

Global Water Works Statistics Table		<A> General Information													
		1. Number of Water Utilities				2. Organization Types of Water Utilities				3. Regulations					
Country	Date of Data	Bulk Water Supply	Water Supply	Central Government	Local Government	Public Corporation	Private Company	Approval of License to Supply Water	Water Quality Standards	System of Water Supply	Operation of Water Supply	Water Resource Development	River Control (Water Rights)	Sewerage System	
India	2011	N/A	3,894		36	3,894	25+	State Govt and CPHEO	State Govt and CPHEO	Local Urban Government and State water Supply Dept.	Local Urban Government and State water Supply Dept.	Ministry of Jal Shakti	Ministry of Jal Shakti	CPHEO, Ministry of Jal Shakti and Pollution control board.	
Japan	2017	92	1,347		1,328	102	9	Ministry of Health Labour & Welfare	Ministry of Health Labour & Welfare	Ministry of Health Labour & Welfare	Ministry of Health Labour & Welfare	Ministry of Land Infrastructure and Transport	Ministry of Land Infrastructure and Transport	Ministry of Land Infrastructure and Transport	
Malaysia	2017	5	18	1		17		National Water Services Commission	Ministry of Health	National Water Services Commission	National Water Services Commission	Provincial Government	Provincial Government	National Water Services Commission	
South Korea	2017	1	161	N/A	161	2	N/A	Ministry of Environment	Ministry of Environment	Ministry of Environment	Ministry of Environment	Ministry of Environment	Ministry of Land, Infrastructure and Transport	Ministry of Environment	
Taiwan	2018		4		3	1		Ministry of Economic Affairs	Environmental Protection Agency	Ministry of Economic Affairs & Local Government	Ministry of Economic Affairs & Local Government	Water Resource Agency	Water Resource Agency	Ministry of Interior	
Thailand (MWA)	2017			1				N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Thailand (PWA)	2017	N/A	234	61	133	N/A	N/A	Ministry of Natural Resources and Environment	Ministry of Public Health	Ministry of Natural Resources and Environment	Ministry of Natural Resources and Environment	Ministry of Natural Resources and Environment	Ministry of Natural Resources and Environment	Ministry of Interior	
USA	2014-2017	N/A	155,000		1		0	Department of Public Health for each state or Local Primacy Agencies	USEPA and local governments	Department of Public Health for each state or Local Primacy Agencies	Public and private owners of water systems	State specific Department of Environmental Conservation	State and Local Government	Federal and State Environ	
Philippines	2013-2015	N/A	5,421					Local Water Utilities Administration & National Water Resources Board	Department of Health	Local Water Utilities Administration & National Water Resources Board	Local Water Utilities Administration & National Water Resources Board	National Water Resources Board	Department of Public Works & Highways	Department of Environment and Natural Resources (effluent standards)	

Global Water Works Statistics Table		4. Status of Water Supply										5. Challenges
Country	Date of Data	Water Environment	Financial Management	Water Tariff	Total Population [Capita]	Water Supply Population [Capita]	Coverage Ratio [%]	Annual Water Supply Volume [thousand m ³ /year]	Number of Service Connections [thousand]	Daily Maximum Water Supply Volume [thousand m ³ /day]	Water Consumption volume per capita per day (including industrial use) [L/capita/d]	Challenges faced *Double click the cell to see full list
India	2011	CPHEO and Ministry and Water and Sanitation and Pollution Control Boards	CPHEEO, Ministry of Jal Shakti and Pollution control board	Central and state water supply department	1,324,171,354	1,165,270,791	88.0%	3,821,335	N/A	10,394.43	130	1) Continuous and Adequate Water Supply for all. High NRW and water losses due to leakages. 2) Quality of water 3) Surface water and ground sources polluted. Efficient O & M. 4) Ageing infrastructure, increasing urbanization, industrialization and population. 5) Financial deterioration, frequent natural disasters: famine and floods.
