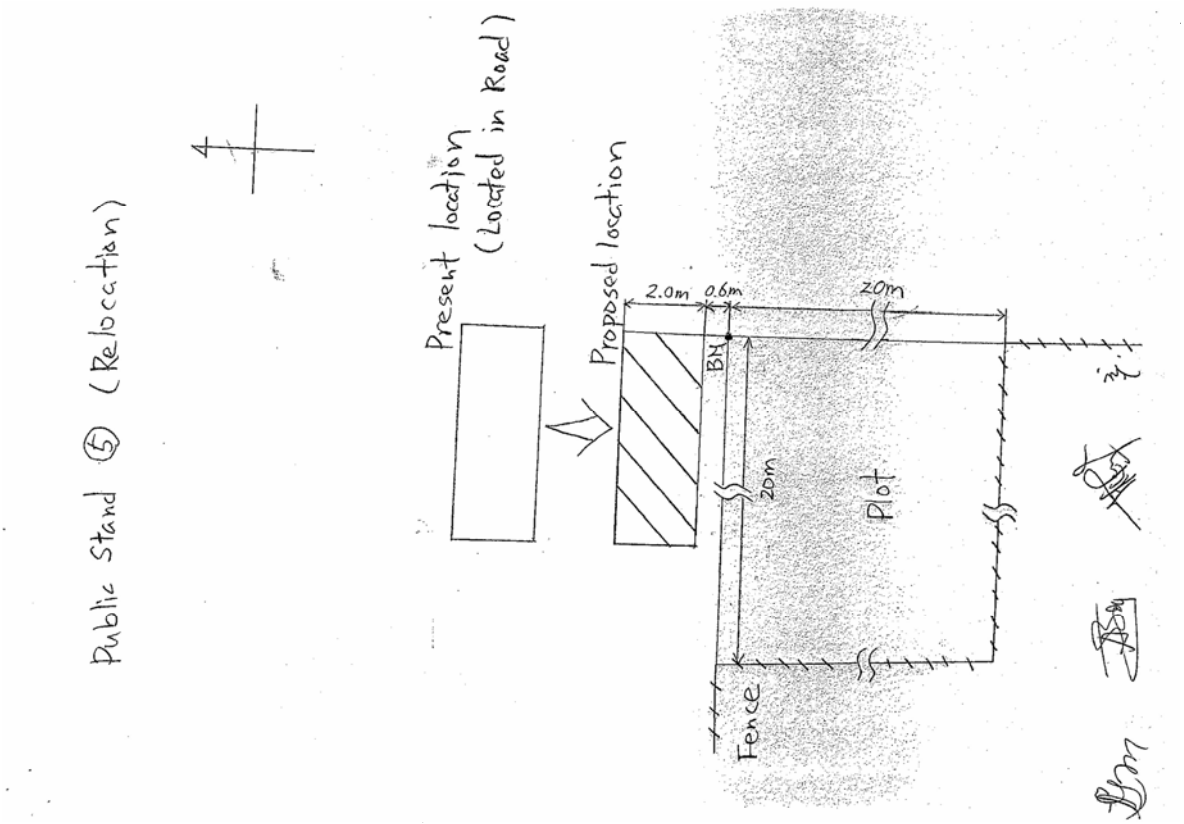
Mr. Franco El Hag Natasha
Director
Munuki Payam

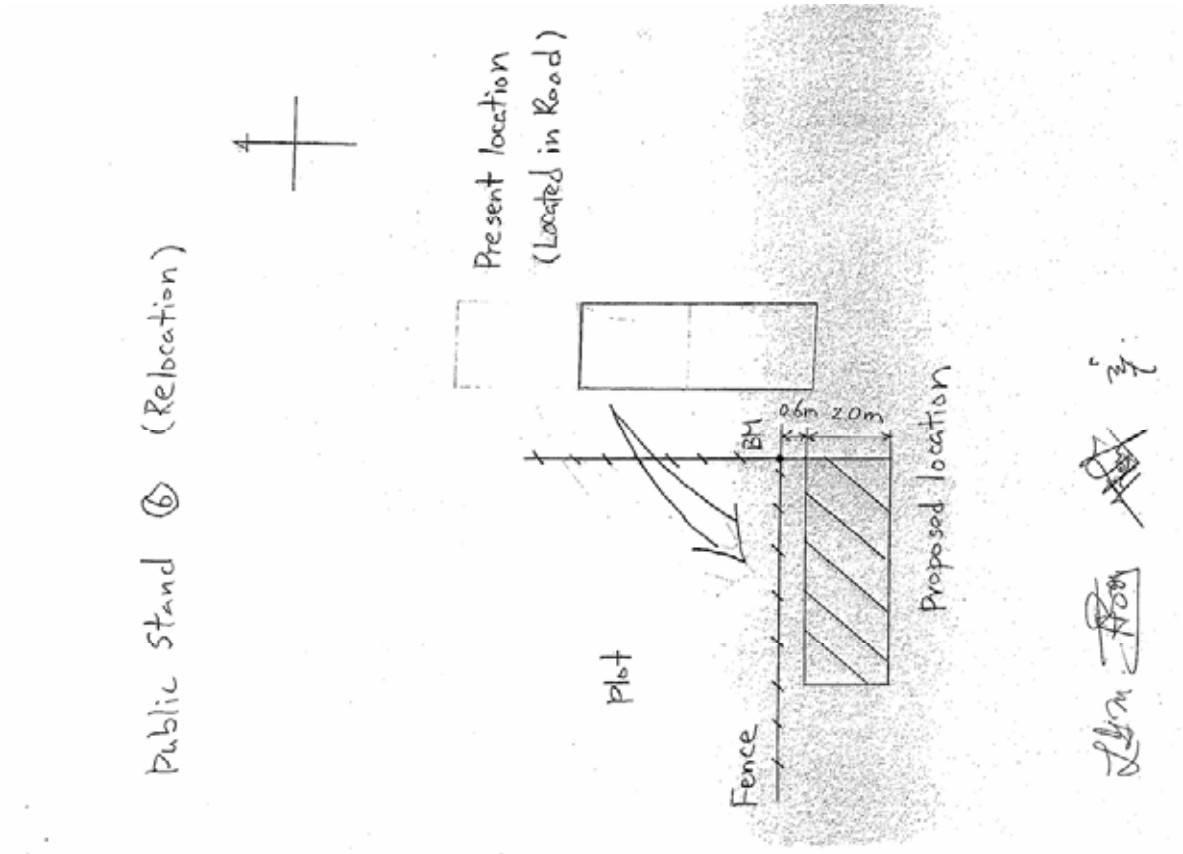


LOCATION OF TAP STANDS


Public stand ② (Relocation)
Present location
(Located in Road)
Proposed location
Fence
Plot
BH
0.6m
2.0m


Public Stand ③ (Relocation)
BH
Present location
(Located in Plot)
20m
0.6m
20m
Fence
Proposed location


Public Stand ⑤ (Relocation)
Present location
(Located in Road)
Proposed location
2.0m
0.6m
20m
BM
20m
Plot
Fence


Public Stand ⑥ (Relocation)
Present location
(Located in Road)
0.6m
2.0m
BM
Plot
Proposed location
Fence

Public Stand ⑦ (Relocation)
(Located in Road)
Present location
Proposed location
BH (Peg)
0.6m
2.0m
Fence
Plot
Public Stand ⑧ (Renovation)
Present condition
Valve Pit
Apron (Demolished)
Public stand
Soak Pit (Demolished)
Plot
Renovation
Valve Pit (Reused)
Public Stand (Reused)
Apron (Reconstructed)
Sock Pit (Reconstructed)
Plot

18 March 2009

To: Eng. Isaac Liabwel C. Yol, Undersecretary
Ministry of Water Resources and Irrigation,
Government of Southern Sudan

Eng. Lewis Gore George, Director General
Ministry of Physical Infrastructure,
Central Equatoria State

Mr. Kenichi SHISHIDO, Resident Representative
JICA Sudan Office

Re: Amendment of Relocation Site of a Water Tap Stand in Munuki Area

Dear Sirs,

Ministry of Water Resources and Irrigation, Government of Southern Sudan, Ministry of Physical Infrastructure, Central Equatoria State, Japan International Cooperation Agency (JICA) and Munuki Payam agreed to the relocation, redesign and repair of water tap stands in Munuki Area, and singed the Memorandum of Understanding on 18th February, 2009. However, the relocation site of water tap stand No 4.is required to be shifted from the original plan, because the heavy traffic has been observed at the place.

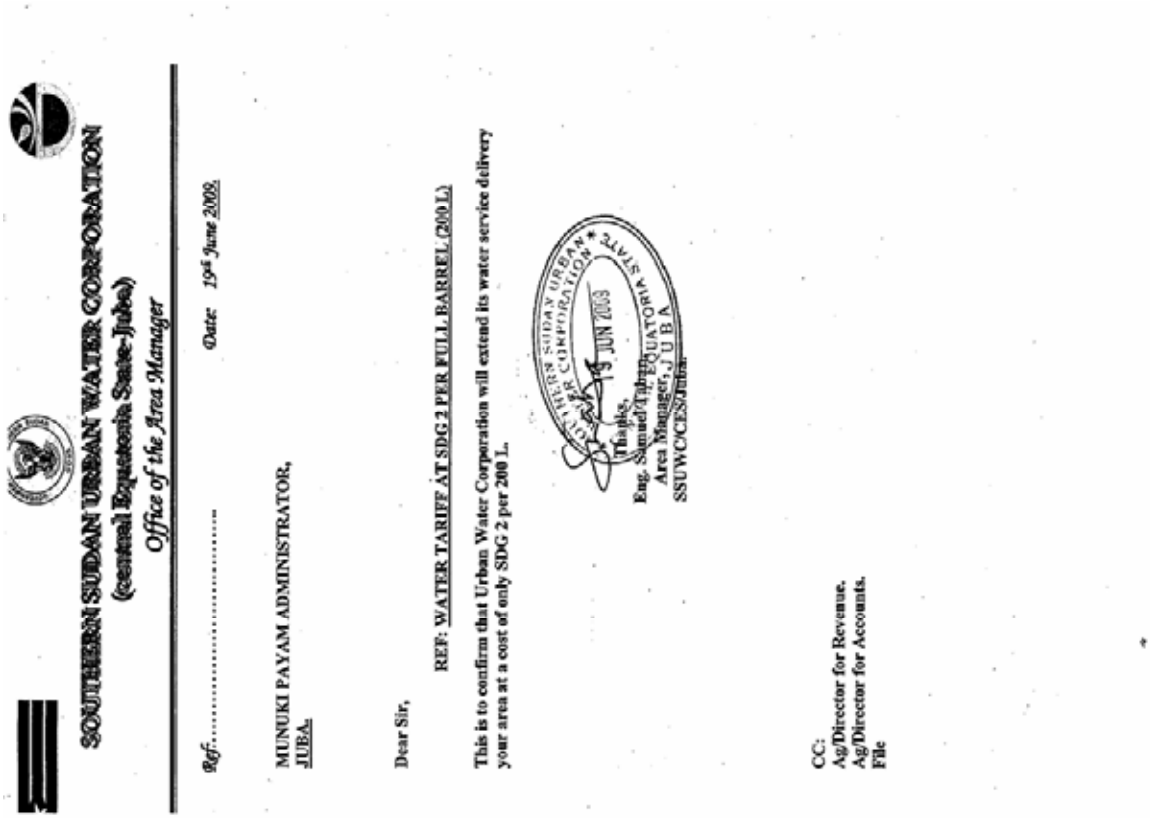
Accordingly, Munuki Payam had a discussion with the community members, and proposed the new relocation site which is described on the attached drawing.

We would highly appreciate if your Excellencies could kindly understand the issue and approve of our proposal.

Sincerely Yours,

Martin Morris Gore
Acting Director
Munuki Payam

(2) Water Tariff Contract



SOUTHERN SUDAN URBAN WATER CORPORATION
(central Equatoria State-Juba)
Office of the Area Manager

Ref:..... **Date** *19th June 2009*

MUNUKI PAYAM ADMINISTRATOR,
JUBA.

Dear Sir,

REF: WATER TARIFF AT SDG 2 PER FULL BARREL (200 L)

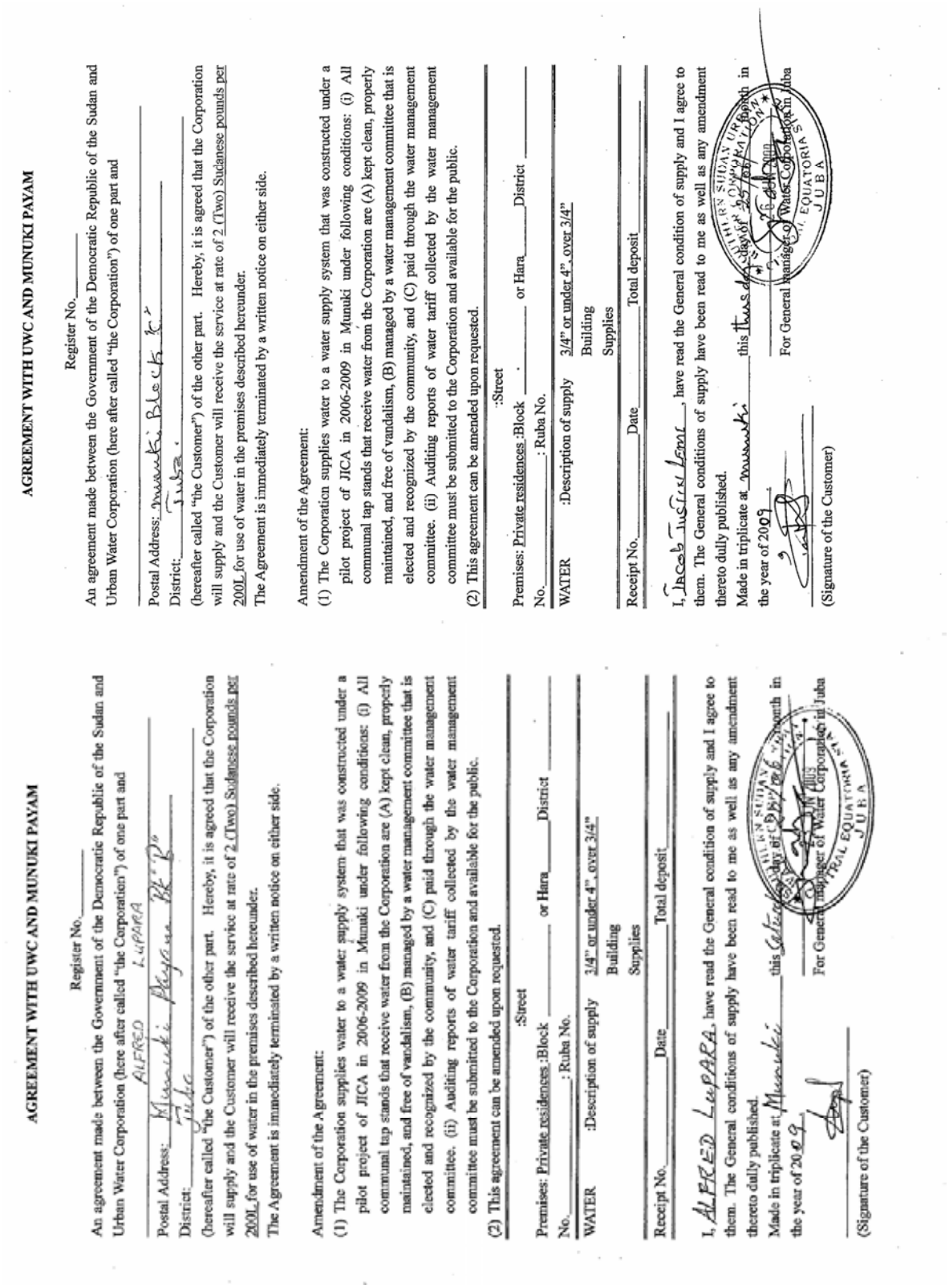
This is to confirm that Urban Water Corporation will extend its water service delivery your area at a cost of only SDG 2 per 200 L.

Thanks.
Eng. Samuel Taban
Area Manager, JUBA
SSUWC/CES/Juba.

SOUTHERN SUDAN URBAN WATER CORPORATION * CENTRAL EQUATORIA STATE
19 JUN 2009

CC:
Ag/Director for Revenue.
Ag/Director for Accounts.
File

(3) Agreement on Public tap Stand (Munuki A, B, C)



AGREEMENT WITH UWC AND MUNUKI PAYAM

Register No._____

An agreement made between the Government of the Democratic Republic of the Sudan and Urban Water Corporation (here after called "the Corporation") of one part and

ALFRED LUPARA

Postal Address: Munuki Block B

District: Juba

(hereafter called "the Customer") of the other part. Hereby, it is agreed that the Corporation will supply and the Customer will receive the service at rate of 2 (Two) Sudanese pounds per 200L for use of water in the premises described hereunder.

The Agreement is immediately terminated by a written notice on either side.

Amendment of the Agreement:

(1) The Corporation supplies water to a water supply system that was constructed under a pilot project of JICA in 2006-2009 in Munuki under following conditions: (i) All communal tap stands that receive water from the Corporation are (A) kept clean, properly maintained, and free of vandalism, (B) managed by a water management committee that is elected and recognized by the community, and (C) paid through the water management committee. (ii) Auditing reports of water tariff collected by the water management committee must be submitted to the Corporation and available for the public.

(2) This agreement can be amended upon requested.

:Street

Premises: Private residences :Block _____ or Hara_____District _____

No._____ : Ruba No.

WATER :Description of supply 3/4" or under 4" over 3/4"

Building

Supplies

Receipt No._____Date_____Total deposit_____

I, ALFRED LUPARA, have read the General condition of supply and I agree to them. The General conditions of supply have been read to me as well as any amendment thereto dully published.

Made in triplicate at Munuki this 26th day of October in the year of 2009.

