JICAカントリーレポート統計

統計年度		2019	2018	2016	2016	2018	2016	2016	2019	2018	2017	2017	2016	2019	2018	2016	2016	2017
国名		ERITREA	ERITREA	ETHIOPIA	ETHIOPIA	MALAWI	MALAWI	MALAWI	RWANDA	RWANDA	RWANDA	ZAMBIA	ZAMBIA	EGYPT	MOROCCO	SUDAN	GUINEA	PERU
国連地域名		Eastern Africa	Eastern Africa	Eastern Africa	Eastern Africa	Eastern Africa	Eastern Africa	Eastern Africa	Eastern Africa	Eastern Africa	Eastern Africa	Eastern Africa	Eastern Africa	Northern Africa	Northern Africa	Northern Africa	Western Africa	South America
都市名		Asmara	Asmara	Addis Ababa	Addis Ababa	–	–	–	–	–	–	Mulonga	Lusaka	–	–	–	Conakry	Lima
首都		X	X	X	X								X				X	X
3レター		ERI	ERI	ETH	ETH	MWI	MWI	MWI	RWA	RWA	RWA	ZMB	ZMB	EGY	MAR	SDN□	GIN	PER
2レター		ER	ER	ET	ET	MW	MW	MW	RW	RW	RW	ZM	ZM	EG	MA	SD	GN	PE
国内3大水道事業体	① 都市名				Addis Ababa	Blantyre	Blantyre	Blantyre	Mutura-Mizingo					Dar El Salam	Rabat and Casablanca Region	Khartoum Bahri		LIMA
	① 組織名				Addis Ababa Water and Sewerage Authority	Blantyre Water Board	Blantyre Water Board	Blantyre Water Board	AQUAVIRUNGA					Cairo	ONEE	Khartoum State Water Corporation		SEDAPAL
	① 資本				Government & Partnership				Public-Private-Partnership					Public (El- Fostat)		Public		Public
	① 総人口				3,384,569	1,400,000	1,400,000	1,400,000	260,000					2,750,000	8,000,000	935,000		10,000,000
	① 給水人口				3,384,569	750,000	750,000	750,000	50,000					2,750,000	8,000,000	850,000		8,500,000
	② 都市名				Gonder	Lilongwe	Lilongwe	Lilongwe	Shyogwe-Mayaga					El- Obour	Agadir	Omdurman, Almanara		AREQUIPA
	② 組織名				Gonder Water and Sewerage Service	Lilongwe Water Board	Lilongwe Water Board	Lilongwe Water Board	WASAC Ltd					Cairo	ONEE	Khartoum State Water Corporation		SEDAPAR
	② 資本				Government & Partnership				Public					Public (El- Obour)		Public		Municipal
	② 総人口				254,450	1,077,116	1,077,116	1,077,116	900,000					3,000,000	1,600,000	960,000		1,000,000
	② 給水人口				254,450	532,584	532,584	532,584	160,000					3,000,000	1,600,000	800,000		700,000
	③ 都市名				Mek'ele	Mzuzu	Mzuzu	Mzuzu	Mata-Nyabimata					Mostrod	Fez & Meknes	Khartoum, Soba		TRUJILLO
	③ 組織名				Mek'ele Water and Sewerage Service	Northen Region Water Board	Northern Region Water Board	Northern Region Water Board	AYATEKE					Cairo	ONEE	Khartoum State Water Corporation		SEDALIB
	③ 資本				Government & Partnership				Public-Private-Partnership					Public (Mostrod)		Public		Municipal
	③ 総人口				271,562	512,076	512,076	512,076	800,000					2,375,000	1,112,000	490,000		800,000
	③ 給水人口				271,562	271,046	271,046	271,046	120,000					2,375,000	1,112,000	430,000		600,000
組織構成及び業務概要	事業体名	Water Supplyand Sewer Department, Administration of ZobaMaekel	Water Supplyand Sewer Department, Administration of ZobaMaekel	Addis Ababa water and sewerage Authority	Addis Ababa water and sewerage Authority	Central Region Water Board	CENTRAL REGION WATER BOARD	CENTRAL REGION WATER BOARD	Water and Sanitation Corporation (WASAC Ltd)	Water and Sanitation Corporation	Water and Sanitation Corporation	Divisional Manager, Technical, Mulonga Waterand Sewerage Co	Lusaka Water and Sewerage Company	Holding Company for Water and Waste Water	National Office of Electricity and Drinking Water - Water Branch	Drinking Water & Sanitation Unit, Ministry of Water Resources, Irrigation & Electricity		SEDAPAL
	設立年			1900	1900	1996	1996	1996					1988	2004	1972	1923		1981
	事業体種別			Government Corporation	Independent Authority	Government corporations	Government corporations	Government corporations	Government corporations					Government corporations	Government corporations	Government corporations	Part of government	Government corporations
	資本構成			Local Governments 65% Others Loan 25% Grant 10%	Local Governments 65% Others Loan 25% Grant 10%	National governmen 100%	National government 100%	National government 100%	National government Investor (Private)					National Government 100%	National government 100%	National Government 100%		National government 100%
	政府による規制 職員数				✓	✓	✓	✓	✓					✓		✓		
	政府による規制 職員給与				✓	✓	✓	✓	✓					✓		✓		
	政府による規制 水道料金				✓	✓	✓	✓	✓					✓	✓	✓		
	政府による規制 管理者の任命権				✓	✓	✓	✓	✓					✓	✓	✓		
	政府による規制 運転管理予算				✓	✓	✓	✓						✓		✓		
	政府による規制 開発予算				✓	✓	✓	✓	✓					✓	✓	✓		
	政府による規制 未払者の給水停止				✓									✓		✓		
	運転管理費（USD） 人件費			5,741,061.04	4,541,031.09	942,436	942,436	942,436	586,415						8,000,000	23,660		100,000,000
	運転管理費（USD） 電力／燃料			2,954,305	3,074,105	286,131	286,131	286,131	7,345,843						17,000,000	57,000		15,000,000
	運転管理費（USD） 薬品			2,750,098.89	3,014,078.78	61,174	61,174	61,174	2,185,332						4,000,000			5,000,000
	運転管理費（USD） その他資材			1,254,698.28	1,254,698.28	101,111	101,111	101,111	2,732,048						28,000,000	97,000		2,000,000
	運転管理費（USD） 輸送費			0	0	163,683	163,683	163,683	474,034									5,000,000
	運転管理費（USD） その他			1,102,153.07	1,404,058.14													
	運転管理費（USD） その他の詳細			miscellaneous cost	miscellaneous cost													
	運転管理費（USD） O&M合計			1,356,491.49	1,478,258.48	726,948	726,948	726,948	81,660						175,000,000	12,650		127,000,000
	給水市町村数			1	1	28	22	22	All urban areas					229	264 cites 420 towns			2
	給水区域			540	540	2,500	2,500	2,500						78,990	700,000	600,000		22
	市域内人口	500,000	500,000	4,000,000	3,384,569	261,876	261,876	261,876	2,120,000	2,000,000	2,000,000		2,000,000	9,540,000	8,000,000	5,274,321	3,000,000	10,000,000
	給水区域内人口						261,876	261,876					2,000,000			5,274,321		
	給水人口	350,000	350,000	4,000,000	3,384,569	181,524	181,524	181,524	1,500,000	1,696,000	1,696,000		800,000	92,200,000	14,800,000	960,000	2,100,000	8,500,000
	普及率（市域内人口（給水人口）／給水区域内人口）	70%	70%	100%	100%	69%	69%	69%	71%	85%	84.8%	74%	40%	966%	185%	18%	70%	85%
	職員数 事務職			80	58	121	121	121	35							32		80
	職員数 技術職			48	74	10	10	10	35							32		250
	職員数 専門職			640	875	201	201	201	425							15		1,000
	職員数 作業員			480	795	18	18	18	500							58		1,170
	職員数 計			1,248	1,802	350	350	350	995					129,485	7,500	123	813	2,500
	年間総取水量								50,532,424					10,064,000,000	137,609,900			800,000,000
	内水訳源 表流水（%）				55		100	100	90				43	85.9	100	40	80	85
	内水訳源 地下水（%）				45	100			10				57	13.7		60	20	15
	内水訳源 その他（%）								0					0.4				
	年間給水量			160,325,885	136,500,000	75,256	4,156,620	1,500,000	48,079,315	49,941,490	25,114,920		81,662,180	9,125,000,000	135,239,233	402,000,000	52,560,000	760,000,000
	年間消費量	9,198,000	9,198,000						32,612,980	24,216,250				10,336,000,000	135,239,233			760,000,000
	一日最大水需要			527,000	460,000	206	10,846	9,264	396,000					34,071,233	389,000	1,600,000		2,000,000
	一日平均水需要	36,000	36,000	440,000	322,000	250	7,231	5,558	330,000				488,433	25,000,000	371,520	1,350,000	300,000	860,000,000
	浄水場数			2	3	1	5	5	18	16	16		4	2,735	1	10		3
	浄水場総施設能力			225,000	195,000	200	15,600	15,600	227,760	81,346	81,346			28,900,000	492,480	1,850,000		2,000,000
水質	濁度 原水（平均）			300-1600	300-1600	0.5	1.4	Slightly turbid	800					< 50	5.08	21000		100
	濁度 浄水			<1	<1	Clear	1.0	Very clean	5max					1	0.2	20		1
	色度 原水（平均）			1500-4000	1500-4000	Clear	Clear	Clear	200						7	no color		
	色度 浄水			<5	<5	Clear	Clear	Clear	15max					Colorless				1
	pH 原水（平均）			7.2-7.8	7.4-7.8	8.1	8.1	5	7					7-8.5	8.1	8.1		7
	pH 浄水			7.4-7.8	7.4-7.8		7.4	8	6.5-8.5					6.5-8.5	7.5	7.9		7
	硬度（ppm） 原水（平均）			34	34	105	105	0.01 or less	40						3.08	90-140		200
	硬度（ppm） 浄水			16.8	34		0.70	less than 0.001	300max					1,000 (TDS)	2.92	90-130		150
	鉄（ppm） 原水（平均）			2.54-3	02-0.4	0.1	0.1	0.01 or less	1.5					< 1	0	0.1		0.05
	鉄（ppm） 浄水			<0.0163	<0.01		0.25	0.001	0.3max					0.3	0	0.08		0.05
	マンガン（ppm） 原水（平均）			0.01	0.033	less than 0.001	Less than 0.001	0.01	0.2					< 1.5	0.01	0.029		0.20
	マンガン（ppm） 浄水			0.066	0.008		Less than 0.001	0.005	0.1max					0.4	0	0.021		0.20
	亜硝酸態窒素（ppm） 原水（平均）			0.02	0.004	less than 0.001	Less than 0.001	10 or less	0.05						2.37	8		0.05
	亜硝酸態窒素（ppm） 浄水			0.5	0.004		Less than 0.001	0.47	0.5max					0.2	2.54	7.5		0.05
	その他項目 項目名			Fl CL	Phosphate (ppm) Sulfate (ppm)	Conductivity (μs/cm at 25℃) Total dissolved solids (mg/l) Carbonate (as CO_3^{2-}) (mg/l) Bicarbonate (as HCO_3^{-}) (mg/l) Chloride (as Cl⁻) (mg/l) Sulphate (as SO_4^{2-}) (mg/l) Fluoride (as F⁻) (mg/l) Sodium (as Na⁺) (mg/l) Pottassium (as K⁺) (mg/l) Calcium (as Ca^{++}) (mg/l) Total alkalinity (as $CaCO_3$) (mg/l) Silica (as SiO_2) (mg/l) Suspended Solids (mg/l) Phosphate (mg/l)	Fluoride, mg/l Sodium, mg/l Calcium, mg/l	Cyanide ion and cyanogens chloride Dichloromethane 1.4-Dioxane Chloric acid Benzene	copper total coliforms E.coli									
	その他項目 原水（平均）			ND 3	0.15 0.2	245 135 10 102 9.5 2.1 0.6 7.3 1.3 32 100 3.8 <0.10 0.23	0.6 7.3 32	0.01 mg/l or less 0.02 mg/l or less 0.05 mg/l or less 0.6 mg/l or less 0.01 mg/l or less	0.9 >100 >100							0.4		
	その他項目 浄水			ND 4.5	0.15 0.2		0.53 6.5 30	0.001 mg/l or less 0.001 mg/l or less 0.005 mg/l or less 0.06 mg/l less 0.001 mg/l less	1 Absent Absent							0.2		
	水質基準									The international, National and East Africa Community standards	the international, National and East Africa Community standards							
	主要浄水処理法			Conventional	Conventional	Dosing/chlorination	Rapid Pressure Filters	Rapid Pressure Filters	Conventional Rapid sand filter					Conventional	Conventional	Conventional		Conventional
	塩素処理法			Gas injection	Gas injection	HTH Solution Injection	HTH Solution Injection	HTH Solution Injection	Powder injection					Gas injection	Gas injection	Gas injection		Gas injection
	微生物検査の頻度（回） 日			1	1				✓					1-3	2	1		3
	微生物検査の頻度（回） 週													7-21	14			
	微生物検査の頻度（回） 月													28-84	60			
	微生物検査の頻度（回） 年					4	4	4						112-336	700			
	延長（km）			3,632	2,837	10	50	50	6,111,029	4,648	4,648			166,000	160			7,000
	口径（mm）			50-400	50-400	63-200	63-400	63-400	25-600					100-2600	800, 1200, 1400, 1600	50-812 (2"-32")		1,800