Japan	2017	Ministry of Environment	Ministry of Internal Affairs and Communication	Council of each Local Government	126,720,532	124,166,682	98.0%	15,131,553	56,634	46,432	341	1) Financial Deterioration The most of water utilities face to the problem of Financial Deterioration because of Revenue Reduction by Population declining and Decrease of Water Consumption per Capita. In addition, Grants from Central Government are also decreasing. 2) Aging Facilities & Aging Pipelines Ratio of aging facilities and aging pipelines are increasing because of the financial deterioration. 3) Earthquake Resistance Large scale earthquakes occur frequently in Japan. However, ratio of the earthquake-resistant pipelines is only 39.3%. 4) Decrease in Highly Skilled Workforce The most of water utilities face to the problem of transferring technique and knowledge because of retirement of highly skilled workforce. In addition, the numbers of staffs in each utility are decreasing because of financial deterioration of municipal government. 5) Vulnerability of Small Scale Water Utilities 70% of Japanese water utilities are small scale (Towns or villages). Such small scale utilities are vulnerable to the financial base and the staff skills.
Malaysia	2017	Department of Environment	National Water Services Commission	National Water Services Commission	31,633,500	30,209,992	95.5%	6,035,640	7,773	16,536	209	1) High Non Revenue Water at 36% national average is a concern and need more concerted effort to provide budget and technical solutions to address the problem beginning with meter changeout, pipe replacement and a dedicated NRW and Leakage control setup in each water perator to focus and follow up. 2) Overall aging nfrastucture and system that needs urgent attention and proper asset management using the advances of digital age 3) Deteriorating water quality due to uncoordinated and ineffective water resources control and planning and catchment protection / reserve etc.including pollution from nonpoint sources due to development upstream of intakes.
South Korea	2017	Ministry of Environment	Ministry of Environment, Ministry of the interior and safety	Ministry of the interior and safety, Council of each local Government	52,950,306	52,468,173	99.1%	6,492,413	8,229	21,286	289.2	1) Turbid tap water (Local government) Turbid tap water had supplied at some major cities because of outdated pipeline and mistakes of engineers. 2) Organization separation (KWWA) Certification department of KWWA will be separated to independent organization on this December.
Taiwan	2018	Environmental Protection Agency and Water Resource Agency	Ministry of Economic Affairs & Local Government	Ministry of Economic Affairs & Local Government	23,626,501	22,201,174	94.0%	3,108,801	8,843	12,272	348	1) Climate change Typhoon happen frequently and bring the heavy torrential rain. 2) Aging facilities and aging pipeline Because the financial deterioration and the excavation control of the road authority 3) Earthquake resistance Because aging facilities and aging pipeline High turbidity of raw water
Thailand (MWA)	2017	N/A	N/A	N/A	8,223,000	8,206,000	99.8%	2,063,830	2,328	6	329.78	1) MWA has a high level of water leakage caused by the aging pipeline networks. Therefore, MWA has policy to reduce water loss to 19% by 2021. 2) MWA use the conventional treatment system which is not suitable for the current deteriorated raw water. Therefore, MWA has to adapt the new advanced technology in the treatment process. 3) MWA should provide the reserved system to ensure that MWA can serve the potable water when faced severe situation.
Thailand (PWA)	2017	N/A	Ministry of Finance	N/A	57,966,000	17,144,000	29.6%	1,838,000	4,286	5,289	850	1) Convince Local Administrative who run their own waterworks system for the municipal which account for 58% of water meter in the country. * PWA always extends technical assistance to Local Authority to upgrade their water supply system. For the transferring of Local Atuthority water supply system to PWA, PWA will consider the possibility of investment cost. The transferred water supply system of Local Authority must not be burden of PWA in term of financial aspect. 2) Expand corporate member as this would also mean to get more involvement from private sector as to date we have very few corporate member. *At preseten there are 12 private sector participation projects (PPP) in the near future. If water supply is urgently needed in some area and PWA could not serve it, PWA will buy treated water from private sector for a short period to solve the problem. 3) Recruiting members from AEC- 10 countries member. *PWA recruitment regulation does not serve for foreigner recruitment.
USA	2014-2017	USEPA	State public utilities commissions	Public Utility Commission for each state	325,000,000	283,000,000	87.1%	445,113,000	80,857	1,218,902	4335.6	1) Renewal and Replacement of aging water and wastewater infrastructure. 2) Financing for Capital improvements. 3) Public understanding of the value of water systems and services.