(Signature of the Customer)

For General Manager of Water Corporation in Juba

CENTRAL EQUATORIA STATE
JUBA

AGREEMENT WITH UWC AND MUNUKI PAYAM

Register No._____

An agreement made between the Government of the Democratic Republic of the Sudan and Urban Water Corporation (here after called "the Corporation") of one part and

_____

Postal Address: Munuki Block B

District: Juba

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WATER :Description of supply 3/4" or under 4" over 3/4"

Building

Supplies

Receipt No._____Date_____Total deposit_____

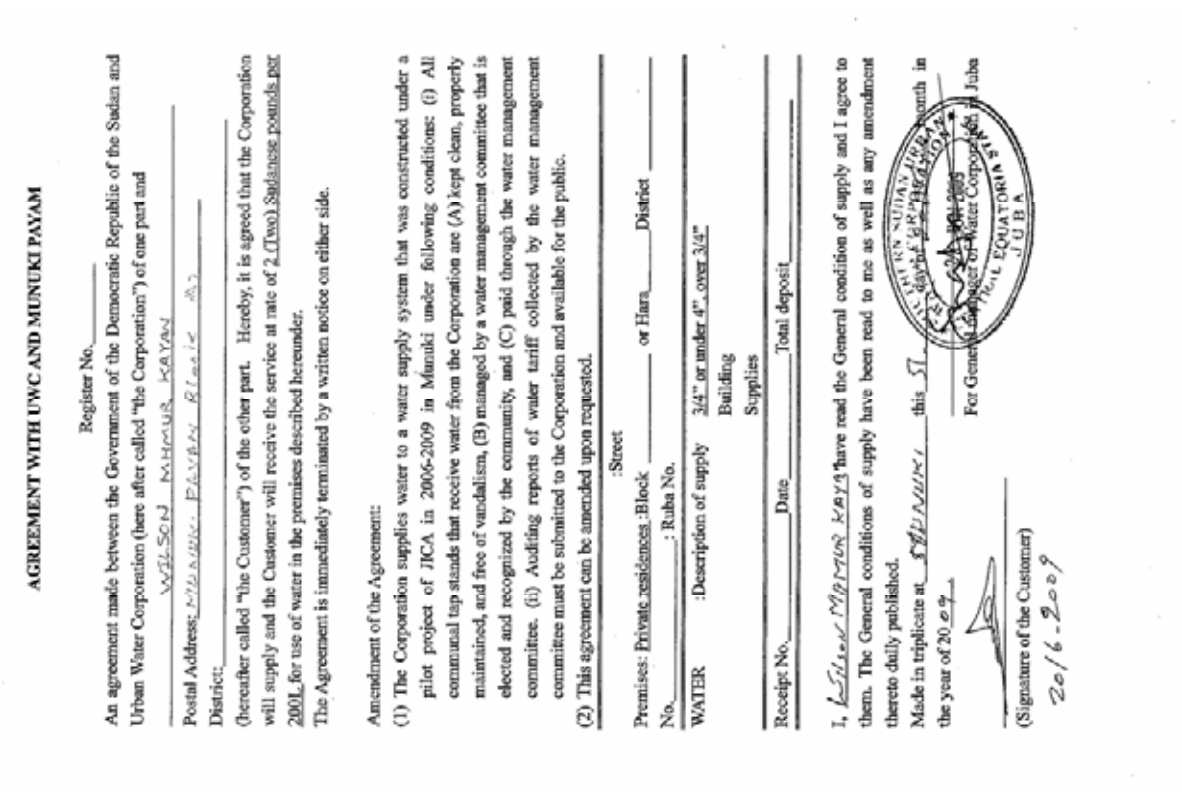
I, _____, have read the General condition of supply and I agree to them. The General conditions of supply have been read to me as well as any amendment thereto dully published.

Made in triplicate at _____ this _____ day of _____ in the year of 2009.

(Signature of the Customer)

For General Manager of Water Corporation in Juba

CENTRAL EQUATORIA STATE
JUBA



AGREEMENT WITH UWC AND MUNUKI PAYAM

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District:_____

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(2) This agreement can be amended upon requested.

:Street

Premises: Private residences :Block _____ or Hara____ District _____

No._____ : Ruba No.

WATER :Description of supply 3/4" or under 4" over 3/4"

Building

Supplies

Receipt No._____ Date_____ Total deposit_____

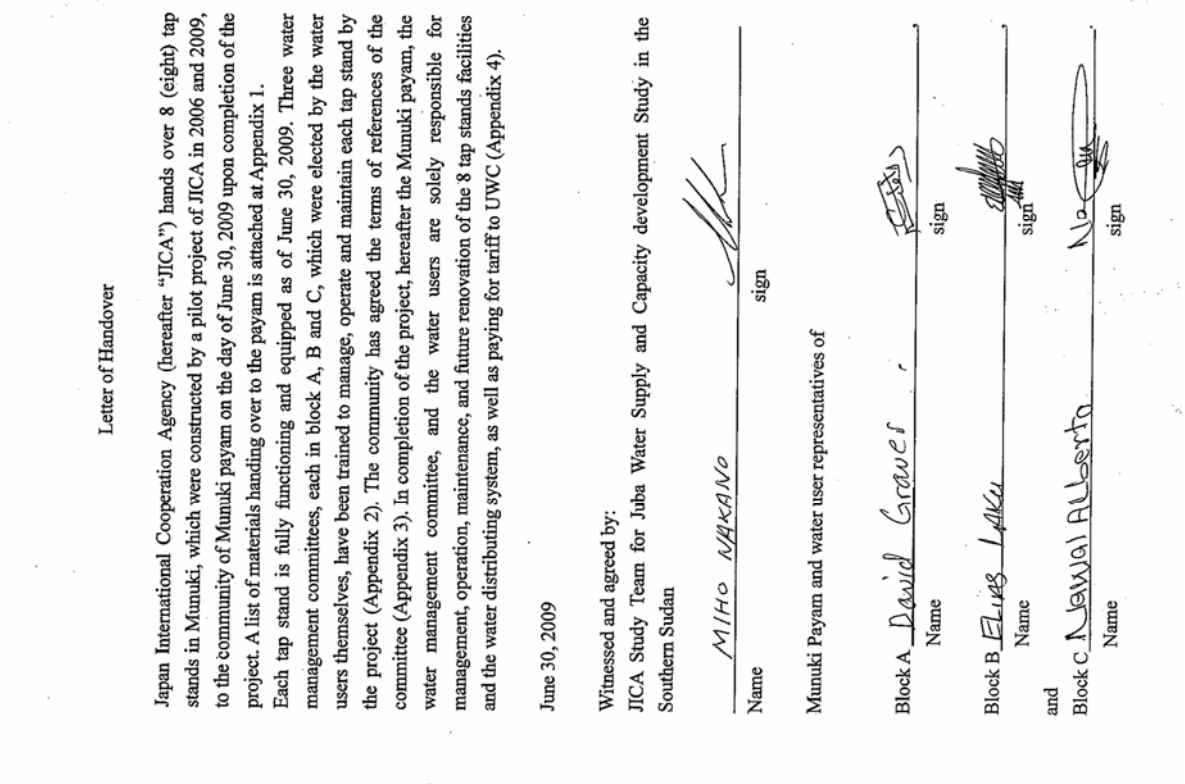
I, _____ have read the General condition of supply and I agree to them. The General conditions of supply have been read to me as well as any amendment thereto daily published.

Made in triplicate at _____ this ____ month in the year of 20__

For General Manager of Water Corporation in Juba

(Signature of the Customer)

(4) Letter of Handing Over for Public Tap Stand in Munuki



Letter of Handover

Japan International Cooperation Agency (hereafter "JICA") hands over 8 (eight) tap stands in Munuki, which were constructed by a pilot project of JICA in 2006 and 2009, to the community of Munuki payam on the day of June 30, 2009 upon completion of the project. A list of materials handing over to the payam is attached at Appendix 1.

Each tap stand is fully functioning and equipped as of June 30, 2009. Three water management committees, each in block A, B and C, which were elected by the water users themselves, have been trained to manage, operate and maintain each tap stand by the project (Appendix 2). The community has agreed the terms of references of the committee (Appendix 3). In completion of the project, hereafter the Munuki payam, the water management committee, and the water users are solely responsible for management, operation, maintenance, and future renovation of the 8 tap stands facilities and the water distributing system, as well as paying for tariff to UWC (Appendix 4).

June 30, 2009

Witnessed and agreed by:

JICA Study Team for Juba Water Supply and Capacity development Study in the Southern Sudan

MIHO NAKANO

Name sign

Munuki Payam and water user representatives of

Block A David Gravel

Name sign

Block B Elias Laku

Name sign

and

Block C Alewal Alberto

Name sign

J.2.3 Photos of Activities

1. TOR Formation Committee Election

	September, 2008 General election to select a group of people to prepare TOR and frame work of water management committee		People around each tap stand casted a vote to chose five representatives
	Explain how to fill in the ballot sheet and cast a vote		Choosing 5 out of 10 candidates from the pictures
			

2. TOR Preparation Community Meeting

	Making of first draft of TOR for Water committee member and committee's roles
	

3. Field trip to another water management committee in MTC

	Visit a water management committee and its activity on October 11 at MTC. 12 community members from Munuki A,B,&C visited a water storage and filtration tanks at MTC that was largely populated with IDPs. MTC community members were cleaning the filter that day. The cleaning is their obligation and cleaners are assigned in turn of benefiting the water and tap system. The cleaning assignment provide cleaning fee to wash clothes after cleaning. Taps are closed for cleaning that day.		Water committee was formed under ACF's emergency project during the war. A water management committee was formed through all-community meetings with their consensus. 24 people were selected: Chairman, vice chairman, Secretary, Information officer, treasure, assistant treasure, operator, assistant operator, tap care taker (each position has more than 1 sheet). The check valve is open by the care taker between 6am and 7pm. The care taker also ensures cleanness of water containers.
	Tariff is collected at each tap stand: 10jerry cans for 1(one)lb; 1 Jerry can=20L. MTC pays 85lb/mo/4taps to UWC. The rate is sat very low since this is an IDP populated area and can not afford paying more than that; otherwise they will use untreated river water which is health hazardous. An extra fee is collected as it requires repair. The collected tariff is deposited to a bank account. Community members are watching each other if each function is performing their duty or not; If not he/she gets replaced.		A tap stand care taker cleans around the tap stand and ensures hygienic water environment. Cleaning supply is given by the committee (purchased by the collected fee) The largest problem is a long and slow "queue"; it takes 1-2 hours to fill jerry cans and often it causes a dispute. However, closing down of the taps stands does not solve the problem but rather aggregates it. MCT's water management committee has been functioning since 1993.
	A chairman of MTC's water management committee explained structure and how the management system functions		
	After coming back form the field trip those who visit MTC told what they saw and learned from the visit to the rest of community representatives. Since may of the participants were not able to take a note(illiterate, can't catch up with speed of lecture etc), several of them took parts to tell the story.		

4. Reselection Meeting

	Meeting with the Payam's deputy director regarding selection of Water management committee members witnessed by JICA representative.		UWC counterpart, payam counterpart, Payam director, and chairman of B block explained to the community people the importance of chosing right kind of people for water management committee
	Agreed to chose the committee members instead of casting ballot democratically		
	Block members discussed to nominate the committee members		

5. Committee Appointment Meeting

	Opening prayer		Agenda of the meeting
	Discussed about Tariff, TOR, Management structure		
			

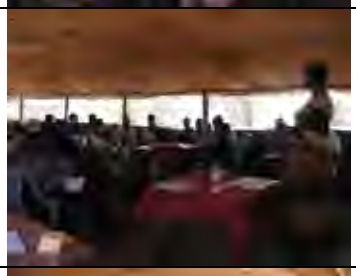
	Heating discussion on TOR		
	Photo shooting for the members		

6. Committee – UWC meeting

	Second meeting after Committee was formed. Discussed about responsibilities of UWC and Munuki regarding water supply. Agreed on amount of tariff, management structure, water distribution system Chaired by UWC and Munuki Rate Officer	
		
		

7. Committee TOR Revision Meeting

	Starting of the third workshop by Mr. Modi February 14, 2009		Pep talk was given by the deputy director of Munuki Payam to motivate committee members.

	Counselors from each block attended: Mr, Charles Nathaniel Lugalla and Mr. Wilson from block A, Mr. Silva Nyarsuk from Block B, and Mr. Justine Jacob from Block C.		Introduction of chief of each block to be mentors of the committee members
	Mentors of each block worked with the committee members to revise the TOR.		Deputy director and chief of block C
	Starting group works to discuss water management committee's roles and responsibility		Block A in discussion about committee's TOR(1)
	Block B in discussion about committee's TOR		Block C in discussion about committee's TOR
	Presentation of Block A		
			
	Presentation by block B		Presentation by block C

			
	Feedback from Payam Health Officer		Chief of Block A and B; giving the group a thought and advice

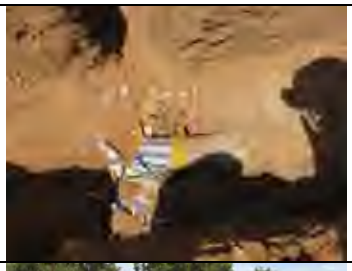
8. Sixth water management committee meeting (March 21, 2009)

	A new counter part from UWC visited the committee and shared UWC's opinion about importance of the water management committee		
			
			

9. Field trip to UWC facilities

	Started at 9:30 leaving Munuki Payam office to UWC. On the bus review of study materials.		Meeting with UWC staff; section manager Mr. Samuel and engineer, Hassan Aggrey

			
	Water intake point in the Nile River: Qin =7,200m3/day		New WTP construction site
	A new pump station; 50 Hp x 3 units: total Q out = 7,200m3/day		At front of the pump station that is in use today
	Viewing a new storage/feeding tank. Front of a chlorine injection chamber; Cl cylinders below		
			Distribution storage tank and booster pumps at veteran's hospital. One out of the three pumps is currently functioning
	.		

	Water sent from UWC's water treatment plant is boosted up to distribution.		Newly build Rising main (behind) and old distribution tank (front) on top of the hill, front of the Assembly. From here water is gravity fed to three different directions; toward Juba University, parliament, and Munuki.
			12" distribution pipe that connects to the main line from Rising Main and Water bridge.
			Water bridge and the 12" pipe.
			A trench dug to lay extended 12" pipe
			Discussion about the main line and water bridge, the boundary of Munuki
	In Munuki, at front of overhead tank made for groundwater distriution by JICA in 2006. Water from UWC will go through this tank.		

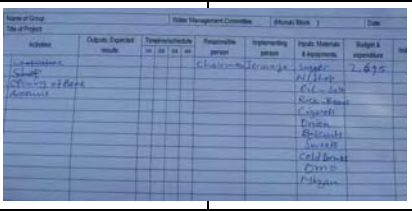
	Water tap stand under construction at next to the old one.		
			
	After trip study session: compare the note and learn.		

10. Repair persons OJT an UWC

	 Moving to work sites with UWC staff	
	Joseph Bera (A), Nelson Oliver (B) and Joseph Yata(B) under UWC engineer Alison Mubarak. Repairing a main pipe. 	
		

		 Elizabeth Apu(A) and Alpus Lake(C); Repairing crushed water tube
		
		

11. Closing Meeting

	June 20 (Sat), 2009 The last meeting to finalize each committee's plan of action.		Each block gathered together and discussed about their annual plan.
			
	Committee members of block A who came to the meeting: Jerisa Kongo(PHO), James Wani(PHO), David Graver(Chairman), Laila Juru (PHO), Dian Loro(Security), Joseph Bera(repairman), Elizabeth Apu (repairman), Jerisa Juru(Tariff collector), Noel Nyoma(Assistant secretary), Susan Lazarous(Treasure), Lona Lurit(Tariff collector), Zermano Okello(Assistant chairman)		Committee members of block B who came to the meeting: Mary Gala(tariff collector), Hawa Ramadhan(PHO), Roponi Alice(Assistance chairman), Reisa Ezanil(tariff collector), Apai James(tariff collector), Joice Paul(tariff collector), Naliso Madau (repairman)
	Committee members of block C who came to the meeting: Selina Rom(Treasure),Tansar William(PHO), Silivas Akim(Information officer), Viola Sadia(PHO), Papar Justine(Tariff collector), Dina Jackson(PHO), Anthoni Mure(Assistant chairman)		

12. Final Training for WMC

Final exercise of water management committee in A. met at the tap #1 before 7am.

Simulation started. PHO cleans tap stand area and opens the gate.

Open the valve and record the mater reading.

Sell 10 tokens for 10 jerry cans(200L) by 3 SGDs. In exchange to paying for tokens receive a receipt from a treasure

Give the token to the tariff collector as water is filled in containers.

Announcing opening of the tap stand to the neighboring community.

13. Treasurer Training

J.2.4 Training Manual

Training Module

For

Water management committee in Munuki

April and May, 2009

1. Training Module Overview

Date	Target	Module#	Topic	Objective	Input (1) person	Input(2) Material
	All		Capacity assessment	To make a list of need, weakness, and strength		Interview sheet
	All	2-1	Knowing TOR	To understand its TOR		TOR
4/6 -4/10	PHO		PHAST #1	To be able to perform as facilitator for PHAST step 1 to a community	Modi, Mary, Hawa	Posters/pictures
4/6 – 4/17	All	2-2	Numbering/ count, additions, subtractions	To be able to write numbers in western system	Susan Lazarous	FAO Worksheets
4/13 -4/17	PHO		PHAST #2	To be able to perform as facilitator for PHAST step 2-Activity 1&2 to a community	Modi, Mary, Hawa	Posters/pictures
4/20 – 4/24	Treasure	2-3	Daily cash record book; Ledger and Journal	To be able to write INCOME, EXPENSES, and SAVING/BANK DEPOSIT in a ledger To be able to collect, categorize, and secure receipts	Susan Lazarous Modi	JICA Tanzania manual, Ledger book
4/20 -4/24	PHO		PHAST #2	To be able to perform as facilitator for PHAST step 2-Activity 3&4 to a community	Modi, Mary, Hawa	Posters/pictures
4/27	Treasure	2-4	Receipt book	To be able to write and issue receipts	Susan Modi	Receipt book
4/27 -5/2	PHO		PHAST #3	To be able to perform as facilitator for PHAST step 3-Activity 1&2 to a community	Modi, Mary, Hawa	Posters/pictures
4/28	Treasure	2-5	Bank saving book	To be able to recognize DEPOSIT, WITHDRAW, and BALANCE	Susan Modi	Example of bank book, JICA TZ
4/29	Treasure	2-6	Money handling	To know how to count, store, transport, deposit, withdraw	Susan Modi	Simulation
4/30	Treasure, tariff collector	2-7	Token handling	To be able to sell, balance and collect tokens, to keep records of tokens exchange	Susan Modi Mary Gara	
5/1	Review of previous works					
5/2 (SAT)	All committee members	4	Base of operation for tariff collectors and treasures	To define locations where tokens are sold, cash is paid, tokens are collected,	Susan Modi, PHO, Chairman	This instruction
5/4 -5/8	PHO		PHAST #3, #4	To be able to perform as facilitator for PHAST step 3-Activity 3,& Step 4- Activity 1 to a community	Modi, Mary, Hawa	Posters/pictures
5/4-6	Catching up with schedule					
5/7	PHO		PHAST #5	To be able to perform as facilitator	Modi,	Posters/pictures

Date	Target	Module#	Topic	Objective	Input (1) person	Input(2) Material
-5/15				for PHAST Step 5 - Activity 1 &2 to a community	Mary, Hawa	
5/7-5/15	All committee members	5-1	Role play	Role play and practice on purchasing token, tap stand use, interaction to the water users, trouble shooting	Susan Modi PHO, Chairman	This instruction
5/18-5/22	All water users	5-2, 5-3	Simulation	Role play and practice on purchasing token, tap stand use, interaction to the water committee members	Susan Modi PHO, Chairman	This instruction
5/25 -5/30	PHO		PHAST #5, #6	To be able to perform as facilitator for PHAST Step 5 - Activity 3 & Step #6 to a community	Modi, Mary, Hawa	Posters/pictures
5/25-5/30	All community	6	Make a plan of action	Goals, actions, time frame, responsible person,		This instruction

2. Treasures and Tariff collectors

2.1 TORs

① Review and memorize TOR of Tariff collectors
② Review and memorize TOR of Treasures
③ Amend TOR as necessary
④ Evaluate a committee members for their performance and ability according to TOR

2.2 Numbering

Have illiterate tariff collectors and treasure practice numbering system.