JICAカントリーレポート統計

		統計年度	2019	2018	2016	2016	2018	2016	2016	2019	2018	2017	2017	2016	2019	2018	2016	2016	2017
		国名	ERITREA	ERITREA	ETHIOPIA	ETHIOPIA	MALAWI	MALAWI	MALAWI	RWANDA	RWANDA	RWANDA	ZAMBIA	ZAMBIA	EGYPT	MOROCCO	SUDAN	GUINEA	PERU
給水	配水管路	材質			DIP,CIP,SP,PVC,HDPE	UPVC, Steel, DIP, CIP, Galvanized sttel, UPVC, ISOPVC, JISP, HDPE	uPVC	uPVC, Ductile Iron	uPVC and Ductile Iron	HDPE, PVC, DI, GS				Asbestos Cement, Galvanised Iron, Unplasticised Polyvinyl Chloride, Steel	UPVC, Ductile, Iron, GRP, Steel, Concrete	Prestressed concrete	HDPE, Ductile Iron, UPVC, Fiber glass		Cast Iron, Ductile Iron, HDPE, PVC, Concrete
		貯水能力				147,230	100	4,000	4,000	5 to 10,000					4,710,196	22,000	143,000		2,500,000
	配水量（m³）分析 有収水量	料金水量				67,332,601 (60.15%)				27,968,035 (60.29%)					15.939.000 (63.25%)				
	無収水量	非料金水量（消防等）				136,588 (0.12%)				135,987 (0.29%)					1.771.000 (7.03%)				
		見かけロス（盗水、メーター不感）				10,768,847 (39.85%)				3,848,345 (8.3%)					2,277,000 (9.03%)			22,600,800	
		実際ロス（漏水）	25%	25%		33,936,715 (30.25%)				14,432,794 (31.12%)					5,213,000 (20.69%)	4.5%			25%
		漏水対策	Replacement of old and corroded GI pipe lines by PVC. Due to lack financial resources, the process of replacement is too slow.	Replacement of old and corroded GI pipe lines by PVC. Due to lack financial resources, the process of replacement is too slow.	By Water loss inspection and	・by performing sonic leak detection surveys and continuous monitoring of flows and pressures in District Metered Areas (DMAs) ・Improving the speed and quality of repairs should aim to ensure timely and lasting repairs and should be regarded as critical to the success of the overall Real Loss control program. ・Pressure management should aim at minimizing excess (unnecessary) pressures in the water distribution system. It can be implemented through suitable pressure zoning and DMA It should be borne in mind that simple and inexpensive pressure management activities can often lead to considerable reductions in Real Losses. ・Pipeline and Asset Management should aim that all network assets are maintained so that they can continue to provide services and are replaced by the end of their useful life. ・All aspects of apparent losses, including unauthorized	door to door check, accelerat	Door to door check, accelera	Physical check of leakages through patrolling the distributions and supply mains , quickly attendance to pipe bursts once they occur, pressure control in the distribution lines and zoning of the supply areas	・Installation of pressure control equipment ・Using standard materials(pipes and fittings) during project implementation ・Rehabilitation of old water supply systems ・Using appropriate leakage detection equipment				・Establishment of Loss Departments in all ACs ・Support all ACs with The Main Instrumentations ・Activate Routine Scanning Plans of Water Networks ・International Funds for Applying Leak Detection Methodology ・Dividing all water networks into District Metered Areas (DMA) ・Studding Loss Reduction in Each DMA ・Pressure Management ・Monitoring	Specific contracts are established at the level of each region which ensures the intervention of a specialized company for the repair once leakage water has been detected.	no control system	Big campaigns of leakages reparation have been organized with the mobilization of all settings and technicians and so 2 067 leakages have been corrected.	
		年間漏水修繕件数			8,000	15,000	133	133	192	2,100	2,555	2,555			30%		1,800		2,000
不明水量の状態及びその対策	大／深刻	都市名			Addis Ababa	Addis Ababa	Kasungu	Kasungu		Kigali city					Naga Abo Shagara-1	Fez/Meknes Tetouan	Khartoum		LIMA
		状態			40%	39%	Stuck Meter Pipe Breakdowns	Stuck Meter Pipe Breakdowns		Water leakage due to old water infrastructures						Topgraphic and geotechnical conditions of the ground causing repetitive leaks on the pipelines.	Low capacity & Weakness of the existing network		25%
		対策			・Identifying distribution system ・Avoiding visible water loss ・Reduction of invisible water loss ・Organizing structure of NRW team	・Prepare strategic plan with international Consultancy Service ・Reorganize the structure of NRW Team ・Replacement of aged pipe ・Replacement of water meter ・Active response for maintenance of pipe ・Implementation of District Metered area	Replacement of all stuck met	Replacement of all stuck meter		Rehabilitation and up grading of water infrastructures					DMA Total number of meters: 693 Recovered Commercial loss m^3/Year: 18,778 Recovered Commercial loss LE*/Year: 35,584 *Egyptian pound	This aspect is more developed in the engineerring of recent projects, in order to ensure the longevity of utilities and to prevent any future problem.	Rehabilitation of the existing and extension to accommodate the remaining areas.		Rehabilitation of networks□
	中	都市名			Addis Ababa		Salima	Salima		Kigali city					Rawafee El Quser	Khouribga, Rabat, Casablanca, Tetouan	Khartoum		LIMA
		状態			Unaccounted for water conditions is not properly organized and reported to Central office.		Pipe Breakdowns and Leakages	Pipe Breakdowns and Leakages □		Use of substandard materials during water supply project implementation						Accidental leakage	None revenue water problem		Low coverage
		対策					Acceleration of replacement and distribution pipelines inspection.	Acceleration of replacement and distribution pipeline inspection		Quality control of works and materials					DMA Total number of meters: 719 Recovered Commercial loss m^3/Year: 26,669 Recovered Commercial loss LE*/Year: 31,753 *Egyptian pound	In order to repair as soon as possible the leaking pipes, specific contracts are established at the level of each region which ensures the intervention of a specialized of water has been detected	To upgrade the monitoring system of the SWC to put leakage detection equipments, and mobilize the communities to economize the consumption.		Network pressures reduction
	小／それほど深刻でない	都市名					Mitundu	Mitundu		Kigali city					El Shewash		Khartoum		LIMA
		状態					Poor caluculation of unaccounted for water	Poor calculation of un accounted for water		Illegal connections						Illegal use of water	Un stability of the electrical power		Sinking of pavement
		対策					Conduct training on un-accounted for water calculations	Conduct training on un-accounted for water calculations		Regular inspection and law enforcement against illegal connections					DMA Total number of meters: 427 Recovered Commercial loss m^3/Year: 23,389 Recovered Commercial loss LE*/Year: 30,723 *Egyptian pound	Legal proceedings are systematically instituted for cases of illegal use of water. The local authorities, who are omnipresent in every are of the kingdom, give its support the ONEE-WB in preventing these illicit uses	The SWC have to own standby power generating units		Repair
カスタマーサービス		接続戸数			413,800	320,835	3,360	3,360	3,360	213,900	157,320	95,422		94,891	15,100,000	2,000,000	584,000	137,555	170,000
		公共水栓(PT)/給水塔(SP)数			1,620	1,710	79	79	79	7,200 (SP)					0	9,110			200
		公共水栓/給水塔 一つ当たり人数			25	128	200	200	200	250 (SP)					0	7,700,000			
		水道水飲用時の習慣			Directly from tap	Directly from tap	Directly from tap	Directly from tap	Directly from tap	After boiling					Directly from tap	Directly from tap	Directly from tap		After boiling
		24時間給水カバー率（%）			70	51	90	90	90	40					96	100	75		85
		平均給水時間（時間）			17	14.8	24	24	24	8				14.3	23	24	18		22
		工業用接続箇所数			16,000	1,750	included in commercial connection			100									1,200
		商業用接続箇所数			55,735	3,425	217	217	217	14,859						15			7,000
		その他接続箇所数			354,346	42,923				198,941									
		年間苦情件数			42,000	50,000	200	200	200	1,320				13,203					1,200
		年間広報費用(USD)			25,673.45	10,084.81	161,712	161,712	161,712	38,905.75									
		推定不明水量（㎥／日）			175,700	145,849	5,698.75	5,698.75	5,698.75	3,848,345					7,500,000	105,000			420,000
		メーター設置率（%）			99	99.03	73	73	73	100					91.5	100	100		25
		年間メーター交換/修理件数			10,000	9,156	1,671	1,671	1,671	800									180,000
		料金決定権者			Addis Ababa city administration	Addis Ababa City Administration	Malawi government	Malawi government	Malawi government	Rwanda Utility Regulatory Authority (RURA)					Egyptian water regulatory agency	ONEE with national/ local authorities	Parliament		SUNASS
		1㎥あたり平均製造コスト(USD)								0.55					0.17				
		1㎥あたり平均料金(USD)								0.92					0.13				
		現料金表の施行年			2011	2011	2016	2015	2015	2019					2018	2017			2016
		料金計算システム名				X7 Customer Information System Multi Utilities Software (adelion France)		Block tariff	Block tariff	Customer Management System (CMS)					automated billing system				
		料金算定（逓増/逓減）			Progressive	Progressive	Progressive	Progressive	Progressive	Progressive	Progressive	Progressive	逓増		Progressive	Progressive	Progressive		Progressive
		メーター検針頻度（日）			30	30	30	30	30	30					60	30	30		30
		請求周期（月）			1	1	1	1	1	starts on 5th up to the end of each month	1	1			1	1	1		1

	統計年度	2019	2018	2016	2016	2018	2016	2016	2019	2018	2017	2017	2016	2019	2018	2016	2016	2017
	国名	ERITREA	ERITREA	ETHIOPIA	ETHIOPIA	MALAWI	MALAWI	MALAWI	RWANDA	RWANDA	RWANDA	ZAMBIA	ZAMBIA	EGYPT	MOROCCO	SUDAN	GUINEA	PERU
水道料金	料金徴収方法			By ministry of communication and information automation has been implemented	Automation has been implemented by the Ministry of Communication and Information Technology. Around 30 collection centers connected to a central data center have been established where all customers can pay bills by accessing the nearest bill collection center	door to door delivery	Door to door delivery	Physical delivery on door to door by the meter readers who are familiar with the places	Water meter index reading by commercial field officers Commercial field officers go to each and every connected house and read water meter index to know the amount of water used by the connected client whereby the client can pay the bill through different payment options (bank account and mobile money systems)	Bank accounts, branch	Bank account, branch			Cash , prepaid cards		Through electricity office		Manual reading
	料金徴収率（%）								96					80			61.5	
	家庭用水消費量平均（㎥／月）			10,918,215	27,832,314	12.8	12.8	12.8	8					707,000,000	10	2,100		30
	家庭用料金平均（USD／月）			2,531,882.87	1,637,195	2.76	2.76	2.76	7.57						6	2.5		20
	家庭支出に占める水道料金比率（%）			0.918	0.1	0.1	0.1	0.1	3						2	0.01		1.50
	水道料金における下水道料金比率（%）				0	Sewerage charges are attached to city rates	The sewerage charges are included in the city rates	The sewerage charges are included in the city rates	So far there is no relevance between sewerage and water bill as this has not been yet established. But it is proposed that sewerage connection bill will depend on water consumption whereby 80% of consumed water will be					75	20			42
水道関連法、規制	水道関連法または規制名			The proclamation no. 68/1971 G.C	Proclamation No 10/1995	Water Works Act	Water Works Act		National water supply policy	The National Water and Sanitation Policy	The National Water and Sanitation Policy		The Water Supply And Sanitation Act	No 458 health ministry	The 10/95 law	Drinking water standards for Sudan		Sanitation services
	制定年			1971	1995	1995	1995		2016	2004	2004		1997	2007	1995			2000
	① 目的／説明			Responsible for water supply and provision of waste water and sludge disposal service. Exclusive right given to fulfill its objectives within the city administrate	To Supply clean water to all citizens of Addis Ababa	It is an Act to provide for the establishment of Water Boards water-areas and for the administration of such water-areas for the development, operation and maintenance of waterworks and water-borne sewerage sanitation systems in Malawi and for matters incidental there to or connected therewith	It is an Act to provide for the establishment of Water Boards water-areas and for the administration of such water-areas for the development, operation and maintenance of waterworks and water-borne sewerage sanitation systems in Malawi and for matters incidental thereto or connected therewith		The Ministry of Infrastructure has developed the National Water Supply Policy to provide clear direction for the implementation of activities in the water supply sub-sector. The Policy outlines initiatives to overcome challenges and exploit existing opportunities in an integrated manner, and will effectively contribute towards achieving the goals of the National Development Agenda. The Nation water supply policy is to ensure sustainable, equitable, reliable and affordable access to safe drinking water for all Rwandans, as a contribution to improving public health and socio-economic development	Long term vision with specific objectives for the management of water supply and sanitation resources in Rwanda	Long term vision with specific objectives for the management of water supply and sanitation resources in Rwanda		To provide for the establishment, by local authorities, of water supply and sanitation utilities; to provide for the efficient and sustainable supply of water and sanitation services under the general regulation of the National Water Supply and Sanitation Council; and to provide for matters connected with or incidental to the foregoing.	Max limitations For domestic water characteristics	- The public domain of water: all water availability is part of the public domain of the state. - The unity of water resources management: the domain and scale of study is the watershed. - The recognition of the economic value of water: adoption of the principles operator payer and polluter payer. -The creation of the basins agencies: spaces consultation between the different actors and water users. They are autonomous organisms taking care of the water management within the watershed. - National and regional solidarity: among the objectives of basins agencies creation, the instauration of mechanisms of solidarities and notably about water transfers between basins.	Water from new water sources shall be tested to certify that the water is fit for human consumption and water from existing water sources shall be regularly monitored to ensure proper quality standards are maintained.		Contains rules for provision of potable water, sanitary and pluvial sewage and sanitary excretas
	② 水道関連法または規制名				Regulation No 31/2002	Water Resources Act	Water Resources Act		Water supply regulation							National commission for the water and environmental sanitation sector		Modernization of sanitation services
	制定年				2002	2013	2013		2018							2010		2016
	目的／説明				To create a city from the hazards posed by liquid waste	(a) to promote the rational management and use of the water resources of Malawi through ｉ) the progressive introduction and application of appropriate standards and techniques for the investigation, use, control, protection, management and administration of water resources ⅱ) the regulation of all public and private activities which may influence the quality, quantity, distribution, use or management of water resources ⅲ) the coordination, allocation and delegation of responsibilities among Ministers and publicauthorities for the investigation, use, control, protection, management or administrationof water resources (b) to allow for the orderly development and use of water resources for all purposes including domestic use, the watering of stock, irrigation and agriculture, industrial, commercial energy, navigation, fishing, preservation of flora and fauna and recreation in ways which minimize harmful effects to the environment and (c) to control pollution and to promote the safe storage, treatment, discharge and disposal of waste and effluents which may pollute water or othrwise harm th environment and human health	(a) to promote the rational management and use of the water resources of Malawi through (i) the progressive introduction and application of appropriate standards and techniques for the investigation, use, control, protection management and administration of water resources; (ii) the regulation of all public and private activities which may influence the quality, quantity, distribution, use or management of water resources; (iii) the coordination, allocation and delegation of responsibilities among Ministers and public authorities for the investigation, use, control, protection, management or administration of water resources; (b) to allow for the orderly development and use of water resources for all purposes including domestic use, the watering of stock, irrigation and agriculture, industrial, commercial and mining uses, the generation of hydroelectric or geothermal energy navigation, fishing, preservation of flora and fauna and recreation in ways which minimize harmful effects to the environment; and (c) to control pollution and to promote the safe storage, treatment, discharge and disposal of waste and effluents which may pollute water or otherwise harm the environment and human health		The purpose of this Regulation is to establish a legal framework to ensure effective and efficient water supply services and provide an open, transparent and non-discriminatory process for the review and decision-making on modalities of licensing of Water Services in Rwanda.							At the national level with representatives from the Ministry of Irrigation and Water Resources, Ministry of Health, Ministry of Education, Ministry of International Cooperation, Ministry of Environment, Ministry of Finance, PWSC and other key sector partners to coordinate, supervise, harmonize, monitor and evaluate sector performance and decisions.		For increasing coverage and insurance of quality and sustainability of sanitation services
	③ 水道関連法または規制名					Environmental Management Act	Environmental Management Act									State council for the water supply and environmental sanitation sector		
	制定年					1996	1996									2011		
	目的／説明					An act to make provision for the protection and management of the environment and the conservation and sustainable utilization of natural resources	An act to make provision for the protection and management of the environment and the conservation and sustainable utilization of natural resources									With representatives from the State Ministry of Physical Planning and Public Utilities, State Ministry of Health, State Ministry of Finance, State Ministry of Education and State Water and Environmental Sanitation Corporation to ensure sector coordination and the successful achievement of policy objectives		