TOOL: Use the FAO work sheet. (Appendix 1)

Time	Topic	Chapter	Page	Goal	Instruction
4/6-7	Count 0 to 20	1, 2	1-12	To be able to write, read, and count Western style numbers	☐ Read the instruction carefully in such manner that each trainee can understand ☐ Guide to follow the dash lines. ☐ Help those with problem writing or to understand your instructions ☐ Ask those who already know math or finish her/his work to help others to understand instruction and process ☐ But do NOT help answering questions
4/7-8	Count up to 100	3, 4	13-22		
4/9	Addition (2 digits)	5	23-28	To be able to add 2 digits numbers	
4/10	Addition (3 digits)	6	29-37	To be able to add 3 digits numbers	
4/16	Subtraction	7	38-43	To be able to subtract 2-3 digits numbers	
4/17	Numbers (3-4 digits)	8	44-49	To be able to count, add, and subtract numbers greater than 1000	

2.3 Ledger and Journal: Daily cash record book

① Use JICA Tanzania's report as reference (Appendix 2).

② Teach how to keep 4 major books for record keeping; Daily cash book, receipt book, bank saving book, and household contribution book

③ Teach major components of daily cash record book; income, expenditure, balance and saving.

TOOL: "Simple book-keeping for water committee" (Appendix 2)

Time	Topic	Page	Goal
4/20	1.Introduction to Book keeping	33	A .To know importance of periodic finance report B. To know components of report
Task	Lecture		Instructions to Modi & Susan
A	1.A finance report must be given to the water users at least once a year e.g. Annual report, monthly report 2. A finance report is for: (1) to gain a trust from the water users; (2)to eliminate temptation of misuse of the public fund; (3)to make known which water users contribute regularly; (4)to make the water users aware of problems and issues; 3.Group Discussion: □ "What can go wrong if no one knows how money is spent?" □ "How often do we suppose to have a general meeting to share finance status?"		>Show an example of finance report from Susan's work and explain the contents and how each line relates >Do NOT tell in this point treasures examples of (1) through (4), let them discuss FIRST. Then you can give examples from your experience. >Use large paper and sticky notes to write their opinions
B	1. A treasure must keep recording, income, expenditures, and the balance. Definitions of terms are: □ Income is money which comes in □ Expenditures is the money which goes out □ The Balance is the money which remains at any time 2. Group Discussion: □ In our water management committee operation, what can be "Income"? □ In our water management committee operation, what can be "Expenditures"? □ In our water management committee operation, what can be "the Balance"		>Do NOT tell in this point treasures examples of each component; let them discuss FIRST. >Use large paper and sticky notes to write down their opinions and show them in front of them >AFTER all of their opinions are told, THEN you can give examples from your experience.
Preparation materials: Thick pens, large paper (flip chart), Sticky notes, Finance report(example), pencils, erasers, notebook or handouts/worksheets for Treasures			

Time	Topic	Page	Goal
4/21	Daily cash record book	34-37	A .To know what 4 main books are B. To know about "INCOME" of Daily Cash Record Book

Task	Lecture	Instructions
A	1.There are 4 main books that keep track finance record (1) Daily Cash Record Book; (2)Receipt Book; (3)Bank Saving Book; (4)Household contribution Book 2. Purpose of each book (1) Daily Cash Record Book is for money taken in and out each day. Income, expenditures, and savings for each day are recorded in this book. (2)Receipt Book is to issue receipts for payment that is made by water user if asked. (3)Bank Saving Book is written by a bank. This book shows Deposit, Withdraw, and the Balance of money from water users. (4)Household contribution book records a special contribution from water users. Record with name and detail of contribution. This may not necessary for Munuki. 3.Group Work: □ Examine Payam Ledgers and identify how they are made: material, size, thickness, types of papers etc. □ Discuss why the books are made so large and strong □ Examine Payam Ledger and write down what is written in the first column, the second column, so on □ Examine Payam Ledger and write down what is written in the first raw, the second raw, so on □ Discuss why it is categorized in such way □ Discuss why Daily Cash Record Book is necessary □ Discuss why people want receipt	>Show an example of each finance book from Susan's work and explain the contents and how each book relates >Help them understand meaning of each columns and rows in Payam's finance record book >Show how Receipt book is made to leave duplication pages to treasure after issuing receipts >Explain definitions of Deposit, Withdraw, and Balance >Use a large paper and sticky notes to write their opinions >Categorize each sticky note and rearrange them according to how Ledger is constructed >Give explanations if they can not think anymore
B	1. To know about "INCOME" of Daily Cash Record Book (1)Income is where and how committee get money (2)Major income is from sales of tokens for tariff payment (3)Write down numbers of tokens sold and amount of money paid for the tokens (4)Fines should be imposed if water users violate rules and agreement (5) Record income everyday and give receipts everybody pays. 2. Group Work: □ Where and how do you get money? □ What are examples of fines? □ Use a new notebook, create your daily Cash Book and write down Income Format example: Year and Month Date / Cash in (+) and out (-) / Amount **4/7 Token 2 pcs 6.00**	>Show Payam Daily Cash Record Book as an example >Demonstrate on a large paper how to write INCOME on a Daily Cash Book in front of your audience >Do NOT tell in this point treasures examples of income; let them discuss FIRST. >Use large paper and sticky notes to write down their opinions and show them in front of them >AFTER all of their opinions are told, THEN you can give examples such as: tariff, fine, membership, special collection > Examples of reasons for fines are: not coming to meeting, breaking tap stand parts, letting animals around tap stand, unclean water containers, opening of a gate valve without permission.

Preparation materials: New large notebook with a hard cover, thick pens, large paper (flip chart), Sticky notes, examples :Payam's Daily Cash Record Book or Journal or Ledger, pencils, erasers, handouts/worksheets for Treasures, Rulers

Time	Topic	Page	Goal
4/22	Daily cash record book	38-39	A. To know about "EXPENDITURES" of Daily Cash Record Book

Task	Lecture	Instructions
A	1. To know about "EXPENDITURES" of Daily Cash Record Book (0) Review of "INCOME" and what was done in previous day (1)Expenditures are where and how committee spend money (2)Major expenditure is water bill payment to UWC (3)The money paid to UWC is recorded as WITHDRAW in the BANK BOOK as well (4)Make sure all the expenditures are approved by other members of the committee before it is spent, usually it is the chairman's work to sign bank cheque for large payment. (5)Some expenditure which directly benefits committee members and other specific individuals but necessary for community work must be consulted and approved by the water users at first. (6)Record all the expenditures with detail everyday and collect receipts for all the money spent. (7)All the receipt collected are kept in an envelope attached at the back of your DAILY CASH BOOK or glue on appropriate page of DAILY CASHBOOK with date and details written (8) Always have a note book when you go to spend money so that it can be used to write a receipt if one can not provide. 2. Group Work: □ Where and how do you spend money? □ What would you do if the bus driver does not have a receipt book to issue a receipt to you? □ Use the notebook you used in previous day, add the expenditure to your daily Cash Book that you have created previous day: an example is shown below.	>Ask what they learned in pervious day and compare with your lecture note >Show BANKBOOK example if possible >Show examples of receipts > For example, "transportation fee" can be abused if a rule is not clearly stated. >Demonstrate on a large paper how to write EXPENDITURE on a Daily Cash Book in front of your audience >Do NOT tell in this point treasures examples of expenditure; let them discuss FIRST. >Use large paper and sticky notes to write down their opinions and show them in front of them >AFTER all of their opinions are told, THEN you can give examples such as: Money the deposited in the bank account, money paid to UWC, transport by those going to the bank, money for notebooks, receipt book, pens, money for repair

	2009 APRIL	
Date	Cash in (+) and out (-)	Amount
4/7	Token 2 pcs	6.00
4/10	**Bus fee to Juba**	**-1.00**

Preparation materials: A large notebook with a hard cover that was used in pervious day, thick pens, large paper (flip chart), Sticky notes, examples :Payam's Daily Cash Record Book or Journal or Ledger, pencils, erasers, handouts/worksheets for Treasures, Example Items to write as expenditures, envelopes

Time	Topic	Page	Goal
4/23	1Daily cash record book	42, 43	A. To know about "Balancing" Daily Cash Record Book

Task	Lecture	Instructions
A	1. To know about how to balance Daily Cash Record Book (0) Review what was done in previous day (1)BALANCE is a difference between ICOME and EXPENDITURE (2)BALANCE should be equal to what you have in your hand (or safe box) at the moment you are recording the Daily Cash Record Book (3)Write date, explanation of the record, and balanced amount of money (4) Record BALANCE everyday before close Daily Cash Record Book (5) Introduce a calculator, explain a function of each button: First, turn on the Calculator by pushing On/OFF switch. Then show symbols of addition, subtraction, multiplication, division, [C] for Clear before starting a new calculation. (6) After calculating all the numbers in the right column of the Daily Cash Book, write TOTAL amount 2. Group Work: □ Practice how to use a calculator by using the worksheet that was used in "Numbering exercise" □ Use the notebook you used in previous day, add the BALANCE to your daily Cash Book that you have created previous day	>Ask what they learned in pervious day and compare with your lecture note >Show Payam's BALANCE SHEET example if possible >Demonstrate on a large paper how to write BALANCE on a Daily Cash Book in front of your audience >Demonstrate how to use a calculator by using: 1+2, 5+61, 10-5, 25+75, 192+108, 1234+1766-1000, 1000-12, so on. >Give them "Number worksheet" with their names on that was used in previous training. >Use large paper and sticky notes to write down their opinions and show them in front of them

	2009 APRIL	
Date	Cash in (+) and out (-)	Amount
4/7	Token 2 pcs	6.00
4/10	Bus fee to Juba	-1.00
4/10	**BALANCE**	**5.00**

Preparation materials: A large notebook with a hard cover that was used in pervious day, thick pens, large paper (flip chart), Sticky notes, examples :Payam's Daily Cash Record Book or Journal or Ledger, pencils, erasers, handouts/worksheets for Treasures, Calculators, Items to use for a calculation exercise, FAO workbook for Numbers, staplers, clips

Time	Topic	Page	Goal
4/24	Daily cash record book	44-45	A. To review all the work done on 4/20-24 B. To know about "SAVINGS"

Task	Lecture	Instructions
A	Review and exercise =Oral Quiz (Individual) Ask the audience: 1. What are 3 major components of Daily Cash Record Book? 2. What is RECEIPTS? 3. When you receive receipts? 4. How do you keep the receipt? =Written Quiz (Individual) 1.Ask to open a new page in their notebook 2.Ask to draw lines to make Daily Cash Record Book 3. Ask to write today's date, month, and year in right places 4.Modi and Susan play a role below (1) Modi: Sitting at table and selling tokens (2) Suzan: Come to buy 5 tokens (3) Modi: Giver her 5 token in exchange to 15 pound (4) Modi: Ask "Where do I write this money and how does it explained on your notebook? Please write down what you think" (6)Give them 5-10 min. Then tell them STOP. Start new play. (7) Modi: Have money and go to Susan (8)Susan: She sells ledger books and pencils (9)Modi: Asks Susan 1 ledger book and 2 pencils (10)Susan: "A ledger book is 5 pound, a pencil is 1 pound. Total is 7 pounds" (11) Modi: Pay 7 pounds to Susan. Ask for a receipt and make sure date, item names, quantity, and total amount of money are stated. (12) Susan: Gives him a receipt. (13) Modi: Ask "Where do I write this payment and how does it explained on your notebook? Please write down what you think" (14)Give them 5-10 min. Then tell them STOP. Start new play. (15)Susan: Ask Modi "how much savings do we have in our bank account?" (16) Modi: Says "Let me see" and open the ledger, then ask "Please calculate and state BALANCE in your ledger" (17)Give them 5-10 min. Then tell them STOP. (18)Check their work. Correct the error and discuss with the individual about her/his mistake.	> Answers >#1: Income, expenditure, balance > #2: Papers that your purchase item and price are stated >#3: When you spend money >#4:Keep in a envelope or glue on the book >>> Role Play <<<< > Announce "Watch our play carefully and make your own Daily Cash Book according to the play" (1)>Use yellow tokens and fake money (4)>This should be "IMCOME"; written as "5 tokens sold" "15.00" in the middle column. >>Use fake money, a ledger, 2 pencils, sticky note for receipt for this skit. (13)> This should be "EXPENDITURE"; written as "A ledger book and 2 pencils", "-7.00" in the right column (16)>This "BALANCE" must be calculated and stated as "8.00" in the right column >>You can play again if they do not understand at the first time.
B	1. To know about SAVINGS (0) Review what was done in previous day (1)SAVING is the money in the bank account that remains after paying bills (2)SAVING earns INTEREST over a period of time (3)SAVINGS can be used to improve or repair tap stands or water users' benefit after everybody in the community agree 2. Group Work: □ Discuss what SAVING is, Do they have savings in their bank account? □ How much is interest rate now? □ How would you agree to spend the savings? □ Who has an authority to use the saving?	>Ask what they learned in pervious day and compare with your lecture note >Use large paper and sticky notes to write down their opinions and show them in front of the audience >Make sure that they know that the savings belong to the water users and the committee has to consult with the water users how to use the savings.

Preparation materials: A large notebook with a hard cover that was used in pervious day, thick pens, large paper (flip chart), Sticky notes, pencils, erasers, calculators, Items to use for a written quiz, FAO workbook for Numbers, Fake money, Tokens

2.4 Receipt book

TOOL: "Simple book-keeping for water committee" (Appendix 2)

Time	Topic	Page	Goal
4/27	Receipt book	35	A. To know about RECEIPT BOOK

Task	Lecture	Instructions
A	(1)A RECEIPT BOOK is a notebook that has duplication or triplication of pages to record name of an item and amount of money received for the item. (2)When TREASUR issues a receipt keep copied page for community's record (3)When TREASUR receive a receipt keep the original with signature for auditing. (4)When you make a mistake on writing a receipt, keep all pages together and write "VOID" over entire page. (5)A receipt is issued to everyone who pays tariff or buy tokens (6)Assign a number to each receipt if there is no numbers already written. (7)Receipt consists of (1)date, (2) name of payee, (3) numbers of token purchased, (4)amount paid, (5)Treasure's signature or office seal. 3. Group Work: □ Observe example receipts and discuss what we need to issue a receipt □ Exercise issuing receipts by doing the role play the Modi and Susan have done before □ Why Receipt is important?	> Get close to each other > Use a receipt book and show how and where to write what, to all the audiences >Show how to write "VOID" or "Cancelled" >An official seal or some stamp is needed to issue a receipt (7)>Show an example of receipts

Preparation materials: New Receipt book, thick pens, large paper (flip chart), Sticky notes, examples :Payam's Receipt book, pencils, erasers, handouts/worksheets for Treasures, Ball-pointed pens

2.5 Bank saving book

TOOL: "Simple book-keeping for water committee" (Appendix 2)

Time	Topic	Page	Goal
4/28	Bank Saving book	35	A. To know about BANK SAVING BOOK

Task	Lecture	Instructions
A	(1)A BANK SAVING BOOK is a book issued by a bank which the committee has its bank account. (2)The people in the bank write in the BANK SAVING BOOK whenever money is put in and whenever money is taken out. (3)Money put in is called DEPOSIT and shown positive number (4) Money taken out called WITHDRAW and shown negative number (5)The BANK SAVING BOOK always shows how much remains in the count. This is called the BALANCE. (6) Keep the BANK SAVING BOOK in a safe place 3. Group Work: □ Discuss what we need to have a BANK SAVING BOOK □ Determine when and where to open a bank account for the community founds	> Show some examples if possible > If no example is found, write it in a large paper to show how it LOOKS LIKE >> We have to chose a bank and 2-3 signers from the committee

Preparation materials: New Receipt book, thick pens, large paper (flip chart), Sticky notes, examples :Payam's bankbook, pencils, erasers, handouts/worksheets for Treasures, rulers

2.6 Money handling

Time	Topic	Page	Goal
4/29	Cash handling	35	A. To know about how to handle cash

Task	Lecture	Instructions
A	(0)Review of previous day (1)Cash paid by the water users must be kept in secure place. (2)A sum of cash in your hand, expenditure and savings in the bank is equal to total amount of income. (3)Count 3 times all the cash against the Daily Cash Record Book at end of a day (4) Have a witness (chairman for example) as you count cash (5) Record cash according to type of note to avoid counting mistake; below is an example. 1SDG note x_____ notes = _____ SDG 2SDG note x_____ notes = _____ SDG 5SDG note x_____ notes = _____ SDG 10SDG note x_____ notes = _____ SDG 20SDG note x_____ notes = _____ SDG 50SDG note x_____ notes = _____ SDG Grand Total _____ SDG (6) If you do not have enough cash for change of which paid for tokens, you have to issue 2 receipts, one for purchase of tokens and another for which you could not pay back. This receipt for change that will be paid later looks like this: Example: Paid for: I O U Date: 2009/04/13 (year/month/date) To : Susan Lazarous (Water user's name) Amount of: 8SDG (Amount of change to be paid) Signature or Seal Important: Never sell tokens by credit or a promise of future payment. (7)The receipt issued for the change, which could not be given at the moment, can be brought next time to exchange to tokens, or cash if available. As all the amount on the receipt is paid back to the water user, get the receipt BACK from the water user, attach to the copy page, and write "PAID". (8)Keep cash in a safe box and lock it. The key is also kept at safe place. (9) The cash in the box must be take to the bank for deposit periodically, say in the end of month. Frequency of going to the bank for deposit can varies, depending on amount of money being collected. (10) If you feel uncomfortable going to the bank alone for depositing, ask a responsible male companion to come along with you. (11)Try to keep all evidences and tracking records as money is moved Individual Work: □ Count cash and write the amount in Daily Cash Record Book Group work: □ Role play simulation 1. Make a pair. 2. One acts as a water user, another act as a Treasure. 3. "Water user" comes to buy 3 tokens to fill in her 200L barrel and pay 5 SDG to "treasure". 4. "Treasure" says "I am sorry but I do not have small notes right now." "I give you 3 tokens for 3 SDG and give you a receipt for the remaining 2SDG". "Please bring this receipt in your next purchase. 5. "Water user" receives the tokens and two receipts; one for the payment for tokens and one for change.	>Use the fake moneys for this exercise >Use the Daily Cash Record Book that Treasured have worked on in the previous lessons >Prepare fake notes of 2 SDG, 5 SDG, 10SDG, a receipt for 2SDG, 5 SDG in an envelope (as a safe box) (5) >Add up all the subtotals of each note to yield Grand total (6) > Demonstrate issuing two receipts by using an example. Susan comes to buy 2 tokens with 10 SDG. It costs 2 SDG but Modi does not have 8 SDG for change. Modi writes down the amount that was paid for tokens and that he could not give back on a receipt book and keep the copies NOTE: 1 token is not necessary to be 1 SDG. We still have to determine a price of a token. >>What kind of problems do you think you would face? Discuss and find solutions. >>If the water user insists to have a change now, what would you say? What would you do? Discuss and make a rule.