		統計年度	2019	2018	2016	2016	2018	2016	2016	2019	2018	2017	2017	2016	2019	2018	2016	2016	2017
		国名	ERITREA	ERITREA	ETHIOPIA	ETHIOPIA	MALAWI	MALAWI	MALAWI	RWANDA	RWANDA	RWANDA	ZAMBIA	ZAMBIA	EGYPT	MOROCCO	SUDAN	GUINEA	PERU
関連法、規制及びマスタープラン	④	水道関連法または規制名																	
		制定年																	
		目的／説明																	
	⑤	水道関連法または規制名																	
		制定年																	
		目的／説明																	
	⑥	水道関連法または規制名																	
		制定年																	
		目的／説明																	
	⑦	水道関連法または規制名																	
		制定年																	
		目的／説明																	
	⑧	水道関連法または規制名																	
		制定年																	
		目的／説明																	
水道分野における国家開発目標	①	計画名			Growth and transformation plan 2	Growth and Transformation Plan	Water	Water	Water for all	7 Years Government Programme: National Strategy for Transformation (NST1) – 2017–2024.			The Rivised sixth National Development Plan	The National Long Term Vision		Water national plan	Water treatment plants project		National Sanitation Plan
		目標年			2014/15–2019/20	2010/11– 2014/15	2015–2030	2015–2030	2015–2030	2024				2030		2030	2013–2016		2021
		概要			Increasing the daily production of Water in Addis Ababa among the best 5 African city.	To line Addis Ababa among the best of 5 African cities in the water supply	Ensure availability and sustainablenmanagement of water and sanitation for all	Ensure availability and sustainable management of water and sanitation for all	Ensure availability and sustainable management of water and sanitation for all	NST1 builds on lessorns learned, successes and challenges encountered in previous medium term development strategies. It therefore entails interventions to enable the transformation journey towards achieving Vision 2050 aspirations. The targets is to improve the accessibility of drinking water source to 100% from 85% (EICV 5), considering the overall accessibility to 100 % in 2024.			To improve water and sanitation infrastructure and develop skills to ensure effective water resource management and efficient provision of reliable and safe water and sanitation services.	Set a goal of 80% access to safe water by 2015 and 100% access by 2030.		With a view to supporting its development and streamlining water management, Morocco has, for decades, been committed to managing its water resources by constructing major water infrastructure (dams, efficient water irrigation systems, etc.) to meet its household, industrial, and agricultural consumption needs	・ Construction of new water treatment plants in six towns along white and blue Nile in different states. ・ Funded by Federal Ministry of Finance ・ Capacity of each plant is about range from (20,000 – 75,000 m^3/day		Increase in efficiency of water and sanitation system, for environmental and sustainability benefits
	②	計画名			Business plan	Business Plan				Vision 2020				The National Water Policy			Nyala Water Supply Project		
		目標年			2011–2020	2011 – 2020				2020				2007–2010			2015 – 2016		
		概要			Reduce NRW to 20% To reach universal of water supply services through individual.	To reach universal coverage of water supply services through individual connection to the entire city by 2020. To continue the progressive transformation of AAWSA towards a more business oriented company				The Vision 2020 aspiration is that all Rwandans will have access to safe drinking water in 2020. Rwanda will continue to invest in protection and efficient management of water resources, as well as water infrastructure development to ensure that by 2020 all Rwandans have access to clean water				To support investment programs that aim at incerasing access to safe, adequate water supply to 80% of the urban and peri-urban population by 2010.			・ To supply Nyala town in South Darfur by drinking water from Geraida basin, which is about 85Km south the city. ・ The project is proposed to drill 20 boreholes and pump to the city with production of about 40,000 m^3/day.		
	③	計画名								EDPRS 2 (2013–2018) The Economic Development and Poverty Reduction Strategy				The 25 year master plan					
		目標年								2013–2018				2010–2035					
		概要								EDPRS Ⅱ establishes the framework within which the Government had to change the structure of the economy and move towards achieving or surpassing the long-term targets of Vision 2020 and the MDGs. EDPRS Ⅱ is aimed at increasing the pace of economic growth and further reducing the incidence of poverty, and lay the foundation for sustainable growth in the future. The overarching goal of EDPRS Ⅱ was to accelerate progress towards a middle-income status and better quality of life for all Rwandans through sustained growth of 11.5% and accelerated reduction of poverty.				To improve access to safe drinking water at fair prices within the vincinity of the customers.					
		ドナー名1				IDA	World Bank-IDA	World Bank -IDA	World Bank -IDA	AfDB	World Bank, OPEC, BADEA, IFAD, Belgium, Austria, the Netherlands, JICA, EU, UNICEF, WHO, UNDP, ICRC	World Bank, OPEC, BADEA, IFAD, Belgium, Austria, the Netherlands, JICA, EU, UNICEF, WHO, UNDP, ICRC		Millennium Challenge Corporation projects	KFW	KFW	Unicef		
		年度				2007–2015	2011	2011	2011	2005–2009						2014	2013 – 2014		
		Grant/Loan				Loan	Grant/Loan	Grant/Loan	Grant/Loan	Grant							Fund		
		基金額				170,000,000	MK 496,000,000	MK 496,000,000	MK 496,000,000	23,600,000 USD						8 Million DH	US$ 38,127,491		

国際援助（過去10年）

	統計年度	2019	2018	2016	2016	2018	2016	2016	2019	2018	2017	2017	2016	2019	2018	2016	2016	2017
	国名	ERITREA	ERITREA	ETHIOPIA	ETHIOPIA	MALAWI	MALAWI	MALAWI	RWANDA	RWANDA	RWANDA	ZAMBIA	ZAMBIA	EGYPT	MOROCCO	SUDAN	GUINEA	PERU
①	概要				・Increased access to water and sanitation ・Improved operational efficiency and demand management ・Institutional reform ・Project management	Rehabilitation and expansion works for Mponela water supply scheme	Rehabilitation and Expansion Works for Mponela Water Supply Scheme	Rehabilitation and Expansion Works for Mponela Water Supply Scheme	PNEAR: National program to supply potable water and provide sanitation services in rural areas				A. Rehabilitation of Iolanda treatment plant (95 to 110 Mld) & pumps B. Rehabilitation of Chilanga booster pump station C. Rehabilitation of DN 900 transmission main (air valves, washouts, surge vessels) D. Rehabilitaion of distribution centers (reservoirs, pump stations, valves) G. Supply and installation of bulk and consumer water meters E. Supply of leak repair materials, tools and equipment (incl. training) F. Replacement of unsuitable and inefficient datribution network and connection pipes G. Strengthening of the primary (backbone) distribution system in Central, Lumumba and chelstone branch's	Water& sanitation	Drinking water supplyof Taroudant city from Oulouz dam.	To implement Water, Sanitation, and Hygiene (WASH) programme in the targeted states.		
	ドナー名				AFD	World Bank-IDA	World Bank -IDA	World Bank -IDA	EU				Water and Sanitation for Urban Poor projects	JICA	KFW	African Water Facility / African Development Bank (AWF/AfDB)		
	年度				2007-2015	2013-2016	2013-2016	2013-2016	2005-2009						2015	2011		
	Grant/Loan				Loan	Grant/Loan	Grant/Loan	Grant/Loan	Grant							Grant		
	基金額				9,000,000	MK 2,340,007,301.94	MK 2,340,007,301.94	MK 2,340,007,301.94	32,000,000 USD						18.3 million DH	EUR 3,300,000		
②	概要				•Increased access to water and sanitation •Improved operational efficiency and demand management •Institutional reform •Project management	Integration and expansion of Salima lakeshore water supply schemes	Integration and Expansion of Salima Lakeshore Water Supply Schemes	Integration and Expansion of Salima Lakeshore Water Supply Schemes	AEP Bugesera-Karenge: the project aimed at providing water in Bugesera district				A. New water network Construction - Misisi Compound B. New water network - Baulemi Compound C. New water network - Linda Compound	Water	Drinking water supplyof Chichaoua, Amezmez and Imintanout cities from Abou El Abes Sebti dam	To contribute in the peace building in Darfur States with following components: - Assessment of needs for 25 rural towns for investment plan - Rehabilitation of existing water yards and new borehole drilling. - Capacity building for SWC technical officers and community.		
	ドナー名				EU	World Bank-IDA	World Bank-IDA	World Bank-IDA	UNICEF				Devolution Trust Fund projects	EU	BAD	Belgium Fund		
	年度				2005-2009	2012	2012	2012	2008-2012						2014	2014		
	Grant/Loan				Grant	Grant/Loan	Grant/Loan	Grant/Loan	Grant							Fund		
	基金額				5,400,000	MK 178,372,397.30	MK 1,781,372,397.90	MK 178,372,397.90	20,000,000 USD				A. New water network - Kabana Composed		35.2 million DH	US$ 3,700,000		
③	概要				Gefersa dam rehabilitation	Construction of Kochilira-Kamwendo water supply scheme	Construction of Kochilira-Kamwendo Water Supply Scheme	Construction of Kochilira-Kamwendo Water Supply Scheme	WASH :The projects aimed at supplying water in Rubavu,Nyabihu,Musanz and Burera Districts					Water& sanitation	Drinking water supplyof Marrakech city from El Massira dam.	To procure water submersible pumps to the country.		
	ドナー名				China Xinhua	World Bank-ACGF	World Bank-ACGF	World Bank-ACGF	AfDB					World Bank	FEDES	African Development Fund		
	年度				2011	2011	2011	2011	2011-2016						2016	2016		
	Grant/Loan				Loan	Grant	Grant	Grant	Grant							Grant		
	基金額				100,000,000	MK 75,155,474.00	MK 75,155,474.00	MK 75,155,474.00	22,340,000 USD						6.3 million DH	EUR 24000000		
④	概要				Increased access to water supply	Supply and installation of Mitundu water supply system	Supply and Installation of Mitundu Water Supply System	Supply and Installation of Mitundu Water Supply System	LVWATSANII: Construction of water treatment plants, Modern Landfill and FSTP in Nyanza, Kayonza and Nyagatare Districts					Sanitation	Reinforcement of the drinking water supplyof Laayoune city from sea water desalination.	Provision of technical assistance to water sector Reforms and institutional capacity development in particular West Kordofan state To contribute in the peace building ・Capacity development for state and federal staff technical officers and community supported for improved services and livelihoods. ・Water supply points and sanitation facilities provided for the improved resilience and stability.		
	ドナー名					World Bank-ACGF	World Bank-ACGF	World Bank-ACGF	JICA							JICA		
	年度					2011	2011	2011	2007-2010									
	Grant/Loan					Grant	Grant	Grant	Grant							Grant		
	基金額					MK 66,791,848.00	MK 66,791,848.00	MK 66,791,848.00	15,000,000 USD									