Preparation materials: New Receipt book, thick pens, large paper (flip chart), Sticky notes, examples :Payam's bankbook, pencils, erasers, handouts/worksheets for Treasures, Safe boxes

2.7 Token handling

Lectors: Susan Lazarous, Mary Gara, Modi

1) Chose material and shape of Token

(Example 1) Tags from Japan

Block	Color	Total amount of tokens	# of tap stands	Price
A	Red	300pcs, 100pcs/tap stand	3	1 token = 1pound 3 pounds = 10 Jerry cans = 200L =1 barrel
B	Blue	300pcs, 100pcs/tap stand	3	
C	Yellow	200pcs, 100pcs/tap stand	2	

2) Price for a token: it is easier to assign 1 token for 1 jerry can. In this case 1 jerry can is 0.3 pound. However, there is no 0.3 pound note exists. Hence people have to buy10 tokens by 3 pounds for 10 jerry cans.

3) If 10 tokens are issued to one house hold it can be issued only 10 households a day for each tap stand. Collected tokens must be returned to Treasure promptly and frequently for better token circulation.

Time	Topic	Goal
4/30	Token handling	A. To construct a Token system B. To be familiarized with handling Tokens

Task	Lecture	Instructions
A	(1)Tokens is treated as money once your token system is agreed upon among the water users (2)Tokens are sold to water users at treasures' house (3)Count Token as you receive in exchange to filling water to 20L jerry cans at a tap stand (4)Count tokens and record numbers with time before remitting back to treasure (5)Treasure confirm the number as tokens are returned by tariff collectors and record (6) Treasure balance tokens returned with tokens sold, just like the Daily Cash Record Book, take toke balance book if necessary (7) If more tokens than you sold were coming back this is a sign of counter-fit being used	(5) Ask Mary Gara for her experience in handling tokens; type of material, method to manufacture the token that she used, problems regarding using token
B	(1) Familiarize token material (2) This can be fabricated and need a counter-fit measure Group work □ Discuss what problem they can foreseen in using tokens □ Discuss how these problems can be prevented and solved □ Practice balancing Token book	(1) Show and let them touch the sample tokens

Preparation materials: Sample tokens (yellow), Small recording book

3. Treasure and Tariff collectors training review (5/1)

Instruction:

□ Review each lecture given between 4/20-30.

□ Give oral exam to Treasure and Tariff collectors.

4. Setting a base of operation (5/2)

Instruction to Modi and the Chairman

□ Ask a Chairman to lead this meeting. Modi will give a technical assistance.

□ Hold a general meeting or committee meeting on May 9, 2009 to discuss and decide your bases of operation.

□ Use large paper and sticky notes to record and show the audiences

□ Make 3 groups according to block. The followings must be assigned and acknowledged

- The exact location of a treasure to sell token
- The exact location of a tariff collector to collect tokens
- Time to open / close the shop for token exchange
- Time to open /close tap water stands
- Route to transfer tokens to Treasure
- A meeting point with chairman and payam accountant
- A meeting point with water users to discuss issues

	Block A	Block B	Block C
The exact location of a treasure to sell token			
The exact location of a tariff collector to collect tokens			
Time to open / close the shop for token exchange			
Time to open /close tap water stands			
Route to transfer tokens to Treasure			
Meeting point with chairman and payam accountant			
Meeting point with water users to discuss issues			

This information must be told to all the water users.

5. Role play/simulation scenario

5.1 All committee members training (5/7-15)

Basic Normal Scenario

Step	Actor	Action	Necessity	Concerned issues
1	Water user	Buy token from Treasure	Cash	-Socially disadvantaged people
2	Treasure	Sell token to water users (customers) in exchange to cash. Record amount of token sold and cash income in a ledger.	Token, a pensile, ledger / daily cash record book for token, safety box, calculator, ID card	-Material and design of Token -Trucking system -Set date or time when tokens are sold
3	Water user	Hand the token in to a Tariff collector at a tap stand of where the token was issued.	Token that was issued at a specific block.	
4	Tariff collector	Collect the tokens from the water user. Allow the water user to fill in as many jerry cans as the token values. Make sure that amounts of tokens and numbers of jerry cans match for one water user. Record numbers of jerry cans.	Token collection box, monitoring log book,	-Tracking system -Method to check counter fit token
5	Tariff collector	Collect and count all tokens given by water users and return to the Treasure at the end of day, or as necessary.	Token log book/ ledger	-Set hours when tariff collectors can attend at the stand
6	Treasure	Receive and count the tokens. Balance the tokens with cash book.	Balance sheet	
7	Chairman Payam accountant	Count cash and token and confirm the balance sheet	Signature	Check and balance system Chose a bank
8	Treasure	Deposit the cash in the bank at the end of week, or as necessary	Bank saving book, Deposit slips from bank	Opening bank account
9	UWC	Read the flow mater and send a monthly bill to the Chairman of the committee	Water use bill, copy of the bill	Check and balance system
10	Chairman, Treasure, Payam accountant	Sign the cheque to pay for the bill Send the cheque to UWC and receive a receipt from UWC in turn Submit the receipt to Treasure		Check and balance system
11	Treasure	Balance the bank saving book Receive the receipt from the Chairman	Receipts book	-Official receipt for purchases other than UWC
12	Chairman, Treasure	Prepare monthly finance report Submit to Payam accountant, Report to water users	Report	-Check and balance structure
13	UWC	Submit finance report/how tariff was used to Chairman and Payam accountant	Report from UWC	-Check and balance structure
14	Tariff collectors Treasure	Check and count tokens, destroy counter-fit tokens	Token-income balance book	-Method to check counter fit token

Instruction to Modi and the Chairman.

□ Read the above table carefully and understand before a meeting day.

□ Call for a meeting before 5/7 (meeting date)

□ Use the table below for this activity program.

□ Modi will record meeting progress and what is discussed in available space in the above table

□ A chairman should lead the meeting

□ Activities are scheduled as shown in next table

□ Try to keep up with the schedule

Working schedule

Date	Action	Output	Responsible person
5/7, 5/8	Read Basic O&M routine above.	Mutual understandings	Chairman, Modi (support, take notes)
	Discuss and record what is missing, what is not clear, what have to be corrected for "Action"	Comments for "Action"	Chairman, Treasure, tariff collectors, secretary, Advisors, Payam accountant
	Discuss and identify what you need and come up with budget for "Necessity"	Comments for "Necessity"	
	Discuss and record solutions to "Concerned issues"	Comments for "Concerned issues"	
	Discuss what kind of problem can be foreseen	Play scenario	
5/11, 5/12	Make skits / plays for (1) Normal operation (2) operation with a problem, based on the table above, about how to pay tariff Assign a play group and its leader Modi or anyone who can write to write down the script	Scenarios to play	Modi, Chairman, Treasure, tariff collectors, secretary, Play team leader
5/13	Practice the skit	Trained play team	Play team leader, Chairman/director of the skit, Play team
5/14-16	Play in front of community/water users Take questions and give answers to the water users	Community's understanding of tariff system	Play team leader, Chairman/director of the skit, Play team

5.2 Water user training (5/18-22)

Instruction to Modi and the Chairman.

□ Try to keep up with the schedule

□ Read "Operation of Public health officer" below carefully and understand before a meeting day.

□ Call for a meeting before 5/18 (meeting date)

□ Use the table below for this activity program.

□ Modi will record meeting progress and what is discussed in the table above

□ A chairman should lead the meeting

□ Activities are scheduled as shown in next table

Date	Action	Output	Responsible person
5/18	Read Basic O&M routine above (both treasure and PHO).	Mutual understandings	Chairman, Modi (support, take notes)
	Discuss and record what is missing, what is not clear, what have to be corrected for "Action" and "Counter measures"	Comments for "Action"	Chairman, Treasure, tariff collectors, secretary, Advisors, Payam accountant
	Have PHO to follow each step by following the "Operation instruction"	PHO memorize work routine	
5/19-20	Make a simulation scenario for the table above, about how to pay tariff Assign a play group and its leader Modi or anyone who can write to write down the script	Simulation Scenario	Modi, Chairman, Treasure, tariff collectors, secretary, Play team leader
5/20-21	Practice the simulation	Ensuring the process	Play team leader, Chairman/director of the skit, Play team
5/22	Teach water users process of tap stand use by simulation Take questions and give answers to the water users	Community's understanding of tariff system	Play team leader, Chairman/director of the skit, Play team

5.3 Public health officer training (5/18)

Operation of Public health officer (PHO)

Basic job description

- Opens and closes the valve to the tap if the tap area is clean
- Makes sure of clean environment around tap stands
- Disseminates hygiene information to the community
- Makes sure of a fence around a tap stand be intact

Normal Operation Instruction:

1. Morning, before tap opening time				
	Actions	Check points	Countermeasures	Means
1	Open the fence	☐ Vandalism	☐ Call security	Key to the fence
2	Check tap valves and faucets	☐ Vandalism	☐ Call security	
		☐ Leakage	☐ Call repairman	
3	Open Valve box	☐ Vandalism	☐ Call security	Key to the box
4	Check flow mater/counter	☐ Intactness	☐ Call repairman	
		☐ Flooding	☐ Call repairman	
5	Record the number of the flow mater before a gate valve is opened	☐ Reading is the same as previous day's reading at closing time	☐ Recheck numbers for recording mistake ☐ Call repairman ☐ Consult with chairman	Notebook/ recording sheet, pencil
6	Open the gate valve	☐ Leakage	☐ Call repairman	Key to the valve box
7	Check cleanness of a tap stand and surroundings	☐ Standing water ☐ Garbage ☐ Animals	☐ Clean the surroundings ☐ Ask community's help in cleaning the area	Check list/ recording book
8	Meet tariff collector	☐ Tariff collector	☐ Stop selling water until a tariff collector comes	
2. During water collecting time				
	Actions	Check points	Countermeasures	Means
1	Check cleanness of water containers	☐ Dirt and algae in containers	☐ Send back to the end of line for cleaning containers	Check list/ recording book
		☐ Lids, caps	☐ Send back home to get lids, caps	
2	Check cleanness around a tap stand	☐ Debris, garbage ☐ Standing water	☐ Ask community's help in cleaning the area	Check list/ recording book
		☐ Animals	☐ Confiscate the animal and ask fine for their owners	
		☐ Children playing around tap stand	☐ Report the parents	
3	Educate about hygiene and clean water	☐ Water Containers ☐ Fingernails ☐ Cleanliness of children ☐ State of latrine and Compound	☐ Advice first to correct ☐ Visit her house for PHAST	Education (IEC) materials
3. After closing time				
	Actions	Check points	Countermeasures	Means
1	Check cleanness of a tap stand and surroundings	☐ Standing water ☐ Garbage ☐ Animals	☐ Clean the surroundings ☐ Ask community's help in cleaning the area	Check list/ recording book
2	Check tap valves and faucets	☐ Vandalism	☐ Call security	
		☐ Leakage	☐ Call repairman	
3	Check flow mater/counter	☐ Intactness	☐ Call repairman	
		☐ Flooding	☐ Call repairman	
4	Close the gate valve	☐ Leakage	☐ Call repairman	Key to valve box
5	Record the number of the flow mater/ counter after a gate valve is closed	☐ Reading is the same as previous day's reading at closing time	☐ Recheck numbers for recording mistake ☐ Call repairman ☐ Consult with chairman	Notebook/ recording sheet, pencil
6	Close the valve box	☐ Vandalism	☐ Call security	Key to the box
7	Meet tariff collector	☐ Tariff collector	☐ Stop selling water as a tariff collector leaves	Clock/watch
8	Close the fence	☐ Vandalism	☐ Call security	Key to fence

5.4 Normal operation at tap stand (5/18)

Instruction:

□ Read below routine

□ Discuss and record what is missing, what is not clear, what has to be corrected

□ Discuss and record what is missing, what is not clear, what have to be corrected for "Action" and "Counter measures"

1. Morning, before tap opening time				
	Actions	Check points	Countermeasures	Responsible party
1	Check cleanness of a tap stand and surroundings	□ Standing water □ Garbage □ Animals	□ If the surrounding is not clean the fence is not open □ Ask community's help in cleaning the area	PHO, water users
2	Open the fence	□ Vandalism	□ If vandalism happened the fence is closed and water can not be sold.	PHO, security
3	Check tap valves and faucets	□ Vandalism	□ If vandalism happened the fence is closed and water can not be sold.	PHO, security
		□ Leakage	□ Call repairman	PHO, repairman
4	Open Valve box	□ Vandalism	□ If vandalism happened the fence is closed and water can not be sold.	PHO, security
5	Check flow mater/counter	□ Intactness	□ Call repairman	PHO, repairman
		□ Flooding	□ Call repairman	PHO, repairman
6	Record the number of the flow mater before a gate valve is opened	□ Reading is the same as previous day's reading at closing time	□ Recheck numbers for recording mistake □ Call repairman for possible leakage □ Consult with chairman for possible water theft	PHO, repairman, chairman
7	Open the gate valve	□ Leakage	□ Call repairman	PHO, repairman
8	Meet tariff collector	□ Tariff collector	□ Stop selling water until a tariff collector comes	PHO, tariff collector
9	Buy tokens at treasure	□ Amount of token □ Cash in hand □ Receipt to issue	□ If not enough token in hands ask her to come back this later	Treasure
10	Start selling water	□ Make sure 1 token for 1 jerry can □ Quality of Tokens	□ No token no water □ Close the gate if counter-fit token is found	Tariff collector
2. During water collecting time				
	Actions	Check points	Countermeasures	Responsible party
11	Check cleanness of water containers	□ Dirt and algae in containers	□ Send back to the end of line for cleaning containers	PHO
		□ Lids, caps	□ Send back home to get lids, caps	
12	Keep selling water and recording number of tariff collected	□ Make sure 1 token for 1 jerry can □ Quality of Tokens	□ If one come with container larger than 20L, ask for more than 1 token □ If counter-fit token is found,	Tariff collector, chairman, security, treasure

			stop selling at the point and call for chairman, security and treasure	
13	Return collected tokens every 10 counts if tokens are short	☐ Number of token cumulated at tap stand	☐ Ask PHO or other tariff collector to watch the stand when you are off to treasure	Tariff collector, PHO
14	Check cleanness around a tap stand	☐ Debris, garbage ☐ Standing water	☐ Ask community's help in cleaning the area	PHO, water users, animal owners, parents
		☐ Animals	☐ Confiscate the animal and ask fine for their owners	
		☐ Children playing around tap stand	☐ Report the parents	
15	Educate about hygiene and clean water	☐ Water Containers ☐ Fingernails ☐ Cleanliness of children ☐ State of latrine and Compound	☐ Advice first to correct ☐ Visit her house for PHAST	PHO
16	Water users line control	☐ Dispute, cut-in	☐ In case of a dispute stop the service temporally until security seizes it	Security

3. After closing time

	Actions	Check points	Countermeasures	Responsible party
17	Stop selling water on time	☐ Water users	☐ If water users insist and not leave, call security	Security
18	Close the gate valve	☐ Leakage	☐ Call repairman	PHO
19	Count token and record the total number received	☐ tokens	☐	Tariff collector
20	Check cleanness of a tap stand and surroundings	☐ Standing water ☐ Garbage ☐ Animals	☐ Clean the surroundings ☐ Ask community's help in cleaning the area	PHO, water users, animals' owners
21	Check tap valves and faucets	☐ Vandalism	☐ Call security	PHO, security
		☐ Leakage	☐ Call repairman	PHO, repairman
22	Check flow mater/counter	☐ Intactness	☐ Call repairman	PHO, repairman
		☐ Flooding	☐ Call repairman	PHO, repairman
23	Record the number of the flow mater/ counter after a gate valve is closed	☐ Reading is the same as previous day's reading at closing time	☐ Recheck numbers for recording mistake ☐ Call repairman ☐ Consult with chairman	PHO
24	Close the valve box	☐ Vandalism	☐ Call security	PHO
25	Meet tariff collector	☐ Tariff collector	☐ Stop selling water as a tariff collector leaves	PHO
26	Close the fence	☐ Vandalism	☐ Call security	PHO
27	Treasure receive remaining of tokens and balance them	☐ Tokens ☐ Token balance book	☐ If tokens are more than having been sold, check them for counter-fit ☐	Treasure
28	Count income/sales, balance the book, close the cash box	☐ Balance the book ☐ Receipts ☐ Remaining tokens	☐ If not balance, check numbers, count cash again, cross check with receipts ☐ If cash is short, consult with chairman	Treasure, chairman
29	Transfer cash to the bank	☐ Bankbook ☐ Security	☐ If money is lost in transportation report the police and the chairman immediately	Treasure, security, chairman

5.5 Normal Operation Simulation by Water Users (5/19-22)

5.5.1 Scenario making(5/19-20)

□ Make several scenario of simulation, to show what and how to follow tap stand use process, for water users according to the normal operation routine (step 1 through 29 of table above)
□ Assign a play group and its leader
□ The play group leader write down the simulation scenario
□ Practice the simulation for the play group of committee members so that they know how to instruct the water users

5.5.2 Practice the skits (5/20, 21)

□ Practice a simulation that was made on the previous day
□ Call the water users for simulation practice

5.5.3 Simulation by Water Users (5/22)

□ Teach water users process of tap stand use by simulation
□ Practice water use routine simulation according to the steps

6. Making Action Plan (5/25-29)

□ Use attached working sheet to make action plan of each block. Define first;
- Activities
- Expected results, out puts from the activities
- Timeline
- Responsible person
- Implementing person (can be the same as responsible person)
- Budget
- Indicators

Name of Group	Water Management Committee	(Munuki Block)	Date:
Title of Project:			

Activities	Outputs: Expected results	Timeline/schedule				Responsible person	Implementing person	Inputs: Materials & equipments	Budget & expenditure	Indicators
		1/4	2/4	3/4	4/4					

7. Rules and Penalty (5/30)

□ Discuss and amend the rules and penalties that have been listed by the committee members

□ Water user must respect the decision

Rule	Responsible party	Penalty
To follow water collection schedule; 6am to 12 pm, 2pm to 5pm	Public health officer	Open a case against the person Fine 100SDG
To close taps in the night (except time of child delver)	Public health officer Security	Call the police Fine 100SDG
To close the gate/fence after 5pm until 6am next morning	Assistant Public Health Officer	Committee meeting will be held/give the violator fine 100SDG
To have an ID card	Public health officer	ID theft is taken to the police
To respect queue	Public health officer Security	Fine is imposed to the violator; Fine 100 SDG
To buy token before collecting water	Tariff collector Treasure	Ban to use the tap after warning, Fine 100SDG
Not to break taps	Assistant Public Health Officer Security	Compensate the damage, pay the cost of repair
To prevent animals to enter the tap area	Public health officer	The animal is removed and tied if its owner is not know Give a warning their owners
To practice hygiene and sanitation messages that were given by the committee; a soak pit will be made to clean water containers	Public health officer	To confiscate dirty containers after two warnings were given, To impose fine to violators

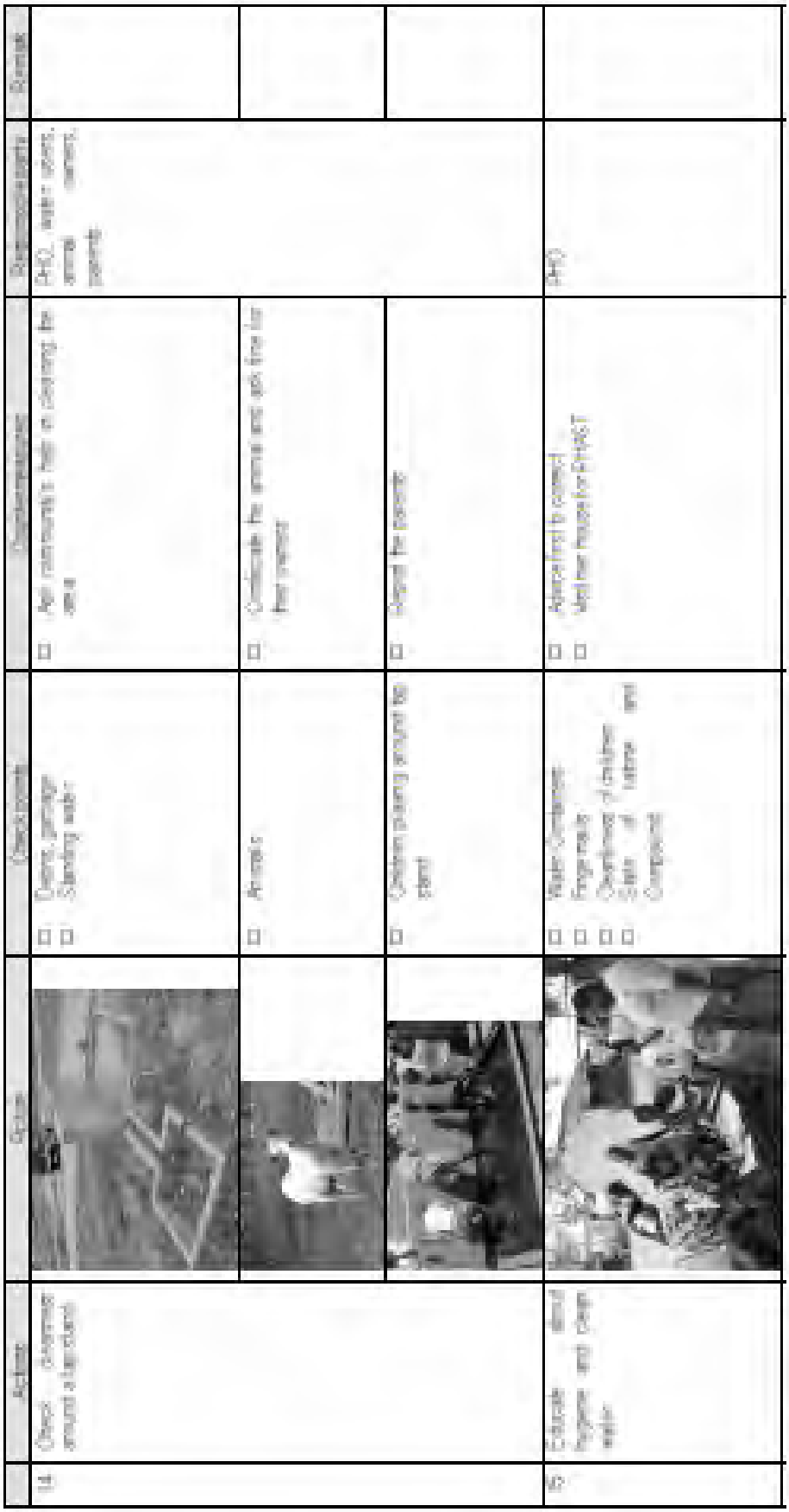
J.2.5 Operation and Management Manual

J.2.5.1. Operation and Maintenance Manual with Picture

	Actions	Picture	Check points	Countermeasures	Responsible party	Remark
1	Check cleanness of a tap stand and surroundings		☐ Standing water ☐ Garbage ☐ Animals ☐ Children	☐ If the surrounding is not clean the fence is not open ☐ Ask community's help in cleaning the area	PHO, water users	
2	Open the fence		☐ Vandalism	☐ If vandalism happened the fence is closed and water can not be sold.	PHO, security	Fences are not built yet.
3	Check tap valves and faucets		☐ Vandalism	☐ If vandalism happened the fence is closed and water can not be sold.	PHO, security	
			☐ Leakage	☐ Call repairman	PHO, repairman	
4	Open Valve box		☐ Vandalism	☐ If vandalism happened the fence is closed and water can not be sold.	PHO, security	
5	Check flow mater/counter		☐ Intactness	☐ Call repairman	PHO, repairman	
			☐ Flooding	☐ Call repairman	PHO, repairman	
6	Record the number of the flow mater before a gate valve is opened		☐ Reading is the same as previous day's reading at closing time	☐ Recheck numbers for recording mistake ☐ Call repairman for possible leakage ☐ Consult with chairman for possible water theft	PHO, repairman, chairman	

	Actions	Picture	Check points	Countermeasures	Responsible party	Remark
7	Open the gate valve		☐ Leakage	☐ Call repairman	PHO, repairman	
8	Meet tariff collector		☐ Tariff collector	☐ Stop selling water until a tariff collector comes	PHO, tariff collector	
9	Buy tokens at treasure		☐ Amount of token ☐ Cash in hand	☐ If not enough token in hands ask her to come back this later	Treasure	
			☐ Receipt to issue	☐		

	Actions	Picture	Check points	Countermeasures	Responsible party	Remark
10	Start selling water		☐ Make sure 1 token for 1 jerry can ☐ Quality of Tokens	☐ No token no water ☐ Close the gate if counter-fit token is found	Tariff collector	
11	Check cleanness of water containers		☐ Dirt and algae in containers ☐ Lids, caps	☐ Send back to the end of line for cleaning containers ☐ Send back home to get lids, caps	PHO	
12	Keep selling water and recording number of tariff collected		☐ Make sure 1 token for 1 jerry can ☐ Quality of Tokens	☐ If one come with container larger than 20L, ask for more than 1 token ☐ If counter-fit token is found, stop selling at the point and call for chairman, security and treasure	Tariff collector, chairman, security, treasure	
13	Return collected tokens every 10-20 counts if tokens are short		☐ Number of token cumulated at tap stand	☐ Ask PHO or other tariff collector to watch the stand when you are off to treasure	Tariff collector, PHO	



	Actions	Picture	Check points	Countermeasures	Responsible party	Remark
16	Water users line control		☐ Dispute, cut-in	☐ In case of a dispute stop the service temporally until security seizes it	Security	
17	Stop selling water on time		☐ Water users	☐ If water users insist and not leave, call security	Security	
18	Close the gate valve		☐ Leakage	☐ Call repairman	PHO	
19	Count token and record the total number received		☐ tokens	☐	Tariff collector	
20	Check cleanness of a tap stand and surroundings		☐ Standing water ☐ Garbage ☐ Animals	☐ Clean the surroundings ☐ Ask community's help in cleaning the area	PHO, water users, animals' owners	
21	Check tap valves and faucets		☐ Vandalism ☐ Leakage	☐ Call security ☐ Call repairman	PHO, security PHO, repairman	

	Actions	Picture	Check points	Countermeasures	Responsible party	Remark
22	Check flow mater/counter		☐ Intactness	☐ Call repairman	PHO, repairman	
			☐ Flooding	☐ Call repairman	PHO, repairman	
23	Record the number of the flow mater/ counter after a gate valve is closed		☐ Reading is the same as previous day's reading at closing time	☐ Recheck numbers for recording mistake ☐ Call repairman ☐ Consult with chairman	PHO	
24	Close the valve box		☐ Vandalism	☐ Call security	PHO	
25	Meet tariff collector		☐ Tariff collector	☐ Stop selling water as a tariff collector leaves	PHO	
26	Close the fence		☐ Vandalism	☐ Call security	PHO	
27	Treasure receive remaining of tokens and balance them		☐ Tokens ☐ Token balance book	☐ If tokens are more than having been sold, check them for counter-fit	Treasure	
28	Count income/sales, balance the book, close the cash box		☐ Balance the book ☐ Receipts ☐ Remaining tokens	☐ If not balance, check numbers, count cash again, cross check with receipts ☐ If cash is short, consult with chairman	Treasure, chairman	
29	Transfer cash to the bank		☐ Bankbook ☐ Security	☐ If money is lost in transportation report the police and the chairman immediately	Treasure, security, chairman	

J.2.5.2. Operation and Management Manual for Financial Requirement For Treasure and Tariff collectors of Water Management Committee In Munuki Block A, B, and C (Version 1)

Created on April 14, 2009

Cooperative work of Munuki Payam, Urban Water Corporation, and Japan International Cooperation Agency

1. Water Distribution System

1.1. General flow of water and major responsible parties

Figure 1. Flow of water and responsible parties

Water distribution path	UWC	Water management committee	Munuki water users
The Nile River	-	-	-
Intake pipe	Civil engineer, plant manager, operation technician, maintenance engineer		
Pump			
Water Treatment Plant			
Pipeline			
Booster Pump			
Pipeline			
Raising Main			
Pipeline			
Water Bridge			
Water flow mater			
Main line			
Pipeline		Repair person	
Overhead storage tank		Repair person, security	
Pipeline		Repair person	
Gate valve, flow mater/counter		Repair person, public health officer	
Tap stand (including soak pit, apron, faucet)		Repair person, public health officer, security	
Fence		Repair person	
Transporting containers		Public health officer/ hygiene educator	Water collector
Hands			Water collector
Storage container			Water collector
Hands			Water user
Cup/ pot			Water user
Ingestion			Water user

1.2. Operation and Maintenance at Munuki level

In this section we discuss about operation and maintenance of a tap water supply system in Munuki-Block A, B, and C that is sole responsibility of its users and water management committee.

Table 1. Summary of O&M requirement

Repair and maintenance of	Frequency	Person in charge	Materials and spare parts	Tools and equipment
Tap water	Daily	Public health officer	N/A	Containers
Clean site	Daily	Public health officer	N/A	Blooms
Clean soak pit	Daily	Public health officer	N/A	Small rake
Valves	As necessary	Repairman/plumber	Washer, gland seal, Teflon, Flax, Spare valve	Spinners. Screwdrivers, pipe wrench
Fence	As necessary	Repairman/plumber	Fence materials	Depending on type of fence
Tap stands	As necessary	Repairman/plumber	Wood board, nails, cement, sand, etc.	Hammer, saw, trowel, bucket, etc.
Piping	As necessary	Repairman/plumber	Pipe nipples, connectors, elbows, oil, Teflon, flax /plumbing putty	Pipe, pipe wrench, pipe cutter, saw, file, pipe threader, sealing cement,

1.1.1. Operation

- Water users clean and fill their containers at the tap stand.
- Bathing and washing of clothes is prohibited around and at the tap stand.
- The tap site has to be cleaned daily and drain/soak pit inspected.
- Water management committee is responsible on managing the tap stand and collection and remittance of water service fee to UWC. In turn the community member/water users are required to subscribe protocols and rules that are suggested by and agreed with the committee.

1.1.2. Maintenance

- The drain/soak pit must be cleaned at least once a month.
- Formation of pools must be prevented at all times.
- A rubber washer or other part of a tap may have to be replaced as necessary.
- A fence must be maintained and repaired as necessary. Durability of the fence varies from material to material.
- Repairman/plumber of water management committee is in charge of repairing overhead storage tank, pipe and gate valve. Flow maters, structures out side of Munuki and complex problem that the repairmen/plumbers are not trained for must be reported to and taken cared by UWC. Any materials purchased and used for on-site repair by the repairmen/plumber are financed by community funding. The community funding is collected as tariff and managed by Treasure of the committee.

1.3. Finance Management

Table 3. Budgeting

Management issues	Possible options
1. What cost to budget for?	-Remuneration -Tools and spare parts -Small repairs only -All repairs -Extension, rehabilitation -Depreciation -others
2. What source of income to use?	-Tariff -Community funds -Voluntary contributions -Credit scheme (e.g. micro financing) -Government subsidy -UNICEF funds -others

Table 4. Organization of Financial flow

Management issues	Possible options
1.How to collect money?	-Billing -Collecting at tap stand -Exchange to Token at Treasure -Fund raising as necessary -Grant
2. When to collect money?	-Per service provided -Before water is taken at Treasure -After water is taken -Beginning of FY
3. Who collect the money?	-Treasure -Tariff collector -UWC
4. Where to keep the money	-In a safe -In the payam account -In a bank account -In a development fund

Table 5. Financial administration

Management issues	Possible options
1.How to resister movements of expenditures and incomes?	-Log book -Daily journal -Book-keeping -Bank statement
2. Who administers the funds?	-Treasure -Payam accountant -Bank accountant -Chairman of committee
3. What are funds used for?	-Payment if expenditures related ti O&M of tap water -Use for other development projects
4. Who orders payment?	-Treasure -Tariff collector -Water management committee -UWC

Table 6. Financial control and monitoring

Management issues	Possible options
1.What type of financial control?	-Receipt from book-keeping -Regular meeting of committee -Double signature fir disbursement of funds -Feed back to users -Checking with mater reading -Checking with bank statement -Checking with bills form UWC -Registered auditors
2. How to monitor?	-Use a log book -make a quarterly review and over view of situation on expenditures and incomes, numbers of people who do not pay
3. What to do with bad payers/water users?	-All-block meeting -Analysis of reasons for bad payment -Improvement of service -Improvement of relationship with the users -Campaign on benefit of good payments -Rescheduling of debt -Sanctions/enforcing penalty

2. Water distribution system management

2.1 Roles and Responsibility in General

1) UWC's role and responsibility

- Making of policies, guidelines, regulations regarding drinking water
- Operate and maintain water supply system and service up to the water flow mater and 4" main pipe
  - Ensuring of safe drinking water quality
  - Ensuring of integrity of water supply line
  - Provide technical supports upon request
  - Inform any event of accident, damage, or anything that concerns customers
- Manage tariff collected from the consumers
  - The tariff is used to repair and maintain the pipes, valves, storage tanks, pumps, and water treatment plant, including the chemicals to treat water
  - The tariff is used for salary of those who work on operation and management of the water distribution system
  - Audit and annual finance report must be disclosed to the Public

2) Payam's role and responsibility

① Management structure (Water management committee)

- Collect and remit water use tariff
- Manage and maintain tap stands
- Ensuring dignity and proper use of the tap stands and water
- Coordinate with UWC to receive safe and sufficient water supply
- Report condition and state of water system to UWC and the community
- Hold and attend meetings periodically to discuss issues regarding tap water use
- Report the activities, decision, and finance to the community and gain consensus
- Support enhancement of health associating water use in payam
- Cover cost of water used by those who are not able to earn income
- Consult with elders and advisors

② Consumer/water user

- Pay water use tariff
- Protect tap stands and their own health
- Obey and respect the rules and agreement regarding tap water use
- Cooperating with Water management committee

・ Monitor works of Water management committee

2.2 Constituents and Structure of Water management committee

A water management committee consists of a chairman, assistant chairmen, secretary, treasure, assistance treasure, public health officers, assistance public health officer, tariff collector, information officer, security, and repairmen/plumber. Each committee member was selected by the core working group who have been elected by community members to construct TOR of Water management committee.