統計年度		2019	2018	2016	2016	2018	2016	2016	2019	2018	2017	2017	2016	2019	2018	2016	2016	2017
国名		ERITREA	ERITREA	ETHIOPIA	ETHIOPIA	MALAWI	MALAWI	MALAWI	RWANDA	RWANDA	RWANDA	ZAMBIA	ZAMBIA	EGYPT	MOROCCO	SUDAN	GUINEA	PERU
⑤	概要					Supply and installation of Linthipe water supply system	Supply and Installation of Linthipe Water Supply System	Supply and Installation of Linthipe Water Supply System	Program East: Supplied water in Rwamagana, Ngoma and Kirehe Districts							Kosti water supply project Kassala water supply project Capacity building project		
⑥	ドナー名6					JICA	JICA	JICA								Iran		
	年度					2015	2015	2015										
	Grant/Loan					Grant	Grant	Grant								Loan		
	基金額					563,000,000 JPY	563,000,000 JPY	563,000,000 JPY										
	概要					Construction of Mkanda and Santhe water supply systems	Construction of Mkanda and Santhe Water Supply Systems	Construction of Mkanda and Santhe Water Supply Systems								Six projects water treatment plant with capacity range 500000 – 100000 m^3/day in white Nile ,north and river Nile states		
⑦	ドナー名															UKAID/ Unicef		
	年度															2015		
	Grant/Loan															Grant		
	基金額																	
	概要															White Nile surface water for camps of refugees from south Sudan by construction of four compact units for water treatment and construction of intake, pipelines and distribution system		
⑧	ドナー名																	
	年度																	
	Grant/Loan																	
	基金額																	
	概要																	
主要な制限	1.水分野への政府の明確な政策の欠如	非常に深刻																
		深刻						✓								✓		✓
		適当		✓	✓	✓	✓		✓					✓	✓			
	2.財源の制限	非常に深刻				✓	✓	✓	✓									✓
		深刻		✓	✓									✓	✓	✓		
		適当																
	3.不十分または古い法制度	非常に深刻														✓		
		深刻						✓										✓
		適当		✓	✓	✓	✓		✓					✓	✓			
	4.不適切な行政組織	非常に深刻														✓		
		深刻			✓	✓	✓											✓
		適当		✓				✓	✓					✓	✓			
	5.水源不足	非常に深刻				✓	✓	✓							✓	✓		✓
		深刻		✓	✓										✓			
		適当							✓					✓				
	6.水源に関する知識不足	非常に深刻														✓		✓
		深刻		✓	✓	✓	✓	✓										
		適当							✓					✓	✓			
	7.コスト回収の枠組みの欠如	非常に深刻		✓														
		深刻			✓	✓	✓							✓	✓	✓		✓
		適当						✓	✓									
	8.訓練された人材不足	非常に深刻																
		深刻						✓								✓		
		適当																✓
	8-(1).訓練された人材不足(専門家)	非常に深刻				✓	✓									✓		
		深刻		✓	✓			✓	✓									
		適当												✓	✓			✓
	8-(2).訓練された人材不足(準専門家)	非常に深刻				✓	✓									✓		
		深刻		✓	✓			✓	✓					✓				
		適当													✓			✓
	9.計画及び設計基準不足	非常に深刻														✓		
		深刻		✓	✓				✓									
		適当				✓	✓							✓	✓			✓
	10.不適当な技術	非常に深刻				✓	✓		✓									
		深刻		✓	✓											✓		
		適当												✓	✓			✓
	11.間欠給水	非常に深刻				✓	✓											
		深刻		✓	✓				✓							✓		✓
		適当												✓	✓			
	12.運転・管理	非常に深刻				✓	✓	✓	✓							✓		
		深刻		✓	✓													
		適当												✓	✓			✓
	13.物流	非常に深刻		✓	✓	✓	✓		✓									
		深刻						✓										
		適当												✓	✓	✓		✓
	14.輸入制限	非常に深刻						✓										
		深刻			✓				✓					✓		✓		✓
		適当		✓		✓	✓								✓			
	15.コミュニティの非関与	非常に深刻						✓										
		深刻		✓										✓	✓			
		適当			✓	✓	✓		✓							✓		✓
	16.健康教育の取組み不足	非常に深刻																
		深刻			✓	✓	✓									✓		✓
		適当		✓				✓	✓					✓	✓			
	17.その他	具体的に																
		非常に深刻																
		深刻																
		適当																
	問題の概要			Lack of priority given to operational modeling and maintenance of old facilities using modern technologies	Lack of priority given to operational modeling and maintenance of old facilities using modern technologies	Very old machinery and infrastructure	Very old machinery and infrastructure	Limited coverage	Budget constraint					Leakage, deterioration of water and wastewater facilities	・Preserving resources ・Sustaininginvestments ・Securing drinking water supply ・NRW management.	Lack of qualified engineers in designing of the water supply projects with advanced techniques		Water stress

		統計年度	2019	2018	2016	2016	2018	2016	2016	2019	2018	2017	2017	2016	2019	2018	2016	2016	2017
		国名	ERITREA	ERITREA	ETHIOPIA	ETHIOPIA	MALAWI	MALAWI	MALAWI	RWANDA	RWANDA	RWANDA	ZAMBIA	ZAMBIA	EGYPT	MOROCCO	SUDAN	GUINEA	PERU
技術的／管理的問題	①	適応対策			Replace aged pipe and apply modern technologie	Replace aged pipe and apply modern technologies	Replacement of machine and complete overhaul of old infrastructure and install new ones	Replacement of machine and complete overhaul of old infrastructure and install new ones	Expansion of the covering areas through construction of devetopment lines with internally resourced funds	Establishment of strategic plan for fund mobilization through Different donors, investors, and collection of National taxes					Dividing networks into DMAs , yearly rehabilitation for deteriorate asset	・Compliance with engineering plans ・Training of the operation employees: new equipment, new technology ・Following-up of the various stages of the works ・Reception of the work: presence of works by an approved laboratory ・Testing and commissioning: On-site testing	More training on the advanced techniques to raise the knowledge of the engineers so as to plan and design projects		Rationing
	②	問題の概要			Poor workmanship with other utilities	Poor workmanship and material quality	Lack of capacity	Lack of Capacity	Lack of capacity and skills	High rate of non-revenue water							Limited quality of construction and implementation of water supply system		Old water networks
		適応対策			Continuous local and foreign training	Continuous local and foreign training program for all staff	Periodic trainings orientation for staff	Periodic trainings orientation for staff	Training of the staff on different operational skill and sub contracting some activities	WASAC has established a unit in charge of non-revenue water which is working day to day with JICA experts to reduce uncounted for water through leakage detection and pressure management and inspection and enforcement							Designation of guidelines and manuals for quality control		Rehabilitation
	③	問題の概要			Lack of cooperation	Lack of cooperation with other utilities	High Non-Revenue Water	High Non-Revenue Water	Revenue collection	Insufficient water production compared to demand							Leakages in pipe lines due to bad construction, excavation ,filling and compaction which leads to waste of water		
		適応対策			Integration with all stakeholders during planning, implementation and operation Managers must lead strategically	Integration with all stakeholders during planning, implementation and operation	ⅰ) Continuous replacement and repair of stuck water meter ⅱ) Tank overflow monitoring programmes ⅲ) Replacement of deteriorated pipes ⅳ) Rapid responses to pipeline breakdowns ⅴ) Programme to arrest illegal water connections ⅵ) Improvement of the effectiveness and efficiency of the billing systems	・ Continuous replacement and repair of stuck water meter ・ Tank overflow monitoring programmes ・ Replacement of deteriorated pipes ・ Rapid responses to pipeline breakdowns ・ Programme to arrest illegal water connections; and improvement of the effectiveness and efficiency of the billing systems	Carrying out disconnection campaigns on monthly basis to maximize revenue collection	Increase production by construction of new WTPs and upgrading of existing WTPs							Applying of new techniques in discovering leakages		
	④	問題の概要				Most of the time they focus on new development works	Low revenue collections	Low revenue Collections	High Non Revenue Water	Old water infrastructures							Poor design for water distribution points (tap stands, cart dispenser)		
		適応対策				Managers must lead strategically	Reduce non revenue water,replace all stuck meters, develop good collection measures like promotions	Reduce non-revenue water, replace all stuck meters, develop good collection measures like promotions	Carrying out meter servicing exercise on stuck meters and replace the old stuck meters, quick attendance to breakdowns.	Rehabilitation and upgrading of water infrastructures							Capacity building in term of design to raise the knowledge of the engineers		
	⑤	問題の概要				They are tired of routine operational work	Limited coverage	Limited Coverage	Tank overflows	Inappropriate technology							Lack of qualified contractors in construction of water supply system project		
		適応対策					Designing and constructing new systems	Designing and Constructing new systems	Physical monitoring of tank levels and control production	Government of Rwanda aims at promoting technology in all services including water supply services to achieve the targeted development long- term aspirations							Qualification of contractors in specific works		
	⑥	問題の概要					Poor cash flow	Poor Cash flow		All materials and equipment are imported due to lack of manufacturing industries									
		適応対策					Discipline in expenditures i.e spending according to budget	Discipline in Expenditures i.e spending according to budget		The government of Rwanda is promoting the industrial sector by encouraging investors to invest in this sector									
		課題の概要			Integration and coordination problem among infrastructure provider	・ Integration and coordination problem among infrastructure provider ・ Unfair distribution of water supply ・ Weak operation and maintenance of water supply ・ Lack of proper administration of non revenue water	Very old machinery and infrastructure	Very old machinery and infrastructure	Old Infrastructure	Insufficient water production compared to demand					Deficit in surface water resources	・Preserving resources. ・Sustaining investments. ・Securing drinking water supply. ・NRW management.	Water sector strategic plan and policy endorsement by mini		Unaccounted water

		統計年度	2019	2018	2016	2016	2018	2016	2016	2019	2018	2017	2017	2016	2019	2018	2016	2016	2017
		国名	ERITREA	ERITREA	ETHIOPIA	ETHIOPIA	MALAWI	MALAWI	MALAWI	RWANDA	RWANDA	RWANDA	ZAMBIA	ZAMBIA	EGYPT	MOROCCO	SUDAN	GUINEA	PERU
優先度の高い要求	①	取組の背景			Discussion with all stakeholder and prepare action plan	・Discussion with all stakeholder and prepare action plan ・Try to make water shift for shortage water supply area and makes awareness for community ・Strict follow-ups of top management	Replacement of broken part of machinery	Replacement of broken part of machinery	Most of the infrastructures were inherited from the previous operator of the system which was the government, the board has tried to upgrade these structures and replace.	New WTPs have been constructed and some of the existing WTPs have been rehabilitated and upgraded.					Expansion in sea desalination plants	・Compliance with engineering plans ・Training of the operation employees: new equipment, new technology ・Following-up of the various stages of the works ・Reception of the work: presence of works by an approved laboratory ・Testing and commissioning: On-site testing	The document was finalized for all states, and waiting the e		Reduction Program
		現在の状況等			City administration tries to formulate a regulator body to control all construction	・City administration tries to formulate a regulatory body to control all construction ・Develop strategic plan with International consultant and parallel work remedial actions with them	Even if the broken part is replaced, the entire machinery is old and this means that most parts of the machine is worn out. pPresent status is that most machinery are old and worn out as such operatuVion and maintenance costs as well as production costs are high, efficiency of the machines is low, and long hours of water disruptions during machine breakdowns.	Even if the broken part is replaced, the entire machinery is old and this means that most parts of the machine is worn out. Present status is that most machinery are old and worn out as such operation and maintenance costs as well as production costs are high, efficiency of the machines is tow, and long hours of water disruptions during machine breakdowns.	Some of these are now in good conditions after upgrading. Others are now in unserviceabEe conditions such that they cannot perform to the required standard.	Projects for construction of new WTPs and upgrading of existing ones are being developed					Only .4%from total resources		In the cabinet for final approve		From 31 to 27%
	②	課題の概要			Unfair distribution of water supply		Lack of capacity and skills in ｉ) Operations staff ii) Engineering staff iii) Revenue staff	Lack of Capacity and skills in i) Operations staff ii) Engineering staff iii) Revenue Staff	Insufficient Funding	Old water infrastructures					Increase in non-revenue water	・Satisfaction of demands of all stakeholders ・Delay in the implementation of certain projects ・Natural disasters (drought and floods) ・Siltation of dams ・Pollution of rivers ・Over exploitation of underground resources	Weakness of the M&E system		New water source
		取組の背景			Try to make water shift for shortage water supply area and makes awareness for community		Staff is being trained but not enough	Staff is being trained but not enough.	The board has been experiencing low cash flow due to non payments of by government institution which is experiencing economic challenges due to low or no support to budget by donors. This has lead the board to rely on bill payments from individual and commercial customers	Rehabilitation and upgrading of water infrastructures have been conducted					Prepaid meters, DMAs and measured losses, Rehabilitation and renovation	Incorporating the Integrated Water Resources Management (IWRM) including a perfect collaboration between stakeholders with adequate control of basin agencies.	M&E system is existing in Water & Environmental Sanitation		Well explotation in right margin of Rimac river
		現在の状況等			Develop strategic		A lot of staff lacks necessary skills for their job.this is so because staff resignations are high and new recruitment will also need to be trained. In addition, in this advanced thechnology changing which means continuously adding of knowledge hence need for regular trainings.	A lot of staff lacks necessary skills for their job* This is so because staff resignations are high and new recruitment will also need to be trained. In addition, in this advanced technology era, things are continuously changing which means continuously adding of knowledge hence need for regular trainings.	The problem has crippled the board's operations of its activities in the zones and schemes. As a result of this The Zone and schemes are Unable to meet their monthly set targets.	Projects for upgrading and rehabilitation for the existing water infrastructures are being developed and some of these projects are at starting phase like upgrading of Gihira WTP.					30% from total production	IWRM iscontributing in the improvement of the design, construction and operation of large investment projects in the use of water (irrigation, water drinking and electricity production). It is optimizing technical solutions to satisfy stakeholders and reduce the costs of these projects.	Modified M&E system is under establishment, and can be finalized on coming period to mo		
現在または今後解決すべき課題		課題の概要			Weak operation and maintenance of water supply		High Non-Revenue Water	High Non-Revenue Water	Poor Water Quality	All materials and equipment are imported due to lack of manufacturing industries						Improving efficiency of production and distributionfacilities to reduce water loss and contribute to the preservation of water resources	Water sector capacity building		
		取組の背景			Strict follow-ups of top management		Pipe inspections and quick response to breakdowns	Pipe inspections and quick response to breakdowns	The water quality in most schemes and zones are poor due to poor waste management and encroachment of catchment areas through unplanned settlement designed	The government of Rwanda has invited and encouraged foreigner investors to invest in industrial sector in Rwanda especially in manufacturing factories						2017-2021 Investment Program with about 1,900 Million Euros			