Figure 2 illustrates a relationship of each committee member and a flow of information and report.

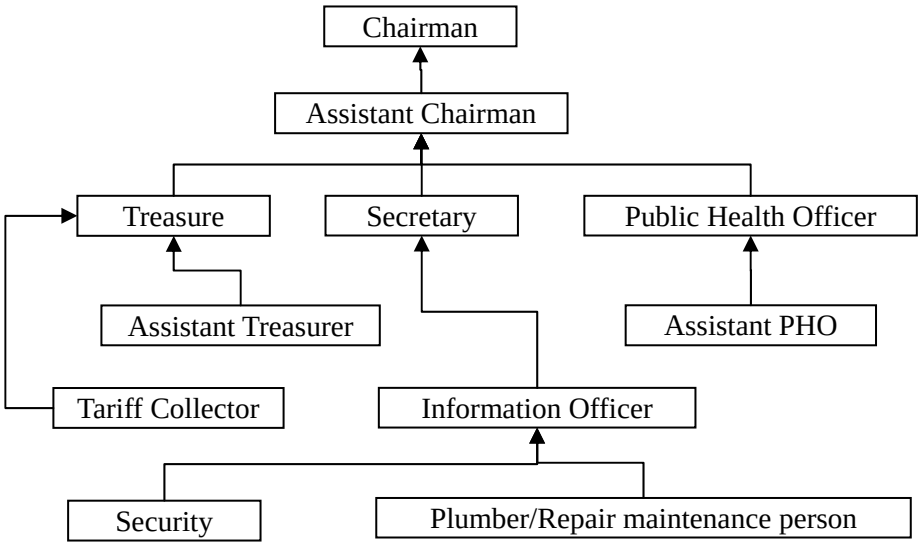


Figure 2. Components and reporting path of Water management committee

Core constitution of the water management committee is:

・ To represent the community in water contact with UWC
・ To serve community voluntary for 3 years without seeing for monetary and material rewards unless the community offers and approves
・ To organize proper operation and maintenance of tap water stand
・ To collect and manage tariff
・ To keep accurate records of all payments and expenditures
・ To promote hygienic and effective use of the tap stands
・ To be accountable to operation and management of tap stand system and finance
・ To hold mandatory quarterly meeting and report the result to the community

Additional Rules for Block B

・ Contract Period Three Years

- General Assembly Once A Year After Three Years
- Executive committee Meeting To Be Decided by the Committee
- Emergency meeting Defending on Arriving Matters
- Penalty To Punish Defaulters

Decisions made by Block C

- To serve as committee to the community for the assigned period of three years
- Need to define contract period after three months
- To hold meeting at each block periodically after every month
- To attend and participate in a meeting every two weeks
- To report to community members results of meetings and share information in three months
- To consult with the community members and councilors before making decision on everything concerning management and operation of the tap stands general meeting of three months
- To submit a written report to Payam Office director every month on finances and activity
- To evaluate activities in three months
- To have auditor to check finance statements every month
- To replace a member if he/ she is incapable to perform his/ her duty after careful performance evaluations by the chairman

Additional Rules Block A

- Cleaning (all tap stand properties)
- Others for caring the tap
- Committee to check all side of the water management
- Committee have right to change the side which does not work well
- The community member can be consulted when making decision
- Every Saturday they will attend a meeting to see the running cost of the work
- Chairman can be changed according to his work (if he is good/bad)
- Daily remittances of tariff to the treasurer
- Weekly remittances to the bank
- Daily remittances to the treasurer will be receive by receipts with a copy to the treasurer
- Monthly evaluation of the activities by the committee(chairman)
- Meetings and evaluation of the activities to see in every side of the committee members
- Reports can be done in the following (Finance-Activities- Incidents)
- System of tariff collection by the rates can be presented by receipts
- General assembly can be done after six months
- Penalty can be punish according to the type of crimes

Tariff Collection System

<u>Collection, management, and remittance of tariff</u>

A fixed amount of tariff for water collection from a tap stand is collected and submitted to UWC. Currently UWC is asking 80 litters (4 x 20L-jerry can) to be 1 (One) Sudanese pound.

Treasure and Tariff collectors of a water management committee are directly in charge of handling money. Once the tariff is collected and deposited to a community bank account, a chairman and other cosignatory sign a check and remit water fee to UWC. UWC then utilize the tariff for chemicals used at the water treatment plant, maintaining piping and pump systems, wages of technicians and engineers, Chlorinate and cleaning storage tanks, and covering other operation and maintenance costs.

Collected tariff is also used for improving the water distribution system, developing a new community project, and covering M&O costs. Their responsibilities / job descriptions are stated below.

Treasure

- Keeps money safely, responsible of transaction and remittance of money
- Makes sure money is secure
- Book keeping
- Issue receipts
- Reports expense to the community periodically and upon request
- Maintains the bank account
- Sell tokens for water collection

Tariff collector

- Collects tokens for use of water
- Submits collected tokens to the treasure
- Keep a record of tokens received

Chairman

- Directs and manages the committee members
- Links Payam to community and UWC
- Calls for meeting
- Assigns replacement of a committee member if he/she does not perform his/her duty as agreed
- Over sees accounting and finance part
- Makes a final decision and take an accountability
- Approve and sign for a payment

Token /Prepaid system

Prepaid/Token system is decided to use in Munuki system.

Concept: Instead of cash being paid at a tap stand, tokens are purchased to exchange to water. Tokens are sold to water users by Treasures. For example, 10 tokens for 10 jerry cans can be sold for 3 SDG. One token is collected at a tap stand in exchange to filling one jerry can. All collected tokens are then returned to the Treasure at the end of a day or as necessary.

Pro: Tariff payment is guaranteed and easier to count and keep truck balance at Treasure. No security issue such as loss of cash is expected at water point. Less burden for tariff collectors at water stands

Con: Tokens must be prepared and they might be costly. Counter-fit tokens can be fabricated and water can be stolen. A token that is purchased at a treasure of Block A can be used to purchase water in Block C which causes unbalance of ledger/balance sheet.

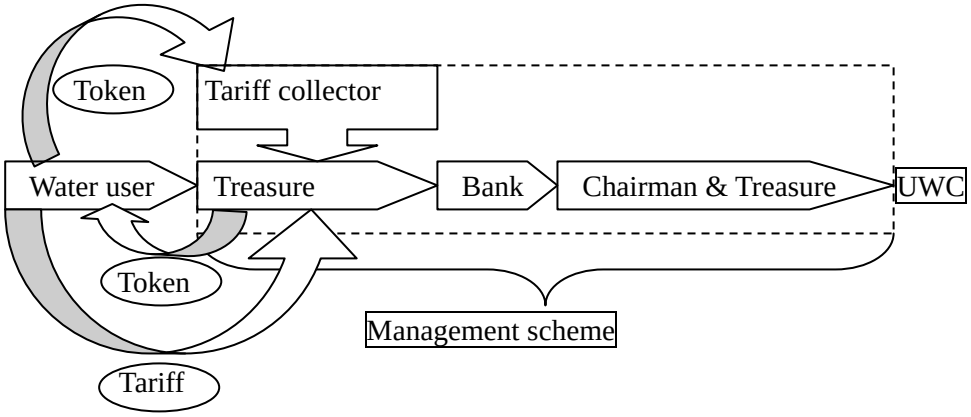


Figure 3. Diagram of Token /Prepaid system

3. Financial requirement

Table 7 summarizes responsible parties for tasks of operation and management. Community bares financial obligation to operation and management of a physical structure in Munuki.

Table 7. O&M tasks and responsibility

O&M tasks	Operational	Financial
Check all the pipelines, tanks, valves and faucet for leakage/breaks, and repair	Repairmen/Plumber	Community
Monitor tap stands use to encourage proper use	Public health officer	Community
Check all tap stands for leaks, wear and tear, and repair if needed	Repairmen/Plumber	Community
Flush all pipes periodically	Repairmen/Plumber	Community
Clean tap stands apron, soak pits and surroundings and repair	Public health officer, Repairmen/Plumber	Community
Conduct water quality tests, locate and correct a source of contamination; disinfect	UWC	UWC
Measure water output periodically, at well head and tap stand. Assess leakage and initiate leak detection and repair if necessary	UWC	Community and UWC
Record all operation and maintenance activities in log book	Water management committee	Community
Develop schedule for preventive maintenance and monitoring	Water management committee, UWC	Community and UWC
Operate and maintain water treatment plant and provide water as schedules to Munuki	UWC	UWC

One of the most important responsibilities of water management committee is taking care of the money which entrusted to you. In order to collect and take good care of these public funds, you must:

- □ Collect money from everybody according to the riles agreed upon by the community;
- □ Keep the money safely, both cash and that which is in the bank;
- □ Use it for water supply purpose only, in ways that are known to everybody;
- □ Record income and expenses regularly and honestly;
- □ Report to the whole water user community from time to time on how much has been collected, how much used, and how much remains.

3.1 Cash Flow Structure

Cash is paid at Treasure in exchange to tokens. The payment then deposited to community bank account and paid to UWC every month. “TOKEN SYSTEMS” is going to be carried on as shown below in Munuki.

Table 8. Basic flow of tariff and concerning issues

Step	Actor	Action	Necessity	Concerned issues
1	Water user	Buy token from Treasure	Cash	-Socially disadvantaged people
2	Treasure	Sell token to water users (customers) in exchange to cash. Record amount of token sold and cash income in a ledger.	Token, a pensile, ledger / daily cash record book for token, safety box, calculator, ID card	-Material and design of Token -Trucking system -Set date or time when tokens are sold
3	Water user	Hand the token in to a Tariff collector at a tap stand of where the token was issued.	Token that was issued at a specific block.	
4	Tariff collector	Collect the tokens from the water user. Allow the water user to fill in as many jerry cans as the token values. Make sure that amounts of tokens and numbers of jerry cans match for one water user. Record numbers of jerry cans.	Token collection box, monitoring log book, ID card	-Tracking system -Method to check counter fit token
5	Tariff collector	Collect and count all tokens given by water users and return to the Treasure at the end of day, or as necessary.	Token log book/ ledger	-Set hours when tariff collectors can attend at the stand
6	Treasure	Receive and count the tokens. Balance the tokens with cash book.	Balance sheet	
7	Chairman Payam accountant	Count cash and token and confirm the balance sheet	Signature	Check and balance system Chose a bank
8	Treasure	Deposit the cash in the bank at the end of week, or as necessary	Bank saving book, Deposit slips from bank	Opening bank account
9	UWC	Read the flow mater and send a monthly bill to the Chairman of the committee	Water use bill, copy of the bill	Check and balance system
10	Chairman, Treasure, Payam accountant	Sign the cheque to pay for the bill Send the cheque to UWC and receive a receipt from UWC in turn Submit the receipt to Treasure		Check and balance system
11	Treasure	Balance the bank saving book Receive the receipt from the Chairman	Receipts book	-Official receipt for purchases other than UWC
12	Chairman, Treasure	Prepare monthly finance report Submit to Payam accountant, Report to water users	Report	-Check and balance structure
13	UWC	Submit finance report/how tariff was used to Chairman and Payam accountant	Report from UWC	-Check and balance structure
14	Tariff collectors Treasure	Check and count tokens, destroy counter-fit tokens	Token-income balance book	-Method to check counter fit token

3.2 Reporting

① At least an annual financial report should be submitted and explained to the water user community for review how money is collected, how much was used for what reason, and how much remains.

② A daily record keeping for income, expense and banking must be kept

③ Treasures must be able to show and answer evidence of all cash transaction and receipts/records.

④ Submit a periodical finance report to UWC for balance-and-check

3.3 Auditing

① An external auditing must be done periodically (use Payam auditor?)

② Internal auditing must be done at least once a year

③ Auditing report must be submitted to UWC.

J.2.5.3. Operation and Maintenance Guideline for Public Health Officers (PHO)

Basic job description

- Opens and closes the valve to the tap if the tap area is clean
- Makes sure of clean tap stand environment
- Disseminates hygiene information to the community
- Makes sure of a fence around a tap stand be intact

Operation:

Morning

	Actions	Check points	Countermeasures	Means
1	Open the fence	□ Vandalism	□ Call security	Key to fence
2	Check tap valves	□ Vandalism	□ Call security	
		□ Leakage	□ Call repairman	
3	Open Valve box	□ Vandalism	□ Call security	Key to the box
4	Check flow mater/counter	□ Intactness	□ Call repairman	
		□ Flooding	□ Call repairman	
5	Record the number before a gate valve is opened	□ Reading is the same as previous day's reading at closing time	□ Recheck numbers for recording mistake □ Call repairman □ Consult with chairman	Notebook/ recording sheet, pencil
6	Open the gate valve	□ Leakage	□ Call repairman	Key to valve box
7	Check cleanness of a tap stand and surroundings	□ Standing water □ Garbage □ Animals	□ Clean the surroundings □ Ask community's help in cleaning the area	Check list/ recording book
8	Meet tariff collector	□ Tariff collector	□ Stop selling water until a tariff collector comes	

During water collecting time

	Actions	Check points	Countermeasures	Means
1	Check cleanness of water containers	□ Dirt and algae in containers	□ Send back to the end of line for cleaning containers	Check list/ recording book
		□ Lids, caps	□ Send back home to get lids, caps	
2	Check cleanness around a tap stand	□ Debris, garbage □ Standing water	□ Ask community's help in cleaning the area	Check list/ recording book
		□ Animals	□ Confiscate the animal and ask fine for their owners	
		□ Children playing around tap stand	□ Report the parents	
3	Educate about hygiene and clean water	□ Water Containers □ Fingernails □ Cleanliness of children □ State of latrine and Compound	□ Advice first to correct □ Visit her house for PHAST	Education (IEC) materials

After closing time

	Actions	Check points	Countermeasures	Means
1	Check cleanness of a tap stand and surroundings	□ Standing water □ Garbage □ Animals	□ Clean the surroundings □ Ask community's help in cleaning the area	Check list/ recording book
2	Check tap valves	□ Vandalism	□ Call security	
		□ Leakage	□ Call repairman	
3	Check flow mater/counter	□ Intactness	□ Call repairman	
		□ Flooding	□ Call repairman	
4	Close the gate valve	□ Leakage	□ Call repairman	Key to valve box
5	Record the number after a gate valve is closed	□ Reading is the same as previous day's reading at closing time	□ Recheck numbers for recording mistake □ Call repairman □ Consult with chairman	Notebook/ recording sheet, pencil
6	Close the valve box	□ Vandalism	□ Call security	Key to the box
7	Meet tariff collector	□ Tariff collector	□ Stop selling water as a tariff collector leaves	Clock/watch
8	Close the fence	□ Vandalism	□ Call security	Key to fence

Maintenance:

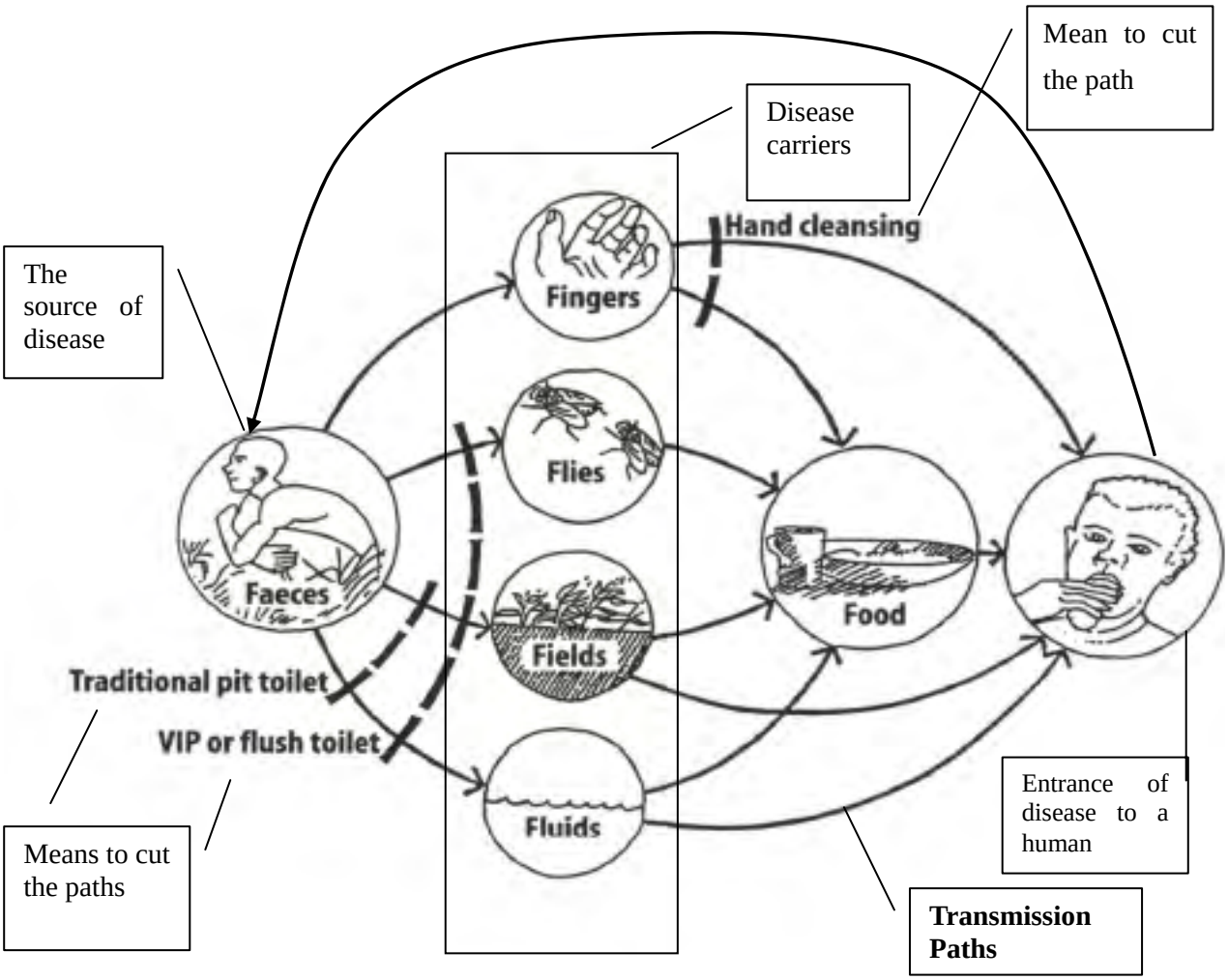
Actions	Means
Community hygiene education: community meeting, house visit	Education (IEC) materials, monitoring sheets, check sheets

J.2.6 Hygiene and Sanitation IEC (PHAST)

Detailed PHAST Training Manual1
for a Trainer of
Public Hygiene Officer in Block A, B and C in Munuki

A bottom line of PHAST: F-Diagram / Disease transmission path[2]

To find how to cut the transmission paths and to eliminate the causes of disease is the journey through the PHAST training. Six Fs, Finger, Flies, Field, Fluid, Foods, and Feaces, are major carriers and source of diseases originating from human. The conceptual diagram below shows a relationship between cause and paths of diarrhoeal diseases.



[1] Based on "PHAST Step-by-Step Guide: A participatory approach for the control of diarrhoeal disease" was created by WHO et al in 1998.
[2] Illustration source: *Winblad U and Dudley E, 1997* IN WHO et al (1998) "PHAST Step-by-Step Guide: A participatory approach for the control of diarrhoeal disease"

Steps

- **Preparation**

.1 PHAST ToT

Read the guideline, make notes, and familiarize with materials

.2 Prepare the communication tools

.2.1 Posters

- Basic composition of the posters

(i) People: Unserialized posters

These posters would be used to represent scenes of everyday life of people in the rural community. They must be made in such an indicative way that many situations can be recreated by combining these posters. Such drawings are, for example;

- Person laying
- A man and a woman talking together
- A group of men socializing
- A group of women socializing
- A group of children playing
- A crying person/people
- A person paying or buying something

(ii) Medical personnel or structures and patients

Traditional medicine man/witchcraft, street drug benders, a health agent at a health center, and the doctors in Payam clinic, and any other people who "treat" sick people are under this category. Often a picture of structure such as health post is also used. Another set of people is patients: An adult man, an adult women, an old woman, girls of various age groups, boys of various age groups, a young children with an adult. These pictures of people could be used for gender analysis as well.

(iii) Three-pile sorting: Good, In-between, Bad

The themes are "good", "in-between", and "bad" practices of everyday hygiene practices for sanitation, hand washing, water sources, water storage, water transport, food preparation, food storage, food handling and environmental hygiene.

(iv) Transmission routes

The theme is transmission routes from faecal matter to human mouth. The same posters form "Tree-pile sorting" could be used as this theme. However, actual problematic practices in your project sites must be reflected on the posters. Typical drawings of this theme are:

1. close-up of a mouth,
2. a hand,
3. a barefoot,

4. bushes (as an open air toilet),
5. a fly (s),
6. dirty water source and its surrounding,
7. animals around water and food sources,
8. squatting human (or open defecation), or close up of faeces
9. eating or drinking out of storage containers,
10. open containers,
11. tree branches or plastic bags in a transporting container of water,
12. someone preparing food

(v) Blocking the routes (often these are the solutions to the problems)

The theme is to block the transmission routes between fecal matter and human mouth. The same posters form "Tree-pile sorting" could be used as this theme. Means to block the paths are the potential solutions to the problems associating water and sanitation. Typical drawings of this theme for the rural Niger are:

- Lids, covered containers for food and for water,
- Fence around water sources
- Cleaning surroundings of water sources or court yard (living environment),
- Tied animals,
- Washing hands with soap,
- Removing child's faeces,
- Burying solid wastes, human faeces,
- Cooking or reheating food
- Dishes stored on a table, roof-top
- Drinking water with a designated cup,
- Latrines,
- A tap stand,
- A feasible technology to treat drinking water

(vi) A4 blank paper and a thick-pointed pen

These can be use to fill missing constituent (adding new drawings) during the training.

.2.2 Pocket chart and Voting materials

- Use a small green buckets instead and voting cards available at JICA Study team's office.

.2.3 Flip Chart and Sticky note

- Use a page from a flip chart and sticky note to make a Barriers Chart, Planning activities, reviewing and other discussions.

.2.4 Miscellaneous

- A large roll of scotch tape, oil based pens with a thick tip, a carrying bag of the posters, a notebook, pencils,

.3 Field test

The posters / tools prepared above must be tested in field before going to a mass-production.

IMPORTANT notice to Facilitators:

This exercise is for water users to reflect their life, find problems and solutions, and put it in practice.

Before start the activities, keep the followings in your mind:

- **All participants are equal,**
- **There is no one right answer,**
- **Your job is to guide and facilitate not to teach,**
- **Creating a right atmosphere,**
- **Democratize a dominating person.**

ALWAYS make sure PHO will do:

- □ **NOT correcting the audience**
- □ **NOT directing the audience**
- □ **NOT giving information and "answers"**
- □ **NOT teach or preach what PHO knows or think**
- □ **NOT explain the posters / pictures that are used in this exercise**
- □ **NOT force the audience to be in a hurry**
- □ **NOT act like a teacher or instructor or some official**
- □ **Act as their advisor, kind friend, or compassionate sister**
- □ **Give open end questions to stimulate discussion**
- □ **Be friendly and patient**

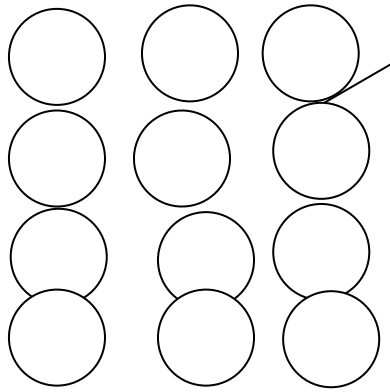
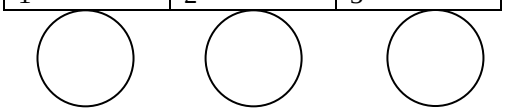
1. Problem identification	
1-1. Community Stories	**Instruction**
■ Tool to use: Posters of People(Unserialized posters)	Review the posters and brain storm how they can be used
■ Time to spend: 2-3 hours	What to say
Introduction	"Hello. My name is ( ). I am a Public health officer and a member of water management committee that was chosen by the community, block ( ). "Today I would like to do health awareness exercise with you. Please be comfortable and enjoy this exercise. "Before we start let's introduce to each other"
(1) Make groups of 5. If there are more than 10 people ask to make 2 groups.	"Please make a group of 5 or so"
(2) Let the target group chose 4 posters from the pile of Posters of People	"Here are some pictures. Please take look at them for a while and study". (5 min passed) "Please chose 4 pictures and make one story from your experience in your community with the 4 pictures that you have chosen. "the first picture has to be a cause of the second picture, and the second one is for the third one, and last picture concludes your story. "Please give name to the person and the place where the story is taking a place. "Let's start working together
(3) Let them work together to make up some story by using the pictures for 15-20 minutes	"how are you doing? (5min) "do you all agree? (5-10min) "are you ready?(5min)
(4) Each group presents a story by its representative(s)	"If you are ready, please present your story. You can present by one person or as a group"
(5) Wait until the presentation is over	"Do you have any question? "Do you agree?
(6) Let them discuss about all the stories and find solutions for the hypothesis	"Are these stories actually happening here? "What issues were raised that could be considered it be problems? "How could these problems be resolved? "What other problems does your community face?
(7) Repeat the same activity until topics about water and sanitation arise	"Let's make some more stories! "This time try to chose water related pictures for your story. (go back to (3) through (7))
(8) Review the activities and discuss how it can be improved	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?
1-2 Health Problems in the community	**Instruction**
■ Tool to use: Medical personnel or structures and patients, large paper, or black board at a school	Review the posters and brain storm how they can be used
■ Time to spend: 2-3 hours	What to say
Introduction	"Hello. My name is ( ). I am a Public health officer and a member of water management committee that was chosen by the community, block ( ). "Today I would like to do health awareness exercise with you. Please be comfortable and enjoy this exercise. "Before we start let's introduce to each other"
(1) Make a group of 20	"Let's make a group
(2) Place posters of "Medical personnel or structures and patients"	"Here are 2 sets of pictures "One sets is People "Another set is medical facilities
(3) Name the facility, medical staff,	"Please give names to people and places

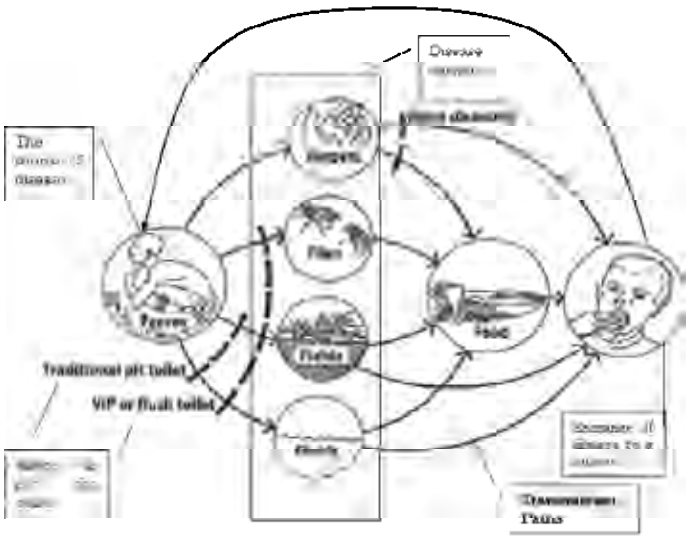
and people in the posters as it wishes	
(4) Place a person in the poster next to the Medical personnel or structure	"These people are coming to visit these facilities. "Please match a person to your choice of medical facility
(5) Imagine and discuss one by one why the person in the poster is visiting the Medical personnel or structure	"Finished? "Ready for presentation? "Please explain why the person is visiting the medical facility of choice? "Please some one write down what is explained on this paper (give a pen and paper to a literate person)
(6) Discuss about the causes brought in (5)	"Is there any other problems than that were told ? "Please some one write down what is added on this paper (give a pen and paper to a literate person)
(7) Discuss, one at the time, how the causes in (6) could be prevented, keep asking the question until finish the list of diseases	"Do you have any idea about why people might have (insert name of illness that was listed) problem? "Please some one write down what is added on this paper (give a pen and paper to a literate person) "What about (insert name of illness that was listed)?
(8) Discuss how (7) can be done by the community's effort and which one of (7) are related to water, hygiene and sanitation Ask a literate person to make a list and categorize it according to what you ask Sort the problems into 2 categories Identify and underline water born disease and hygiene related diseases	"Does anybody have any idea how this problem could be prevented? "Please some one write down what is added on this paper (give a pen and paper to a literate person) "Which one could be prevented by a community's effort? "Please circle these preventable disease on the list "Which one will continue to require treatment at the medical facility? "Please cross these will keep suffering on the list "Which one of preventable disease is related to water, sanitation, and hygiene practice? "Please underline words of these water-related diseases
(9) Review the activities and discuss how it can be improved	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?

2. **Problem analysis**	
■ Tool to use: Community mapping, , Pocket chart and Voting materials, Transmission routes, A large paper , something to be used to locate land marks on the map drawn on the ground such as pebbles, pieces of leaves, caps, cans, scrap paper	Review the posters and brain storm how they can be used
■ Time to spend: 1-3hours	What to say
Introduction	"Hello. My name is ( ). I am a Public health officer and a member of water management committee that was chosen by the community, block ( ). "Today I would like to do health awareness exercise with you. Please be comfortable and enjoy this exercise. "Before we start let's introduce to each other"
2.1 Community Mapping	
(1) Ask the target group to draw a map of the village on the sandy ground, which includes major landmarks such as wells, ponds, a health post, a school, church, butcherly, participants' houses, piles of garbage, farms, major places for defecation. Often rocks, a can of water, braches are used to make landmarks. In this way the map can be corrected and revised as many as the target group wishes. People in the rural	"Make a map of your community on the ground. "Please use rocks, leaves, paper, anything to make it easy for you to locate major landmarks such as □ Roads, paths □ Housings □ Field, bush □ Sanitation facilities including ones located inside of compounds □ wells, tap stands,

area can find their location easily if they can see actual geographical information and village structure within village's environment then transfer the map to a paper afterward. The paper map will be used in other steps to follow.	□ ponds, seasonal rivers □ a health post, □ a school, □ church, cemetery □ butcherly, □ participants' houses, □ piles of garbage, □ farms, □ major places for defecation
Transfer the map on the ground into a paper. Ask a volunteer to do so. Determine icons to represent each land mark. Finish mapping with these icons and colors if necessary	"Are you finished? "does anyone want to add more? "If this is finished, please copy the map on the ground into a paper here "anybody who can draw a map please? (give a pen to the person volunteered) "let's agree for icons to represent each land mark (here you gather suggestions of icons/symbols from your audiences) "Please draw picture of icons in the upper right corner of the paper and use the icons to make the map
(2) Make two groups and simulate a visitor-guide game: One group acts as visitors to the village and another as guides. By doing such role play one group ask would questions about locations of water and sanitation, another would answer by using the map.	"Now, please make 2 groups, "One group is <residents> and another is <visitors> "<Visitors> have never been here before. So <residents> have to show them around everything of this community. The <residents> use the map to take the <visitors> on a guide tour. "Show the visitor as much as possible, including water, sanitation, and hygiene arrangements, and help them understand what like is like here in Munuki.
(3) Help the group in such way that the target group would rediscovers conditions of its living environment through out this process. This simulation helps the target group to think about their community in a different viewpoint, which leads to find problems that have never come to its mind before. List problems associating water and sanitation that they found through the role play.	"Please describe about people and your life "The visitors should ask questions about what you are shown such as latrine, "Make sure that the tour shows all the aspect of life in Munuki, both good and bad "What are the water and sanitation arrangement that <residents> are proud of? "Any common problems or difficulties that they have? "What is the most important problem they have? "Please mark down such problem spot on the map
Ask them to keep the map for future use	"We will use this map in the future exercise "So please keep this with your PHO
(4) Review the activities and discuss how it can be improved	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?
2.2 Good and Bad hygiene behavior	**Instruction**
□ Tool: Three-pile sorting (Good, In-between & Bad), heading cards	**This is NOT to test what they know about hygiene and sanitation, NOT to accuse bad behavior. This activity is to start discovering community's behaviors. Do NOT correct or redirect their answers.**
□ Time: 1-1.5 hrs	**What to say**
Introduction	"Hello. My name is ( ). I am a Public health officer and a member of water management committee that was chosen by the community, block ( ). "Today I would like to do health awareness exercise with you. Please be comfortable and enjoy this exercise. "Before we start let's introduce to each other"
Review	"Let's review what we have done previously "Does anybody remember? "About the community story and problems? "About water borne diseases and their causes?

	"About the map?
(1) Make group of 5-8	"Please make two groups if there are more than 10 people
(2) Let the group work with the Three-pile sorting posters and identify "good", "bad" and "in-between" behaviors. If there are two groups, split the posters in half according to theme and exchange the half when one is done with the other half. Give everyone plenty time to think. (3) Write 3 heading cards in Sticky notes <good>, <bad>, and <in-between> and post them	"here is a pile of pictures that you are familiar with by now "Please discuss among group and make it into 3 piles "One is <good> which you think is showing activities that are good for health "One is <Bad> which you think is showing activities that are bad for health "One is <In-between> which you think is showing activities that are neither good nor bad for health, or which you are not sure about "Is it clear what you do? Please make 3 piles of <goods>,< bads>, and <in-betweens> "Let's start
(4) Give them plenty of time to decide (5) After the decisions are made each group presents its decision.	"how are you doing? (5min) "do you all agree? (5-10min) "are you ready?(5-10min) "If you are ready, please present how you grouped the pictures. You can present by one person or as a group"
(6) Point out each selection and ask why they chose those pictures (7) Compare and discuss the differences in selections made and the reasons for these	"Please tell us why you think that are <good> "Please tell us why you think that are <bad> "Please tell us why you think these are <in-between>
(8) If there is only one group, PHO acts as a questioner	"So, other group do you have any question? "Let's discuss (give them time to discuss)
(9) Ask questions and stimulate a discussion	"What are the same or similar choices between your groups? "What are the different choices between your groups? "Why they are the same? "Why these are different?
(10) Ask the target group to discuss the common behaviors in Munuki and if they are close to the good and bad behaviors that were just discussed. Encourage discussion on solutions to the problematic behaviors. (11) Separate the pictures that are common in Munuki	"What are the common behaviors about water and sanitation in Munuki? "Please use a picture that is similar to people's behavior in Munuki and tell us about it? (give them time to tell) "Do you agree? "Anything else?
(12) Review the activities and discuss how it can be improved, what they have learned	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?
2.3 Investigating community practices	
Tools: Three-pile sorting (Good, In-between & Bad), heading cards, ballot sheet, small buckets	
Time: 1-1.5 hrs	**What to say**
Introduction	"Hello. My name is ( ). I am a Public health officer and a member of water management committee that was chosen by the community, block ( ). "Today I would like to do health awareness exercise with you. Please be comfortable and enjoy this exercise. "Before we start let's introduce to each other"
Review	"Let's review what we have done previously "Does anybody remember? "Tell us "About the community story and problems? "About water borne diseases and their causes? "About the map?

	"About good behaviors and bad behaviors?
(1) Explain about the Pocket chart by showing the small green ballot buckets that you find in our office and the Voting materials, paper slips.	"This exercise is to collect information **confidentially** on what people are actually doing in Munuki "your vote can not be known by anybody so you can tell truth "We use this bucket and voting card
(2) Let the target group select the most interesting topic among the Three-pile sorting posters	"We have chosen different behaviors by 3 pile sort, in the previous activity, "Which of behaviors or practices that you have chosen do you want to know more about? "Please chose and show us or tell us "You can chose more than one "Anything else?
(3) On the ground, place the buckets then the posters of good, in-between and bad behaviors of the topic and pictures of people around the buckets like what showing below: Poster 1 | Poster 2 | Poster 3 Woman Girl Old woman Man  Small green bucket	"Please come and help me in placing pictures around the buckets "First place the pictures of behaviors on top "then put the pictures of people at the left side "put buckets in between these posters "Identify which picture represents yourself and stand next to the picture of person. "If you are a woman, then chose a raw of <woman> "Then see the posters of behaviors above "And decide which one of the behaviors you want to know about "Cast your vote that you have chosen "But not right now! We do confidential voting
(4) If the audiences are only women then just place posters and buckets Poster 1 | Poster 2 | Poster 3 	
(5) Show a ballot card and tell them to cast her vote into a buckets places under what you want about more	"Please go out from this room "Please move some where that you can not see the ballot box
(6) Place the Voting materials anonymously into buckets placed next to the posters of choice	"Use this ballot sheet and cast your choices "Please go and cast the vote one person at a time
(7) Count the vote and discuss meaning of the total; what about other choices?, what if the rest of community vote which one would be the most? How do actual practice compare with what the group identified at the activity 2.2?	"Did you all finish voting? "Can we have a volunteer to count the votes? "Please count ballot sheets in each bucket and write down and post the numbers of ballot sheets "which one was chosen the most and why? "what environmental factors influence people's choice? "what other options do people favor? Read out the ranking of ballot boxes. Why? "How do the choices affect the community's health? "What if all the community members vote? Would it be like our results? "Do people in Munuki practice "bad behaviors? "Which one? "Do people in Munuki practice "good behaviors?