統計年度		2019	2018	2016	2016	2018	2016	2016	2019	2018	2017	2017	2016	2019	2018	2016	2016	2017
	国名	ERITREA	ERITREA	ETHIOPIA	ETHIOPIA	MALAWI	MALAWI	MALAWI	RWANDA	RWANDA	RWANDA	ZAMBIA	ZAMBIA	EGYPT	MOROCCO	SUDAN	GUINEA	PERU
③	現在の状況等			Plan with International consultant work remedial actions with them.		High non revenue water is quiet a serious aspect to deal with. As such the following measures are proposed to be put in place a. Network mapping Network survey will be locate all waterworks facilities and components within the reticulation system B. Establishment of District Meter Areas This involves dividing an open water supply network into smaller, more manageable zones. Which can be hydraulically isolated and number of inflows will be limited c. Pipe inspection to detect leakages d. Digitizing of the systems and installation of leak detection facilities e. Monitoring night flows of big institutions f. Pressure management by installing pressure reducing valves. g. Meter audits ti reveal illegal conections, not registered connections and under billed customers h. Customer survey to investigate on lowest billed customers and also to verify if the long disconnected customers are not illegally drawing water. i. Servicing and replacement of meters j. Trainings staff training workshops to be conducted to equip responsible officers with the required knowledge and skills on the proposed practices.	High non-revenue water is quiet a serious aspect to deal with. As such the following measures are proposed to be put in place a. Network Mapping Network survey will be conducted to locate waterworks facilities and components within the reticulation system b. Establishment of District Meter Areas (DMAs) This involves dividing an open water supply network smaller, more manageable zones. Which can be hydraulically isolated and number of inflows will be limited. c. Pipe inspection to detect leakages d. Digitizing of the systems and Installation of leak detection facilities e. Monitoring night flows of big institutions f. Pressure management by installing pressure reducing valves g. Meter audits to reveal legal connections, not under billed customers. h. Customer Survey to investigation on lowest billed customers and also to verify if the long disconnected customers are not illegally drawing water. i. Servicing and replacement of meters j. Trainings Staff training workshops to be conducted to equip responsible officers with the required knowledge and skills on the proposed practices.	The board has been forced to abandon some of its water sources relocate to other places which are not sufficient for expansion.	Very few manufacturing factories are available in Kigali industrial free zone like AQUASAN that is manufacturing HDPE pipes and some of their fittings						・Improving production yield from 95.5% (2016) to 96% (2021) ・Improving distribution yield from 75.5% (2016) to 78% (2021)	DWST/JICA is working on the capacity building for all the country states, but the govern		
④	課題の概要					Low revenue collections	Low revenue Collections	Poor billing of customers	In sufficiency of trained personnel due to the lack of capacity building plan						Diversification and strengthening of water supply sources to strengthen and secure the population's drinking water supply	Compact unit design and construction		
	取組の背景					Subcontracted billing personnel	Subcontracted billing personnel	Many customers are billed on average due to the problem of stuck meters and physical taking of meter readings by meter leaders who sometimes are un able to collect real figures on the meter due to fatigue after moving long distances.	Some staff have been trained inside and outside the country						2017-2021 Investment Programwith about 1.900MillionEuros Equip an additional flow of 20 m^3/s	Designation of training courses for engineers in this issue		
	現在の状況等					1. Negotiations with debtors 2. Conducting meter audits to eliminate average billed customers.	1. Negotiations with debtors 2. Conducting meter audits to eliminate average billed customers	The board is not able to collect enough revenue as some customers pay less than what they have consumed.	Capacity building plans have developed but there is no sufficient fund						Improvement of the rate of access to drinking water in rural areas from 96% (2016) to 99% (2021)			
⑤	課題の概要					Limited coverage	Limited Coverage								Access to liquid sanitation	Water consumption estimation and Water tariff		
	取組の背景					Eight water systems have been constructed	Eight water systems have been constructed								2017-2021 Investment Program with about 500 Million Euros	Applying new techniques in water tariff modules		
	現在の状況等					Since un supplied area is large, there is need to design and construct more systems for the unsupplied areas to increase coverage. Since water supply systems need huge investments, organizations fail to found such design hence low coverage.	Since un supplied area is large, there is need to design and construct more systems for the unsupplied areas to increase coverage. Since water supply systems need huge investments, Organizations fail to fund such design hence low coverage.								from 353.000 m^3/j (2016) to 520.000 m^3/j (2021)			
⑥	課題の概要					Poor cash flow	Poor Cash flow								Environmental aspects			
	取組の背景					Formulation of cash budget meetings and implementing cost cutting measures	Formulation of cash budget meetings and implementing cost cutting measures								Designing a unit to recycle the media filters washing water and treatment of produced sludge of the DAOURAT Comple			
	現在の状況等					Adherence to cash budget.	Adherence to cash budget								・Preliminary project summary: achieved ・Environmental impact study: achieved ・Geotechnical and topographic works: ongoing ・Financial: not defined			

JICAカントリーレポート統計

統計年度			2017	2019	2017	2016	2016	2019	2019	2018	2016	2019	2017	2017	2019	2017	2017	2016
国名			PERU	CAMBODIA	CAMBODIA	CAMBODIA	INDONESIA	LAOS	MYANMAR	MYANMAR	MYANMAR	TIMOR-LESTE	AFGHANISTAN	AFGHANISTAN	YEMEN	IRAQ	IRAQ	IRAQ
国連地域名			South America	South-Eastern Asia	South-Eastern Asia	South-Eastern Asia	South-Eastern Asia	South-Eastern Asia	South-Eastern Asia	South-Eastern Asia	South-Eastern Asia	South-Eastern Asia	Western Asia	Western Asia	Western Asia	Western Asia	Western Asia	Western Asia
都市名			Lima	Phnom Penh	Kampot	Battambang	-	Vientiane capital	Yangon	Yangon	Yangon	-	-	Herat	Aden	Baghdad	Kurdistan	Baghdad
首都			X	X			X	X	X	X	X					X		X
3レター			PER	KHM	KHM	KHM	IDN	LAO	MMR	MMR	MMR	TMP	AFG	AFG	YEM	IRQ	IRQ	IRQ
2レター			PE	KH	KH	KH	ID	LA	MM	MM	MM	TP	AF	AF	YE	IQ	IQ	IQ
国内3大水道事業体	①	都市名	LIMA	Phnom Penh	Phnone Penh	Phnom Penh	Malang	Vientiane capital	Yangon city/ Yangon Region	Yangon City	Yangon	Lautem	Kabul	Herat	Aden	Baghdad	Erbil	Baghdad
		組織名	Sedapal	Phnom Penh Water Supply Authority	PPWSA	Phnom penh water supply authority	PDAM Kota Malang	Vientiane Capital Water Supply State Enterprise	Yangon City Development Committee	YCDC	YCDC	SAS	Paktia mawj	KFW	Aden Local Water and Sanitation Corp	Baghdad's Water Authority	Erbil Water Directorate	BWA
		資本	Public	Private Enterprise	Public-Private-Partnership	Public-Private-Partnership	Local Government Company	Public-Private-Partnership	Public	Public	Public	Public	Private	Extention of water supply Project in Herat city	Public	Public	Public	Public
		総人口	10,000,000	2,234,566				808,362	5,200,000/ 7,360,000	5,209,541	5,209,541	22,714	60,000	530,000	1,761,000	7,216,000		7,722,975
		給水人口	8,500,000	2,008,536		300,000		606,036	2,000,000	1,712,172	1,712,172	7,518	57,000		1,232,700	7,216,000		7,722,975
	②	都市名	Arequipa	Siem Reap	Siem Reap	Battambang	Surabaya	Luangphabang	Mandalay	Mandalay city	Mandalay		Kabul	Herat		Basra	Duhok	Nainava
		組織名	Sedapar	Siem Reap Water Supply Authority	SPWSA	Battambang Water supply	PDAM Surya Sembada	Luangphabang Capital Water Supply State Enterprise	Mandalay City Development Committee	MCDC	MCDC		Omaid Olya	World Vision		Basra Water Directorate	Duhok Water Directorate	MMPW
		資本	Public	Private Enterprise	Public-Private-Partnership	Public	Local Government Company	Public-Private-Partnership	Public	Public	Public		Private	Extention of water supply Project in Herat city		Public	Public	Public
		総人口	1,200,000	140,000				447,424	6,150,000	1,225,133	1,225,133		3,960	125,000		2,015,483		3,604,684
		給水人口	1,000,000			12,000		131,098					2,000			2,015,483		3,604,684
	③	都市名	Qosqo		Kampong Cham	Seam Reab	Banjarmasin	Champasak	Naypyitaw	Nay Pyi Taw	Naypyitaw		Kabul			Ninawa	Sulamania	Basra
		組織名	SedaQuosqo		Kampong Cham water Supply	Seam Reab Water Supply Authority	PDAM Bandarmasih	Champasak Capital Water Supply State Enterprise	Naypyitaw City Development Committee	NCDC	NCDC		Septain			Ninawa Water Directorate	Sulaimania Water Directorate	MMPW
		資本	Public		Public	Public-Private	Local Government Company	Public-Private-Partnership	Public	Public	NCDC		Private			Public	Public	Public
		総人口	850,000					724,000	1,160,000	1,158,367	1,158,367		50,160			2,065,597		2,713,658
		給水人口	750,000			6,000		170,161					48,000			2,065,597		2,713,658
組織構成及び業務概要		事業体名	SEDAPAL	Phnom Penh Water SupplyAuthority	Kampot Water Supply	Battambang waterworks	Ministry of Public Works and Housing	Vientiane Capital Water Supply State Enterprise	Yangon City DevelopmentCommittee (YCDC)	Yangon City Development Committee	Yangon City Development committee	DNSA (National Directorate of Water Services)	Ministry of Urban Development & Housing	Afghanistan Urban Water Supply & Sewerage Corporation (AUWSSC), Herat SBU	Aden Local Water and Sanitation Corp.	Baghdad's Water Authority	Ministry of municipality and tourism /general directorate of water and sewerage	Baghdad Water Administration / Amanat Baghdad
		設立年	1982	1895	1951	1993	1945	1959	1852	1922	1985	2000	1353	2006	1900	1924	1993	1924
		事業体種別	Part of government department	Public enterprise	Part of government department	Part of government department	Part of government department	Government corporations	Part of government department	Part of government department	Part of government department	Part of government department	Part of government department	Government corporations.	Government corporations	Part of government department	Part of government department	Part of government department
		資本構成	National government 80% Others(Public-Private-Partnership) 20%	National government 85% Investor (Private) 15%	None		National government 70% Local government 25% Investor (Private) 5%	Local government 100%	Local government 100%	Local government 100%	Local Government 100%	National government 80% Local government 15% Invester(Private) 5%	National government 75% Others (International Community Funds) 25%	Ministry of Finance (MOF) 40% Ministry of Urban Development and Housing (MUD) 35% Ministry of Economy (MOE) 15% Department of National Environment life 10% Municipality of Kabul 5%	National government 20% Local government 80%	National government 70% Local government 30%	Local government 100%	National government 70% Local government 30%
	政府による規制	職員数							✓	✓	✓		✓		✓	✓	✓	✓
		職員給与							✓	✓	✓				✓	✓	✓	✓
		水道料金		✓			✓	✓	✓	✓	✓					✓	✓	
		管理者の任命権							✓	✓	✓					✓	✓	✓
		運転管理予算							✓	✓	✓				✓	✓	✓	✓
		開発予算							✓	✓	✓				✓	✓	✓	✓
		未払者の給水停止													✓	✓		
	運転管理費（USD）	人件費	100,000,000			202,943		4,109,541	1,600,000		2,320,276	500	650,547.05	355,555		4,825,743,000	90,000,000	4,825,743,000
		電力／燃料	15,000,000		5,093	267,113.17		3,314,499	6,500,000		5,372,243	2,500	487,910.29	653,520			12,000,000,000	
		薬品	5,000,000		53,112	10,902,028		792,701	1,500,000		19,521,604	2,400	450,000	10,000		4,660,720,000	5,500,000,000	4,660,720,000
		その他資材	2,000,000		7,664	152,906.20		413,171	1,980,000		1,618,928	1,500	1,000,000	536,332			8,000,000,000	
		輸送費	5,000,000			11,467.36		28,926	50,000			800	250,000	5,000			2,000,000,000	
		その他				75,861		10,221,477	33,000		31,266	1,000				34,524,500	2,000,000,000	34,524,500
		その他の詳細						Training, Security, Maintenance, Telephone, advertising, etc.										
		O&M合計	96,000,000		50,796	1,346,911.46		18,880,315	12,350,000		28,864,317	9,000	2,000,000	1,560,407		2,133,047,970	50,000,000,000	2,133,047,970
	給水市町村数		42	2		2	38	9	1	1	33	5	34	19 provinces 14 districts	7	1	4	1
	給水区域		21.88	678			47,922	3,920	576		630	1,813.12		90	750	200,000		
	市域内人口		10,000,000	2,500,000	57,194	150,000	37,476,757	808,362		5,210,000	4,441,265	85,800			1,761,000	7,216,000	5,000,000	7,722,975
	給水区域内人口								5,200,000		4,441,265			560,000				7,722,975
	給水人口		8,500,000	1,500,000	30,093	70,000	26,233,730	606,036	2,000,000	2,050,000	51,419,420	7,518		2,057,052	1,232,700	7,216,000		7,722,975
	普及率（市域内人口（給水人口）／給水区域内人口）		85%	60%	53%	47%	70%	75%	38%	39%	1158%	9%	#DIV/0!	367%	70%	100%	0%	100%
	職員数	事務職	900		3	29	5	354			113		750	68		355	78	355
		技術職	300		2	3	10				495		520	6		439	26	439
		専門職	1,100		2	13	15	235			874		440	23		800	3	800
		作業員	200		2	20	3	12			85		307	121		1,000	3	1,000
		計	2,500	1,042	9	65	33	601	1,247	2,227	1,567	20	2,017	219	2,000	2,594	110	2,594
	年間総取水量		800,000,000	59,000,000				99,626,686				11,711	109,500	48,524,132			118,884,000	
	内訳源	表流水（%）	85	100		100	95.39	99.58	88	92	87	50				100	60	100
		地下水（%）	15				4.61	0.42	10	8	8	35	75	100	100		40	
		その他（%）						0	2		5	15						
	年間給水量		760,000,000	194,000,000	2,102,400	4,134,726	43,288,029	91,200,290	335,454,545	149,318,181	340,113,636	2,176,116	435,000	32,126,503	34,300,000	974,776,000	200,932,500	974,776,000
	年間消費量		760,000,000		2,102,400			61,475,155	150,954,545			242,611	420,000	16,397,629	23,610,000	974,776,000	140,652,750	
	一日最大水需要		2,000,000	567,584	5,760	11,328	118,409.91	263,630	931,818		611,417	673.92	500	88,017.82	271,890.4	4,160,000	550,500	4,160,000
	一日平均水需要		860,000,000	540,000	5,760	11,300	0.81	249,823	931,818		611,417	461	270	88,017.82	0.1812	3,000,000	506,700	3,000,000
	浄水場数		3	4	1	1		12	1	1	1		25	1	2	125	3	125
	浄水場総施設能力		2,000,000	540,000	5,760	11,520		282,320	409,090	409,090	409,090	1,314	650	1,000	271,890.4	2,943,619	338,400	2,943,619
水質	濁度	原水（平均）	100	64	3.8	93	0.44	214.0	12	7.59	13.59		5			39	102	39
		浄水	1	0.76	0.2	1.5	0.13	0	12	3.26	0.19	<5	3.9	<5		2.0	2.1	2.2
	色度	原水（平均）	5	25.53	8	142	Colorless	30	50	12	23					0-5	2.5	0-5
		浄水	1	3.29	1.0	1.1	Colorless	1.0	50		0	5		No color		0-5	0	0-5
	pH	原水（平均）	7.0	7.3	6.2	7.8	6.8	8.2	7.46	7.4	6.84		6.5-8			7.9	7.2	7.90
		浄水	7.0	7.23	7.35	7.1	6.8	7.9	7.46	7.21	7.07	>6.5 and <8.5	7	6.5-8.5		7.5	7.8	7.51
	硬度（ppm）	原水（平均）	200	34		134	180.5	140	46	58	48					324	234	324
		浄水	150	31		132	133	128	46		12	200		500-600		324	300	324
	鉄（ppm）	原水（平均）	0.05			0.973	0.187	0.39	0.45	0.42	0.42		0.3			1.22		1.22
		浄水	0.05			0.071	0.174	N.D<0.03	0.45		0.04	0.3	8	0.30		0.08		0.08
	マンガン（ppm）	原水（平均）	0.20			0.03	0.159	19.4	0.11	0.13	0.104		0.4			30	55	30
		浄水	0.20			0.01	0.142	5.5	0.11		0	0.4	8	0.3		30	55	30
	亜硝酸態窒素（ppm）	原水（平均）	0.05					2.2	0.01	0.01			0.2			0.77		0.77
		浄水	0.05					N.D<0.05	0.01			50	3.4	11		0.84		0.84
	その他項目	項目名										Tasted & Outdor Asenic Flouride Sulphate Residual Chlorine Total Caliform Bacteria E. Coli or Thermotolerant bacteria						
		原水（平均）																
		浄水										Unobjectionable 0.01 mg/L 1.5 mg/L 250 mg/L 0.1-0.2 mg/L Must not be detected in any 100ml sample Must not be detected in any 100ml sample						
	水質基準							Standards of Ministry of Health	Myanmar National Drinking Water Quality Standard (NMDWQS)			National Drinking Water Quality Standard		Afghanistan National Standards Authority Specifications WHO Standard				
	主要浄水処理法		Conventional	Conventional	Slow Sand Filter	Conventional	chlorination	Conventional	Conventional	Conventional	Conventional	Slow Sand Filter	Conventional	Slow Sand Filter		Conventional	Slow Sand Filter	Conventional
	塩素処理法		Gas injection	Gas injection Powder injection		Powder injection	Gas injection	Liquid injection	Sodium hypochloride solution	Production of Sodium Hypochloride from salt		Gas injection	Powder injection	Powder injection	Powder injection	Gas injection	Gas injection	Gas injection
	微生物検査の頻度（回）	日	3														1	2
		週		80 points	1						1			1		2		2
		月	4				1	1	1	1	4	2	1			8		1
		年			48	4		12	12		48					96		0
	配水管	延長（km）	7,000	2,853	84.247	320.457	2,000.67	2,404	1,129	1,522	657,000	45.60	5.3	3,748.25		6,150	300	6,150
		口径（mm）	1,800	250-1600 (DIP) 50-225 (HDPE)	100, 150, 200, 250, 300	400	50,75,100,150	13-1200	25-300	20-200	450, 600, 900, 1000, 1200, 1400, 1500, 1600	50, 80, 100, 150, 200, 250	3/4,1/1-1/4,2,3,3-1/2 inch	63-100		100-150-200	75-100-150-200-250	100-150-200