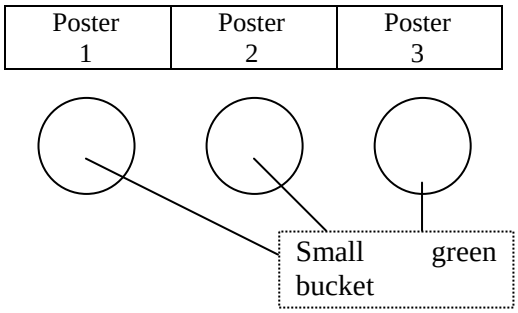
	"Which one?
	"What could be changed? "What changes in behavior would bring benefit and how could it be done?
(8) Review the activities and discuss how it can be improved	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?
2.4 How diseases spread	
□ Tool: Transmission ladder, the community map created in the section 2.1	**Select picture of:** **mouth, feces, hand, food, flies, water, ground/village**
Introduction	"Hello. My name is ( ). I am a Public health officer and a member of water management committee that was chosen by the community, block ( ). "Today I would like to do health awareness exercise with you. Please be comfortable and enjoy this exercise. "Before we start let's introduce to each other"
Review	"Let's review what we have done previously "Does anybody remember? "Tell us "About the community story and problems? "About water borne diseases and their causes? "About the map? "About good behaviors and bad behaviors?
(1) Make a group of 10 (2 groups)	"Let's form a group
(2) Use posters of Transmission Route and show posters of open defecation and of mouth	"Here are a set of pictures that you have already seen before.
(3) Show a picture of faeces and a mouth. Place the faeces in your left and the mouth in your right. (4) Hand the selected pictures to the audience. (5) Ask how the fecal matter in "open defecation" poster could reach to "mouth". Ask it to use the rest of posters to connect the fecal matter and mouth. You can expect something like the F-diagram would be constructed. ■ If they can not believe faeces can enter in a mouth, discuss with the group why, then ■ alter the approach and try it again	"Use this set of pictures, please show us how the fecal matter can enter to your mouth. "Place the pictures in an orderly and progressive way to show a traveling path of fecal matter to the mouth. "Work logically, step by step, think how one event can link to another event "Use this paper to draw arrow to show the direction of transmission 
(6) Each group comes up with different diagram and discuss similarities and differences	"Are you finished? "Do you all agree to the decision? "Please present your result "You can present by a selected person or group

	"Please tell us
(7) Discuss where the transmission routes can be seen in Munuki	"Thank you for your presentation "Does anyone have a question? "Is this transmission path common in Munuki? "Is anyone can write? Please write down our discussion
(8) Use the map created in the section 2.1 and identify the problem places	"Let's open the map you have created some time ago. Do you remember? "Where on this map do you usually see such transmission route?
(9) Referring the posters used in the section 2.2 and discuss about the risky behaviors	"What kind of behaviors will pass the faeces on?
(10) Review the activities and discuss how it can be improved	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?

3 Planning for solutions	
■ Tool to use:	Transmission ladder(same as you used in 2.4), Blocking the routes(Pictures of washing hands, covering food, cleaning a compound, closing latrine, composting latrine, covering water, and others), barriers chart (A-0 paper), People: Unserialized posters
■ Time to spend: 0.5-1 hours	
3.1 Blocking the spread of disease	
Tools: Transmission ladder	**Chose pictures that was used in 2.4**
Introduction	"Hello. My name is ( ). I am a Public health officer and a member of water management committee that was chosen by the community, block ( ). "Today I would like to do health awareness exercise with you. Please be comfortable and enjoy this exercise. "Before we start let's introduce to each other"
Review	"Let's review what we have done previously "Does anybody remember? "Tell us "About the community story and problems? "About water borne diseases and their causes? "About the map? "About good behaviors and bad behaviors? "About how disease passes?
(1) Keep the same groups in activity 2.4	"Please form a group like we did last time
(2) Give them a set of pictures to construct F-diagram (3) Ask the groups to examine the diagram created in activity 2.4 and think how the paths can be blocked with the posters from "Blocking the routes" (4) Give them a set of pictures to block the route (5) If necessary Modi will draw some picture	"Here are the pictures that you used last time "Please used these pictures and construct a route how a fecal matter can enter to a mouth, again. "If you are ready we do next exercise "Now that we know the ways in which faeces can spread. We have to think how we can stop this from happening. "Please place these pictures in where you think such action should be taken to stop the transmission "Tell me if you need some more picture to complete your work
(6) Discuss on the new diagrams and exchange opinions (7) Keep these pictures in your record to use at next exercise	(30min passed) "Are you done? Do all of you agree? "Ready to present? (After presentation) "Any question?
(8) Review the activities and discuss how it	"What did you learn from today's activity?

<table>
<tr><td>can be improved</td><td>“What of activity did you like?
“Or you did not like?</td></tr>
<tr><td></td><td></td></tr>
<tr><td>3.2 Selecting the barriers</td><td></td></tr>
<tr><td>Tool: these picture that were used to stop transmission in 3.1</td><td></td></tr>
<tr><td>Introduction</td><td>“Hello. My name is ( ). I am a Public health officer and a member of water management committee that was chosen by the community, block ( ).
“Today I would like to do health awareness exercise with you. Please be comfortable and enjoy this exercise.
“Before we start let’s introduce to each other”</td></tr>
<tr><td>Review</td><td>“Let’s review what we have done previously
“Does anybody remember?
“Tell us
“About the community story and problems?
“About water borne diseases and their causes?
“About the map?
“About good behaviors and bad behaviors?
“About how disease route?
“About blocking the disease route?
“How did you block the transmission of fecal matter?</td></tr>
<tr><td>(1) Keep the same groups in activity 3.1</td><td>“Please form a group like we did last time</td></tr>
<tr><td>(2) Ask the group to take the posters from” Blocking the routes” that they chose at the activity 3.1</td><td>“Here are the pictures that you used last time
“Take look at them for a while…</td></tr>
<tr><td>(3) Place the Barriers chart with a matrix of 4 x 4 grid on the floor or table. The first raw is written “easy to do”, “in-between” and “hard to do” from left to right. The first column is written “very effective”, “in-between” and “not very effective” from top to bottom.
<table>
<tr><td></td><td>Easy to do</td><td>In betwe en</td><td>Hard to do</td></tr>
<tr><td>Very effecti ve</td><td>1</td><td>3</td><td>2</td></tr>
<tr><td>In betwe en</td><td>7</td><td>9</td><td>8</td></tr>
<tr><td>Not very effecti ve</td><td>4</td><td>6</td><td>5</td></tr>
</table></td><td>1.“Which one is easy to do and very effective?
2.“Which one is hard to do but very effective?
3.“Which one is very effective but not sure whether it is easy or not?
4.“Which one is easy to do and not very effective?
5.“Which one is hard to do and not very effective?
6.“Which one is not effective but not sure whether it is easy or not?
7. “Which one is easy to do and not sure whether it is very effective or not?
8.“Which one is hard to do and not sure whether it is very effective or not?
9. “Which one is not sure if it is easy to do or not and not sure whether it is very effective or not?</td></tr>
<tr><td>(4) Discuss of each pile and which barriers the group would like to use in the village</td><td>“Which barriers would you like to use regardless of your current capacity?
“Which barriers do you think you can possibly do realistically?</td></tr>
<tr><td>(5) Review the activities and discuss what was learned, how it can be improved</td><td>“What did you learn from today’s activity?
“What of activity did you like?
“Or you did not like?</td></tr>
<tr><td>3.3 Tasks of men and women in Munuki</td><td>Skip this for now</td></tr>
<tr><td>(1) Posters of people (Unserialized posters) and some posters showing daily activities are given to the target group</td><td></td></tr>
<tr><td>(2) Let the target group identify who dose what</td><td></td></tr>
<tr><td>(3) Write down on a large paper</td><td></td></tr>
<tr><td>(4) Discuss the findings, how differences in workloads might affect task allocation for</td><td></td></tr>
</table>

overcoming diarrhoeal disease, advantages and disadvantages of changing men's work and women's work, the potential for changing the tasks done by men or women	
(5) Review the activities and discuss what was learned, how it can be improved	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?
4 Selecting options	
□ Tool to use: Blocking the routes, Three-pile sorting, small buckets	Pictures of different places for defecation, means to block transmission of faeces,
■ Time to spend: 1-2 hours	
4.1 Choosing water and sanitation improvement	
Introduction	"Hello. My name is ( ). I am a Public health officer and a member of water management committee that was chosen by the community, block ( ). "Today I would like to do health awareness exercise with you. Please be comfortable and enjoy this exercise. "Before we start let's introduce to each other"
Review	"Let's review what we have done previously "Does anybody remember? "Tell us "About the community story and problems? "About water borne diseases and their causes? "About the map? "About good behaviors and bad behaviors? "About how disease route? "About blocking the disease route? "How did you block the transmission of fecal matter? "What was your choice of barriers? "What option did you chose in previous exercise?
(1) Select posters expressing water and sanitation from the Tool and blank A4 paper and a pen	"Here are pictures of various places where you can defecate.
(2) Ask the group to make a sanitation "ladder", starting one it considers worst at the bottom and ending with the one it consider best at the top.	"Please take look at these picture carefully "Put the one you think it is worst "Put the one you think it is the best above the worst "Put the one you think it is better than the worst right above the worst "Put the one you think it is a bit bad than the best but bit better than the worst in a right place
(3) Place each poster according to the level of ladder in front of the group so that everyone can see. Keep the ladder created here because it will be used in activity 5.1.	"Please come and present your pictures
(4) Ask the group which one is the present condition in Munuki and which one could be its future	"Please tell me which latrine is yours today in these pictures? "In one year from today, which latrine do you think the community has?
(5) Discuss the advantages of each option, the difficulties or obstacles that would make moving up the ladder difficult, how these decisions are reached	"What are good things about having the latrine you have chosen the best? "What are the difficulties to have your choices of latrine? "What do you have to know other than just seeing the drawings so that you can chose the best latrine option more easily? Please list things that you want to know to make the best decision to select your dream latrine?
(6) Further discussion if there are more than 1 group	"Please compare the two ladders "What is the same and what is the difference in their choices of latrines? "What is the future of group A and what is the future of group B? Why they are different/same?
(7) Review the activities and discuss what was	"What did you learn from today's activity?

learned, how it can be improved	"What of activity did you like? "Or you did not like?
4.2 Choosing improved hygiene behaviours	
□ Tools: Pictures used for 3 piles sorting, buckets, ballot sheet	
Review	"Let's review what we have done previously "Does anybody remember? "Tell us "About the community story and problems? "About water borne diseases and their causes? "About the map? "About good behaviors and bad behaviors? "About how disease route? "About blocking the disease route? "About barriers? "What option did you chose in previous exercise? "Which latrine is your future latrine?
(1) Ask the group to work on Three-pile sorting posters to find the best and the worst hygiene behaviours	"Here are the pictures that you have worked with some time ago, do you remember? "Please select pictures that you think are **healthy** hygiene behaviors and recommend other people to do "Please select pictures that you think are **unhealthy** hygiene behaviors and not recommend other people to do
(2) Use the buckets and ballot sheets (3) Set a chart like you did at "selection of barriers" section, See below for an example. 	"Here are the ballot boxes again "Do you remember how a voting process goes? "Please come to place the pictures that you have chosen above the buckets "Do you remember what you did when you chose <barriers> to stop spreading fecal matter from getting into your mouth? "We do the same thing here "Go out the place that we can not see the boxes "Let's vote the best and worst that you think "Write O on the ballot sheet for the beat and cast your vote "Write X on the ballot sheet for the worst and cast your vote
(4) Count the votes and discuss to reach an agreement about which good and bad behaviours are the most important to work on, how to influence the community to use good practices all the time, accept new behaviours and stop bad practices. (5) Ask a literate person or Modi to take note	"Please have some volunteers to count the votes "Write down the numbers of votes above the pictures "Which one got the most of votes for <the best>? "Which one got the most votes for <the worst>? "Please discuss among all of you why this is chosen <the best> and recommended? "Please discuss among all of you why this is chosen <the worst> and not be recommended? "Do you all agree? "Now how can you convince other people in Munuki to do what you would think of the best? "How would you do to make sure to people to wash hands with soap always? "How would you do to make people to accept new practice? "What can prevent people to keep bad practices?
(6) Review the activities and discuss what was learned, how it can be improved	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?

5 Planning for new facilities and behavior change	
□ Tool to use: Planning activities (A-0 paper)	
■ Time to spend: 5 hours	
5.1 Planning for Change	
Introduction	"Hello. My name is ( ). I am a Public health officer and a member of water management committee that was chosen by the community, block ( ). "Today I would like to do health awareness exercise with you. Please be comfortable and enjoy this exercise. "Before we start let's introduce to each other"
Review	"Let's review what we have done previously "Does anybody remember? "Tell us "About the community story and problems? "About water borne diseases and their causes? "About the map? "About good behaviors and bad behaviors? "About how disease route? "About blocking the disease route? "About barriers? "What option did you chose in previous exercise? "Which latrine is your future latrine? "Which behavior did you chose to be < best> and <worst>?
(1) Use 2 "sanitation ladder" that was developed in activities 4.1. One is "a place for defecation today" and another is "what you would like to have for defecation in the future". (2) Draw a new picture in blank A4 paper to fill in gaps if necessary (3) Place "present condition" in your left and "future condition" in your right with some distance between these two pictures.	"Do you remember which picture that you have chosen to represent your latrine of present time? Pick the picture. "Now, do you remember which one was that for your future latrine? Please pick one. "Do all agree? (show the 2 pictures) "Now we have to figure out what we have to do to get your <future latrine>. What do we need to do? "Let's make a list of actions that we have to take in order to get our dream latrine. "Tell me what you have to do? "Modi will write down your idea to fill the gap. "This is a process making a plan. (30-60 min to come up with ideas)
(4) Discuss how they can achieve from "Now" to "Future", fill the gap between "Now" and "Future"	"How are you doing? "Are you ready? "Please present your plan.
(5) Further discussion and record it	"Dose any one have questions? "Can you tell me what difficulty you might face when you try to follow the plan that you just made? "What resources do you think you need to implement your plan? "How long time do you need to collect the resources and over come difficulties and achieve the goal?
(6) Review the activities and discuss what was learned, how it can be improved	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?
5.2 Planning who does what (Creating a plan of action)	**Use the list and plan just made at the previous section**
Introduction	"Hello. My name is ( ). I am a Public health officer and a member of water management committee that was chosen by the community, block ( ). "Today I would like to do health awareness exercise with you. Please be comfortable and enjoy this exercise. "Before we start let's introduce to each other"

Review	"Let's review what we have done previously "Does anybody remember? "Tell us "About the community story and problems? "About water borne diseases and their causes? "About the map? "About good behaviors and bad behaviors? "About how disease route? "About blocking the disease route? "About barriers? "What option did you chose in previous exercise? "Which latrine is your future latrine? "Which behavior did you chose to be < best> and <worst>? "What is your plan to get your <future> latrine?
(1) Use the drawing from 5.1-(4)	
(2) Refer what the target group did in activity 3.3 (roles of male and female)	"Please tell me someone, what plan did you make in previous exercise? "Do you remember what you suppose to do? "What you need? "How long it takes?
(3) Assign tasks to male or female keeping in mind which one has a impact to what	"Now you need to find out who implement the plan "Let's discuss "First you have to assign responsible person for each step
(4) Assign specific person to each tasks identified in (3). If necessary carry out the anonymous vote by using the Pocket chart.	"You have to assign a specific name to each responsibility "and ask Modi to write down the names
(5) Allocate time to each task. Facilitate discussion on the importance of seeing that things are being done on time, how the group can check that people are doing what they are responsible for, and what the group can do if the tasks are not carried out.	"Now think and discuss how much time is required to finish each step "Ask Modi to write down days and durations that are required for each task
(6) Write them down on (1)	
(7) Review the activities and discuss what was learned, how it can be improved	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?
5.3 Identify what might go wrong	
(1) Discuss and think what obstacles could arise	
(2) Discuss how the obstacles can be removed	
Review the activities and discuss what was learned, how it can be improved	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?

6 Planning for monitoring and evaluation	
□ Tool to use: Monitoring chart (A-0 paper)	
□ Time to spend: 5 hours	
6.1 Preparing to check the progress	
(1) Place Monitoring chart (A-0 paper) with topics written in a raw, from right to left, "Goal", "amount/number", "How to measure", "How often to measure", "by whom (who monitor the activity, not who carry out)".	
(2) Place the chart made in activity 5.2	

(3) Place a poster of a task specifically assigned to a specific person to "Goal". The responsible person leads filling the rest of blanks for his/her task.	
(4) Decide the date when to evaluate the progress of each task ("project"). The chart (3) is completed here. This chart is now called "monitoring chart" and will be used for evaluation (step 7).	
Review the activities and discuss what was learned, how it can be improved	"What did you learn from today's activity? "What of activity did you like? "Or you did not like?
7. **Participatory evaluation**	
□ Tool to use: various tools that have been used	
■ Time to spend: 5 hours	
This activity would be done by the community 6 to 12 months after the community starts implementing the plan of action. The PHAST trainer, however, is hired for a intensive training and can not wait for 6 months to do this activity. During the training session evaluation step would be simulated for future practice.	
In this activity, progress and problems are checked and identified.	
(1) Have any group chosen by the community for monitoring check the monitoring chart made in activity 6.1 (5).	
(2) Check the community map made at step 2.1 and compare with current situation if anything improved.	
(3) Take a walk through the community and check and write down behaviors and facilities.	