統計年度			2017	2019	2017	2016	2016	2019	2019	2018	2016	2019	2017	2017	2019	2017	2017	2016
国名			PERU	CAMBODIA	CAMBODIA	CAMBODIA	INDONESIA	LAOS	MYANMAR	MYANMAR	MYANMAR	TIMOR-LESTE	AFGHANISTAN	AFGHANISTAN	YEMEN	IRAQ	IRAQ	IRAQ
給水	配水管路	材質	Cast Iron, Ductile Iron, P.E. P.V.C., Concrete	DIP, HDPE	DI, AC, GI, PVC	DI, CI, HDPE, PVC	PE,PVC,GP, ACP	GSP, PVC, uPVC, HDPE, DIP, SP, GFCP, GRP	DIP, HDPE, PVC, CIP	PC,CI,MS,GI,DI,HDPE	HTPE, UPVC, DI, CI, PCP, MS, FRP	Galvanis Pipe		Poly Ethylene		DIP	PE , Ductile ,Asbestos, PVC	DIP and asbestos
	貯水能力		2,500,000	96,000	1,600	1,310	20,540	12,560			4,545	200	300	104,196		1,007,000	1,200	1,007,000
	配水量（m³）分析 有収水量	料金水量						61,475,155 (67.41%)				50,000(66.27%)						
	配水量（m³）分析 無収水量	非料金水量（消防等）						247,470 (0.27%)				451(0.6%)						
		見かけロス（盗水、メーター不感）						2,590,185 (2.83%)				15,000(19.88%)						
		実際ロス（漏水）	25%		9.31%	10.96%	18.61%	26,900,135 (29.49%)			50%	10,000(13.25%)	2.6%			25%	20%	25%
	漏水対策		renovation			Replace pipe PV to PE	a. Pressure management b. Pro active leak detection c. Infrastructure management d. Leak repairation	Repair	・Establishment of NRW Management team ・Countermeasure model for physical loss and commercial loss reduction and capacity development ・T oT training for Countermeasure on NRW reduction ・Construction of training yards for NRW reduction ・Construction of DMA Pilot projects by owned budget	Replaced aged pipes	Only Pipe Line Inspection					Continuous pipe repair	Assumption	Continuation of pipe repair
年間漏水修繕件数			1,680		38		5,133	10,160			620		12	5,225			1,700	
不明水量の状態及びその対策	大／深刻	都市名	Lima			Battambang, Prakmohateap	Kota Malang	Vientiane	Yangon	Mayangone Township/ Mingalardon Township	Mayangone Township Yangon City	Lautem	Kabul	Herat/Afghanistan			All	
		状態	25%			Ruined pipe	Old pipes	・Leak Main pipe ・Accidental damage of water pipe	High	Pipe burst in the main transmission pipe line (Old aged mild steel pipe,prestressed concrete pipe)	Pipe burst in the main transmission pipe line (Prestressed concrete pipe)	There is leak in the system at every point, so that affects the speed and pressure of the water in the pipe	With the numbers at 5% nationwide, and only 1% in rural areas. With the population 6 million 80% access to safe drinking water, and 95% lack access to improved sanitation	Technical and Operational problems of old networks such as （ACP, GIP and PVC) which are extended 40 years ago in Herat water supply Networks, Leakages of network		Leak of allocation	Illegal connections	Lack of allocations
		対策	Rehabilitation of networks and connections			Replace the old pipe	Assets management/Replacing old pipes	Water leakage repairing in tim	・Establishment of NRW Management team ・Countermeasure model for physical loss and commercial loss reduction and capacity development ・ToT training for countermeasure on NRW Reduction ・Construction of training yards for NRW Reduction ・Construction of DMA Pilot projects by owned budget	Urgent Repair by using M.S collars, Jute and lead,Replaced HDPE pipe	Urgent repair by using MS collar, jute and lead	Must take action as soon as possible, so that the community can get enough water by the government of clean water	We have to improved our water supply system to stop this problems	Replacement of old networks components by new ones. Leakage management. Distribution management				
	中	都市名	Lima			Or cha village		Vientiane		Almost all of townships in Yangon City	Almost all of townships in Yangon City		Kabul	Herat/Afghanistan			All	
		状態	Insufficient coverage			Illegal customer	Bad accessories conditions	・Leak Repaired ・Aging water meter ・Bad quality of water meters ・Mistaking on meter reading ・Illegal uses of water		Illegal connection	Illegal connection	The community dose not use a meter each house so it dose not use water properly	Only 12 percent of afghans living in rural areas have access to clean drinking water.	No payment of water used by holly palaces		Illegal water intake from the network	Oldness of the pipe	Illegal connections
		対策	Reduction of network pressures			Make law to protect	Replacing bad accessories	・Water leakage repairing in time ・Aging water meter replacement ・Training staff ・Advertising		Take action on Inspection and change to the billed connection.	Take action on inspection and changed to the billed connection	From the institution, it is nessecary to control the water supply system in every community, especially the instllation of meters in each house so that the water that is used can be utilized properly.	One of the most critical needs that a community will often identify as we work together on their journey towards development, is the desperate need for clean water.	Coordination with Ministry of Pilgrims and Islamic affairs concerning of their used water payment.				
	小／それほど深刻でない	都市名	Lima			Treatment plant		Vientiane		Almost all of townships in Yangon City	Almost all of townships in Yangon City		Kabul	Herat/Afghanistan			All	
		状態	Asphalt track subsidence			Technical lost	Over pressure	・Fire Hydrant ・Elevated Overflow ・Wash Out ・Public Use		Pipe burst in the distribution pipe lines and service pipe	Pipe burst in the distribution pipe lines and service pipe		Many afghans lack access to clean water, as well, a large numbers of people suffer from cholera because of dirty drinking water.	Cutting of the electricity to water pumps and reduction, the amount of water productions.		No DMA (district metered area)	Lack of cooperation between organizations	No DMA (district metered area)
		対策	repair			Checked and replaced	Pressure management	・Install float valve for elevated Tank		Urgent repairment and replacement with new ones.	Urgent repair and replacement with new ones		We should make many water supply system to increases clean water.	Coordination with power supply department concerning the providing sustainable electricity				
カスタマーサービス	接続戸数		170,000	360,000	6,324	11,820	146,041	122,196	320,000	335,015	257,156	1,074	10,000	174,055		608,516	150,000	608,516
	公共水栓(PT)/給水塔(SP)数		20	17	None	None	19	0	N/A			20 (PT)/ 50 (SP)	750	1,309				
	公共水栓/給水塔 一つ当たり人数				None	None	200	0	50			20	10,000	130,900			7	
	水道水飲用時の習慣		After boiling	Directly from tap	After filtering	Directly from tap		After filtering	After filtering	After boiling After filtering	Directly from tap	Directly from tap	After filtering	Directly from tap		Directly from tap	Directly from tap	Directly from tap
	24時間給水カバー率（%）		85	100		100	100	100	40	50	50			22.05		100	70	100
	平均給水時間（時間）		23	24	24	8	24	24	10	8	8	8	4	20		24	12	24
	工業用接続箇所数		1,200		282	0	38	7,945				5	17	1,621		2,329		2,329
	商業用接続箇所数		6,500	55,891		314	5,723	7,945	29,812		22,224	10	15	2,628		87,320		87,320
	その他接続箇所数			271,317 (domestic)	6,324	74	41	1,711	255,457		375	12		956		6,823		6,823
	年間苦情件数		1,500	5,351	35		31,265	12,904	3,500			100	10			20	2,400	20
	年間広報費用（USD）							40,997				1,000				25,000		25,000
	推定不明水量（㎥／日 ）		420,000		1,400 Rial	115.2	9,780	86,197	512,500	465,909	465,909		75	45,251		78,522	165,150	78,522
	メーター設置率（%）		25			100	100	100	80	82	82		25	74		11.9		11.9
	年間メーター交換/修理件数		180,000	761	469		20,243	10,310	20,000	14,400	14,400		100	0		5,177		5,177
	料金決定権者		Sunass	Ministry of Industry and Handicraft		Portable water department	PDAM Kota Malang	President	Normally, EDWS need to make the new water tariff rate proposal and confirm this from regional government to central government step by step.	Regional government to central government	Regional government to central government			Top Management of AUWSSC and Afghanistan Government Cabinet		Baghdad Water Authority		BWA
	1㎥あたり平均製造コスト（USD）							0.27										
	1㎥あたり平均料金（USD）							0.35	0.067									
	現料金表の施行年		2016	2018				2016						2012		2009		2009
	料金計算システム名		428 sectors		Ms. Excel & Access		IWA Rate							MS Access		DOS		DOS
	料金算定（逓増/逓減）		Progressive		Progressive	Progressive	Progressive	Progressive	Digressive	Digressive	Digressive	Digressive	Digressive	Progressive		Progressive		Progressive
	メーター検針頻度（日）		30	60	Every 1 day	every day	30	30	30	30	15	every day	30	60		120	Reading based on Area	120
	請求周期（月）		1	2	1	1	1	1	3.5	1	10日			2		4	2	4

統計年度			2017	2019	2017	2016	2016	2019	2019	2018	2016	2019	2017	2017	2019	2017	2017	2016
国名			PERU	CAMBODIA	CAMBODIA	CAMBODIA	INDONESIA	LAOS	MYANMAR	MYANMAR	MYANMAR	TIMOR-LESTE	AFGHANISTAN	AFGHANISTAN	YEMEN	IRAQ	IRAQ	IRAQ
水道料金	料金徴収方法		Manual reading	Using handheld equipment to produce the billing			Custommer service, bank transfer	Payment of water at the head office, Paying water at the Branch office, Water for bank and telephone, Water payment for water supply company.	•Firstly meter reader read the meter consumption on ground. •Send these data to main office to calculate the water char ges according to meter readings and print out the billing sheets •Meter readers distribute these sheets to customers and these customer can bill directly to these meter readers at the same time. •On the other hand, the customer can visit to the related township offices and On the other hand, the customer can visit to the related township offices and billbill.. •After collecting these water charges, the township officers need to transfer the billed money to the bank and register	manually	・ Distribute the water bill to the customers. ・ Customer's need to bill at township office.		Collection method of water bill dose people that they used form water supply network they submitted his bill every month	Bank account		Direct Payment	Manually by collectors	
	料金徴収率（%）								65									
	家庭用水消費量平均（㎥／月）		30	43.5		193,650	16.5	3,434,796	9,545,454		20	20,218	21.6	15		68,234,322		682,343,200
	家庭用料金平均（USD／月）		20			72,618.75	4.08	824,242	0.058		1.5		64	5.6		638,000		638,000
	家庭支出に占める水道料金比率（%）		1.5			30	3.23		4		71					1		1
	水道料金における下水道料金比率（%）		42		None	6.66		0.23 USD/ Bill	No bill for sewerage service	None	0			No Sewerage Service in AUWSSC level yet		100		100
水道関連法、規制	①	水道関連法または規制名	Sanitation services law				Local regulation No.11 Tahun 1974	Law water supply	The essential Supplies and Service Act,1947	The essential Supplies and Service Act	YCDC Law	Article, 21	Legal framework	Company constitution, Human resource procedure, procurement procedure, financial procedures and law		Act 16		Act 16
		制定年	2000				1974	2009	1947	1947	2013	2004	2009	2005		1995		1995
		目的／説明	It includes the reaular orovision of ootable water sanitary and pluvial sewage and sanitary disposal of excreta, both in urban and rural areas				right to autonomy in the management of drinking water	The Water Law sets out the principles and measures on organization, movement, promotion, management and inspection of water treatment and business activities in order to promote production and supply of water to consumers in urban and rural areas.	Provisions for regulation water supply and environmental sanitation in rural areas, to "maintain serv ice essential to the life of the community, if essential	Provisions for regulation water supply and environmental sanitation in rural areas, to "maintain service essential to the life of the community, if essential	To know the duties & responsibilities about water and sanitation agreement between YCDC law and the customers.	Water supply systems operate by community.	Article 2 states that water is owned by the public and the government is responsible for the protection and management the law outlines the responsibilities of a number of government institutions with respect to the management and protection of water resources.	Management overall affairs of water supply. Management of human resource affairs. Management of procurement affairs. Management of financial affairs.		Amanat Baghdad organizational chart		Amanat Baghdad organizational chart.
	②	水道関連法または規制名	Law on the modernization of sanitation services				Local regulation No.2 Tahun 1984		The Yangon Water works Act 1885	The Yangon Water-works Act	YCDC regulation related to water & sanitation	Article, 22				Contracts implementati on regulations		Contracts implementation regulations
		制定年	2016				1984		1885	1885	1999	2004				Periodically		2014
		目的／説明	Aims to establish measures aimed at increasinq coveraae and ensuring the quality and sustainability of sanitation services at the national level.				right to autonomy in the management of drinking water		Prohibiting on the pollution of water works in the city o f Yangon	Prohibiting on the pollution of water works in the city of Yangon	To know the duties & responsibilities about water and sanitation agreement between YCDC law and the customers and to understand the penalties for breaking on some agreements.	Water supply systems are operated by the water department				Contracts implementation regulations.		Contracts implementation regulations.
	③	水道関連法または規制名					Regulation of directors No.30		The city of Yangon municipal act, 1922 (The law Amending the city of Yangon Municipal Act,1941)	The city of Yangon municipal Act								
		制定年					2013		1922	1922								
		目的／説明					Position, organizational structures, job descriptions, Function		Provisions relating to environmental sanitation, pollution of air and water and public health	Provisions relating to environmental sanitation, pollution of air and water and public health								

関連法、規制及びマスタープラン	統計年度		2017	2019	2017	2016	2016	2019	2019	2018	2016	2019	2017	2017	2019	2017	2017	2016
	国名		PERU	CAMBODIA	CAMBODIA	CAMBODIA	INDONESIA	LAOS	MYANMAR	MYANMAR	MYANMAR	TIMOR-LESTE	AFGHANISTAN	AFGHANISTAN	YEMEN	IRAQ	IRAQ	IRAQ
	④	水道関連法または規制名					Local regulation No.7 Tahun 2014		The underground water act,1930	The underground water act								
		制定年					2014		1930	1930								
		目的／説明					Master Plan water supply System Malang City		Prohibitions on accessing and using underground water without license	Prohibitions on accessing and using underground water without license								
	⑤	水道関連法または規制名					Local regulation No.96 Tahun 2015		The city Yangon development law, 1990 (Amended in 1995 and 1996)	The city Yangon development law								
		制定年					2015		1990	1990								
		目的／説明					Business Plan 2015 – 2019		Provisions relating to environmental sanitation pollution of air and water, and public health	Provisions relating to environmental sanitation , pollution of air and water, and public health								
	⑥	水道関連法または規制名							The development committee law,1993	The development committee law								
		制定年							1993	1993								
		目的／説明							Provisions relating to environmental sanitation, pollution and water, and public health	Provisions relating to environmental sanitation, pollution and water, and public health								
	⑦	水道関連法または規制名							The Mandalay City Development law,1992	The Mandalay City Development law								
		制定年							1992	1992								
		目的／説明							Provisions relating to environmental sanitation, pollution of air and water, and public health	Provisions relating to environmental sanitation , pollution of air andwater, and public health								
	⑧	水道関連法または規制名							Yangon City Development Law, 2013 (Amended in 2014)	Yangon City Development Law								
		制定年							2013	2013								
		目的／説明							Provisions relating to environmental sanitation, pollution of air and water, and public health	Provisions relating to environmental sanitation , pollution of air and water, and public health								
水道分野における国家開発目標	①	計画名	National Sanitation Plan (NSP)	Bakheng Water Production Facilities			PP 11 Tahun 1974	Water Service			Water Safety Plan	・Infrastructure water system ・The water rate system ・Water supply system		Change of old ACP and PVC pips for 30km length.			Sector water development plan	
		目標年	2021	2020-2022			1974	2016-2020			Under discussion	To provide quality water for community		2017-2018			2030	
		概要	Financing of the sector the search for environmental and sustainability benefits, through an increase in the efficiency of the water and sanitation system.	Volum1: Master plan report Volum2: Water demand Volum3: Water Resources Volum4: Production optimization Volum5: Hydraulic Modeling Volum6: Water tariff Volum7: Financial Study			About Irigation	In order to respond to the Sustainable Development Goals (SDGs) of the United Nations and Party-Government, the planned development of economic society, the 8th FIVE-YEAR NATIONAL SOCIO-ECONOMIC DEVELOPMENT PLAN (2016-2020). The Vientiane capital water supply state enterprise must work harder to increase the water service up to 80-85% by 2017 and 90-95% by 2020. strove to reduce water loss (NRW) must be 18-20%.			Contents	With the construction of water supply system, the community can be live with prosperity and be safe from disease		・To find the location of old pipes. ・ Coordination with other sectorial offices ・ To start changing procedures.			Water masterplan for Erbil and Duhok	
	②	計画名					Permen PU 18 Tahun 2007							To extend the 17.5km length of Herat Water Supply Network in sarbanha & khaja kozagar region.				
		目標年					2007							2018-2019				
		概要					Water Supply System							・To identify the necessities of these two regions. ・Prepared the proposal of mentioned project.				
	③	計画名					Permenkes 492 Tahun 2010							To extend the 15km length of water supply Network across 5 Districts of Herat Province.				
		目標年					2010							2018-2019				
		概要					Standart of Water Quality							・To identify the necessities of these two regions. ・Prepared the proposal of districts projects				
		ドナー名1	JICA PE-P42	AIMF-France	ADB	1-Loan of ADB	World Bank	China	JICA/Japan	-ODA Loan Project by JICA -Grant AID Project by JICA -Grass Root Grant Project (Japan) -Technical Assistant Projec By JICA -Cooperation with Japan Consortium TSS.Mitsui&Tooji -Cooperation with Manila Water and Mitsoubishi Co.ltd -Cooperation with AFD and Egis (France) -Cooperation with Danish Water (Denmark)	Japan		Afghanistan water, agriculture and technology transfer (AWWTT)	KFW		EU	KfW	EU
		年度	2013	2009	2004	2003		2013	2013		2014		2008-2011	2009		2015	2009	2015
		Grant/Loan	JICA PE-P42	Grant	Grant	Loan			Grant		Grant		Grant					
		基金額	¥ 5,078 m	2.15M		3,400,000$USD		88,000,000	Yen 1,900 million		161 ,679 USD		$16,056,296	8,600,000 Euro			1,200,000	

統計年度		2017	2019	2017	2016	2016	2019	2019	2018	2016	2019	2017	2017	2019	2017	2017	2016
国名		PERU	CAMBODIA	CAMBODIA	CAMBODIA	INDONESIA	LAOS	MYANMAR	MYANMAR	MYANMAR	TIMOR-LESTE	AFGHANISTAN	AFGHANISTAN	YEMEN	IRAQ	IRAQ	IRAQ
国際援助（過去10年）	① 概要	Lima North Ⅱ	Supply and Delivery of HDPE and DI Pipes & Fitting Project for Phum Trapaing Achanh & Phum Ondoung	Network Expectation	Provincial Improvement Project of water system		Expansion Dongmakkhay WTP Project (Phase II 100,000 m3/day)	Project for Urgent Improvement of Water Supply System in Yangon		Construction of District Metering Area (DMA) System in Yankin Township		Improve community and farm level management of the supply and demand of irrigation water resource for increase agriculture productivity and food security	1) 3000 m^3 ground reservoir 2) 1000 m^3 elevated reservoir 3) Providing and installation of 3 booster pumps. 4) Extension of 40 km network in variety of sizes.		Water quality Improvement	Development of water sector	Water quality improvement
	ドナー名	JICA (PE-P37)	Marie de Paris	Gret	JICA		Norinco	JICS/Japan		Japan					UNICEF	AUMA	UNECEF
	年度	2010	2007-2010	2009	2007		2016	2014		2014					2013-2015	2007	2013-2015
	Grant/Loan	JICA PE-PE37	Grant	Grant	Grant			Grant		Grant							
	基金額	¥ 9,301 m	0.20M				100,000,000	USD 610,317									
	② 概要	Huachipa Plant and North Branch – Lots 1, 2 and 3	Clean Water for all Project (Household Connection)	Network Expectation	Capacity Building for HRM		Water pipe system extension project of Sandin Water treatment plant and Replacing old pipes for Nampapa Nakhoneluang	NRW Reduction Pilot Project in Mayangone Township (Phase-1)		Pilot project for NRW reduction in Mayangone Township					Lows and Regulations	Specific study on how to develop ministry of municipality administration system	Laws and regulations.
	ドナー名	BID 2645	AFD	AIMS	JICA		JICA	JICS/ Japan		Japan						KOICA	
	年度	2012	2012	2010	2012		2017	2016		2014						2007	
	Grant/Loan	BID 2645	Grant	Grant	Grant			Grant		Grant							
	基金額	Us$ 100 m	0.30M				93,574,851	Yen 2.106 billion		1900 Million Yen							
	③ 概要	Water for All Program Ⅱ	Extension of Water Supply System to the Greater PP	Network Expectation	Expansion &Replacement Pipe		Extension of Chinaimo waters treatment plant with Capacity 40,000 m3/day	NRW Reduction Project in Mayangone Township (Phase-2)		Reconstruction of old pumping station in Nyaunghnapin Water Treatment Plant Replacement of 42"Ø M.S pipe along Kabaraye Road Construction of DMA pilot project in Yankin Township						Renovation of Erbil WTP with network and preparing mini master plan of Erbil water supply system.	
	ドナー名	CAF 6616	AFD	JICA	JICA			Manaila Water and Mitsubishi Co. Ltd								UNDP-SGI	
	年度	2010	2009-2013	2011	2014			2014								2010	
	Grant/Loan	CAF 6616	Loan	Grant	Grant			Grant									
	基金額	Us$ 77 m	24.00M		18,000,000 $USD			USD 700,000									
	④ 概要	Drinking Water and Sewerage System – Lima – Callao	Niroth Water Supply Project (Phase 1) Raw Intake Station and Raw Water Transmission Mains	Capacity Building	Expansion Network system			NRW Reduct ion Pilot Project in South Okkalapa and Insein Township								Preparing water masterplan for Sulaimania	
	ドナー名	KFW	AFD	Unhabitat				AFD/France									
	年度	2016	2013-2017	2012													
	Grant/Loan	KWF	融資	Grant				Grant									
	基金額	Us$ 50 m	37.50M					Euro 663,000									

統計年度			2017	2019	2017	2016	2016	2019	2019	2018	2016	2019	2017	2017	2019	2017	2017	2016
国名			PERU	CAMBODIA	CAMBODIA	CAMBODIA	INDONESIA	LAOS	MYANMAR	MYANMAR	MYANMAR	TIMOR-LESTE	AFGHANISTAN	AFGHANISTAN	YEMEN	IRAQ	IRAQ	IRAQ
	⑤	概要	Optimization Systems Drinking Water and Sewerage - Huachipa Plant	Niroth Water Supply Project (Phase 2)	Network Expectation				NRW Reduction Pilot Project in Tarmwe, Thingangyun, Tharketa Township by AFD (Phase-1)									
	⑥	ドナー名6		AFD					AFD/France									
		年度																
		Grant/Loan		Loan					ODA Loan									
		基金額							Euro 1.25 million									
		概要		Bakheng Water Production Facility					NRW Reduction Pilot Project in Tarmwe Township by AFD (Phase-2)									
	⑦	ドナー名							Japan									
		年度																
		Grant/Loan							ODA Loan									
		基金額																
		概要							Greater Yangon Water Supply Improvement Project (Phase-1)(MYP-5)									
	⑧	ドナー名							Japan									
		年度																
		Grant/Loan							ODA Loan									
		基金額																
		概要							Greater Yangon Water Supply Improvement Project (Phase-1)(MYP-19)									
主要な制限	1.水分野への政府の明確な政策の欠如	非常に深刻			✓	✓		✓			✓	✓	✓		✓		✓	
		深刻	✓															
		適当		✓			✓		✓	✓				✓		✓		✓
	2.財源の制限	非常に深刻	✓		✓	✓		✓			✓						✓	
		深刻							✓			✓	✓	✓	✓	✓		✓
		適当		✓			✓			✓								
	3.不十分または古い法制度	非常に深刻			✓	✓					✓		✓		✓		✓	
		深刻	✓					✓	✓			✓		✓		✓		✓
		適当		✓			✓			✓								
	4.不適切な行政組織	非常に深刻				✓					✓							
		深刻	✓	✓			✓		✓			✓					✓	
		適当			✓			✓		✓			✓	✓	✓			
	5.水源不足	非常に深刻	✓			✓							✓					
		深刻			✓			✓			✓			✓				
		適当		✓			✓	✓	✓			✓			✓		✓	
	6.水源に関する知識不足	非常に深刻	✓		✓	✓		✓					✓		✓			
		深刻		✓							✓	✓		✓				
		適当					✓		✓								✓	
	7.コスト回収の枠組みの欠如	非常に深刻			✓			✓	✓		✓	✓					✓	
		深刻	✓											✓	✓			
		適当		✓		✓	✓			✓			✓					
	8.訓練された人材不足	非常に深刻					✓					✓	✓		✓			
		深刻		✓	✓				✓		✓			✓				
		適当	✓			✓										✓	✓	✓
	8-(1).訓練された人材不足(専門家)	非常に深刻										✓			✓			
		深刻		✓	✓	✓	✓		✓		✓		✓	✓				
		適当	✓					✓								✓	✓	✓
	8-(2).訓練された人材不足(準専門家)	非常に深刻													✓			
		深刻			✓	✓	✓		✓		✓	✓		✓				
		適当	✓	✓				✓					✓			✓	✓	✓
	9.計画及び設計基準不足	非常に深刻			✓	✓	✓				✓		✓					
		深刻		✓								✓		✓	✓			
		適当			✓				✓	✓						✓	✓	✓
	10.不適当な技術	非常に深刻				✓		✓			✓				✓			
		深刻		✓								✓	✓	✓				
		適当	✓		✓		✓		✓	✓						✓	✓	✓
	11.間欠給水	非常に深刻			✓						✓		✓					
		深刻	✓			✓	✓					✓		✓	✓			
		適当		✓				✓	✓	✓						✓	✓	✓
	12.運転・管理	非常に深刻						✓					✓		✓			
		深刻			✓		✓				✓	✓					✓	
		適当	✓	✓		✓			✓	✓				✓		✓		✓
	13.物流	非常に深刻									✓				✓			
		深刻			✓			✓	✓				✓	✓				
		適当	✓	✓		✓	✓					✓				✓	✓	✓
	14.輸入制限	非常に深刻				✓						✓	✓					
		深刻	✓						✓		✓			✓	✓	✓		✓
		適当		✓	✓		✓	✓									✓	
	15.コミュニティの非関与	非常に深刻				✓			✓		✓							
		深刻			✓		✓	✓					✓					
		適当	✓	✓						✓		✓		✓	✓	✓	✓	✓
	16.健康教育の取組み不足	非常に深刻				✓			✓		✓							
		深刻	✓	✓			✓					✓		✓	✓			
		適当			✓			✓		✓			✓			✓	✓	✓
	17.その他	具体的に																
		非常に深刻																
		深刻																
		適当																
		問題の概要	Water stress	Lack of knowledge of water distribution design and analysis		HRM limited		・High turbidity in raining season. ・Low raw water level in dry season.	High Non Revenue Water Rate	High NRW Rate	Design Calculation in water treatment processes.	The water supply for the community is not qualified and is always contaminated by bacteria and lime		・Lack of a modern database.	Weak knowledge of the organization procedures	Lack of financial allocations	No Water law and Policy	Lack of financial allocations

統計年度		2017	2019	2017	2016	2016	2019	2019	2018	2016	2019	2017	2017	2019	2017	2017	2016
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技術的／管理的問題	①	適応対策	Drinking water rationing	Improve and gain more knowledge related to the design and analysis especially new experience from the other country		Training and Development HRM		・Use more amount of chemical ・Floating water intake pump is operated for supplementing lack of water when water level of ・Mekong River decreases during dry season	・Establishment of NRW Management team ・Countermeasure model for physical loss and commercial loss reduction and capacity development ・T.oT training for countermeasure on NRW Reduction ・Construction of training yards for NRW Reduction ・Construction of DMA Pilot projects by owned budget	Replaced with New Water Meter, Installation meter for illegal connection and implementing DMA zoned water supply network system in selected area	Supported by Consultant Companies from Japan.	The need to overcome the problem of water that is contaminated by bacteria and lime		・Using home based Access DBMS.	Building capacities and give opportunity to middle-aged people	Looking for funding from international organizations.	A draft of water law and policy	Looking for funding from international organizations.
	②	問題の概要	Lack of volume of regulation of the water system	Insufficiency of Hydraulic modeling of water network		Full capacity treatment Plant		Water Quality	Water quality improvement	Inadequate water Supply amount	Operation & Maintenance in water treatment plant.			・Lack of modern building	Uncovered maintenance operations			
		適応対策	Requirement in buildings with greater volume of reserve water.	Study more about Hydraulic modeling for both theory and practice with the real situation		Establish long – term planning		We have water Sampling on outside 110 Point for water quality control	・Human resource development ・Facility improvement ・Financial outsources	Implementing new water treatment plant projects (Lagunbyin WTP and Kokkowa WTP)	Suggestion & Cooperation with JICA technical Assistant team.			・Using different building for staff.	Rise the budget of maintenance and acting of preventive maintenance procedures			
	③	問題の概要	Obsolescence of water networks	Inadequate data of water network sharing between each department		Lack of Water resource		NRW reduction			Design Consideration for pipe line network installation.			・Leakage of elevated reservoir for network balance.				
		適応対策	Rehabilitation of water networks	Collaboration with other department		Request the Government look for the new one.		・Water Supply area Zone ・Water Leakage repairing in time ・Underground water leakage detection ・Aging water meters replacement			Started to use GIS and pipe line network simulation software.			・Communication with AUWSSC for rehabilitations.				
	④	問題の概要				Leakages		Mapping System and Water Asset Management			Funding for improvement of drinking water quality.							
		適応対策				Replace old pipe.		Pipeline data management by ArcGIS Program			Cooperating with JICA Technical Assistant team.							
	⑤	問題の概要						Water shortage										
		適応対策						Expansion of Water treatment plant and pipeline network										
	⑥	問題の概要						Customer Service level improvement										
		適応対策						By training, OJT, advertising										
		課題の概要	Unaccounted for water	Ineffective water network data management		HRM limited	Raw water problem	Unstable water supply	Upgrading of the existing distribution networks	Institutional Management	Large amount of non-revenue water (60%)			Lack of modern and developed DBMS		Pumps technical problems	No Water law and policy	NRW (25%)

統計年度			2017	2019	2017	2016	2016	2019	2019	2018	2016	2019	2017	2017	2019	2017	2017	2016
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優先度の高い要求	①	取組の背景	Capacity building program for the reduction of unaccounted-for water.	Using Geographic Information to control for all water network		JICA Support (Capacity Building Phase 2 & 3)	Lack of raw water management	Pumps using	To manage the water supply system effectively and support the good water supply services to the customers	Lack of Law and Regulation and standard Guide Line for Water Work	mainly to find the physical loss and try to repair the pipe leakage in visible problems.			Using different home base Access DBMS		Lack of spare parts	A draft copy of water law and policy are available now	・Repairing Brocken pipes. ・Installing water meters.
		現在の状況等	Reduction from 31% to 27% of unaccounted water	80% of water network data managed by system		Qualified staff and skilled		・Improve pipeline network ・Replacement old pipes	・Un adequate wate supply with low pressure. ・Intermittent water supply to service area	Preparing to legislate Law ,Regulation and Standard Guide Line for water work	Try to solve on both physical & commercial losses to reduce the non-revenue water.			The same as before		We continue to repair the old type pumps	Working to get approval	・We continue to repair Brocken pipes. ・We completed installing water meter for about
	②	課題の概要	Surface or underground water sources	Ineffective hydraulic modeling for water network design and analysis		Full capacity treatment Plant	Water leakage control	Pump	High NRW Rate	NRW Management	Insufficient water supply networks to cover the whole Yangon City areas.			Lack of modern managerial building			Log routine to get approval on specified budget	
		取組の背景	Schemes with conjunctive use of surface and groundwater	Design and analysis by running hydraulic modeling for one area		Under Consruction Project Expansion Network system	High persentage of water leakage control	Pumps are often broken which cause water supply stopping	To reduce the non revenue water and supply water more to the customers	High NRW Ratio	Additional (or) extended water supplied distribution networks throughout the city areas.			Using different small building to settle and arrange Herat water supply staff.			Working to reduce routines	
		現在の状況等	Districts of the north of Lima have conjunctive use of underground and superficial source.	Completed 80% for one area of water network design and analysis		Enough Capacity		OJT, O&M Manual development	Cooperation with international development agencies s uch as JICA, AFD, Manila water, Formulating of NRW Reduction pilot areas	Implementing NRW reducing projects	Continue to construct the transmission maln pipe line and also the distribution pipe line.			A little change well be come on office situations.			A consultant company working on this issue	
現在または今後解決すべき課題		課題の概要	Sectorization of drinking water networks	Inadequate data of water network sharing between each department		Leakages		NRW reduction	Un-appropriate situation on water quality management	Water Quality Management	Unsatisfactory to water quality management			Leakage cased to elevated reservoir in Herat Water Supply Network.				
		取組の背景	Distribution of drinkinq water through primary networks.	Try to collect all the data of water network into the system		Investigation and maintance the pipeline		Water leakage repairing in time	To improve the supplied water quality to be sure in safe and clean drinking water	The supplied water quality is only portable (not drinkable water)	Just to control the water quality management by using portable water quality test kits only in water treatment plant.			To survey the amount of danger and keep the authorities posted the risky situation of this reservoir.				

統計年度		2017	2019	2017	2016	2016	2019	2019	2018	2016	2019	2017	2017	2019	2017	2017	2016
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③	現在の状況等	The city of Lima has 55% of controlled sectors	70% of Completion for hydraulic modeling		Reduce Water loss from 37% 2014 to 11% in 2014		・Water supply area zoning ・Water leakage repairing in time ・Underground water leakage detection ・Aging water meters replacement	Cooperation with JICA TA Team to develop human resource and facility improvement	Trying to introduce disinfection system in water treatment process and distribution network	Initiation the departmental laboratory to monitor the water quality not only for WTP but also for water distribution network.			Intensifying and duplicating the efforts to solve the problem.				
④	課題の概要	Renewal of water and sewage networks with antisismic material					Mapping System and Water Asset Management	Weakness of practice in PPP		Inadequate amount of water suppiied amount to the City dwellers.							
	取組の背景	Through contracts of preventive maintenance in order to renew networks and extend the useful life and reduce losses of drinking water.					Previously used AutoCAD to make water supply map	To be sure for workability and reduce the burdens on the government staffs		Controlling the supplied water allocation from the existing water resources (reservoirs and tube wells)							
	現在の状況等	Preventive contracts to renew an approximate 50km per year.					Presently use ArcGIS program in data management	To encourage the upper ranked officials to initiate the PPP practices		construction of new water treatment plant and formulation of new water resources such as river water.							
⑤	課題の概要						O&M on water supply equipment	Un-appropriate water treatment process									
	取組の背景						Yearly water valve checking	To be sure for water quality improvement									
	現在の状況等						Make plan on replacement and O&M after valve checking	To revise the existing water treatment process and initiate the upgrade treatment processes such as direct filtration method									
⑥	課題の概要																
	取組の背景	x (5.7 m^3/s)															
	現在の状況等																