Philippines	2013-2015	Department of Environment and Natural Resources (raw water standards)	Local Water Utilities Administration & National Water Resources Board	Local Water Utilities Administration & National Water Resources Board	100,699,000	N/A	85.5%	N/A	N/A	N/A	98	1) Water supply has not kept pace with growing population in the last few decades. 2) Many water utilities face financial difficulties because tariffs are too low to recover costs and systems are too small to work efficiently. 3) Persistent problems include: (i) institutional fragmentation, (ii) weak sector planning and monitoring due to lack of sector information, (iii) poor performance of many water utilities, (iv) low private and public sector investment and limited access for service expansion, and (v) inadequate support for poor urban communities and rural water supply. (Source: ADB – Philippines Water Supply and Sanitation Sector Assessment, Strategy, and Road Map, January 2013)

Global Water Works Statistics Table		 Water Supply System																							
		1. Water Resources														2. Water Treatment Process									
Country	Date of Data	Surface Water (Natural Flow)[m³/yr]	Surface Water (Natural Flow)[%]	Surface Water (Dam)[m³/yr]	Surface Water (Dam)[%]	Surface Water (Lake Water)[m³/yr]	Surface Water (Lake Water)[%]	Surface Water (Total)[m³/yr]	Surface Water (Total)[%]	Ground Water [m³/yr]	Ground Water [%]	Others [m³/yr]	Others [%]	Grand Total [m³/yr]	Grand Total [%]	Disinfection Only [thousand m³/yr]	Disinfection Only [%]	Slow Sand Filtration [thousand m³/yr]	Slow Sand Filtration [%]	Rapid Sand Filtration [thousand m³/yr]	Rapid Sand Filtration [%]	Membrane Filtration [thousand m³/yr]	Membrane Filtration [%]	Grand Total [thousand m³/yr]	Grand Total [%]
India	2011	N/A	78.0%	N/A	N/A	N/A	N/A	N/A	78%	N/A	21%	N/A	0.5%	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%
Japan	2017	3,899,575	25.2%	7,384,784	47.7%	220,449	1.4%	11,504,808	74%	3,526,432	23%	444,398	2.9%	15,475,638	100%	2,581,684	17.0%	486,980	3.2%	11,723,177	77.3%	368,139	2.4%	15,159,980	100%
Malaysia	2017	14,431	81.3%	3,065	17.3%			17,496	99%	254	1.4%			17,750	100%					6,035,640	97.0%			6,035,640	100%
South Korea	2017	3,116,908	46.6%	3,358,631	50.2%	66,426	1.0%	6,541,965	98%	150,021	2.2%			6,691,986	100%	113,113	1.1%	193,289	1.9%	9,670,718	96.2%	76,821	0.8%	10,053,941	100%
Taiwan	2018	1,748,503	42.7%	1,902,680	46.5%			3,651,183	89%	424,193	10%	15,773	0.4%	4,091,149	100%	5,292	0.1%	8,021	0.2%	3,858,968	99.5%	7,495	0.2%	3,879,776	100%
Thailand (MWA)	2017	2,063,830	100.0%					2,063,830	100%					2,063,830	100%					6,320,000	100.0%			6,320,000	100%
Thailand (PWA)	2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A few	N/A	N/A	N/A	Most	N/A	2	Invalid	Invalid	Invalid
USA	2014-2017	N/A	N/A	N/A	N/A	N/A	N/A	327,978,000	74%	117,011,700	26%	123,300	0.03%	445,113,000	100%	N/A	98.0%	N/A	N/A	N/A	N/A	29,000,000	N/A	N/A	100%
Philippines	2013-2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Global Water Works Statistics Table		Water Intake Pipe																Transmission Main																			
Country	Date of Data	DIP (Ductile Iron Pipe) [km]	DIP (Ductile Iron Pipe) [%]	SP (Steel Pipe) [km]	SP (Steel) [%]	PVC (Poly Vinyl Chloride pipe) [km]	PVC (Poly Vinyl Chloride pipe) [%]	PE (Poly Ethylene pipe) [km]	PE (Poly Ethylene pipe) [%]	SUS (Stainless Steel pipe) [km]	SUS (Stainless Steel pipe) [%]	Concrete Pipe [km]	Concrete Pipe [%]	Others [km]	Others [%]	Total [km]	Total [%]	DIP (Ductile Iron Pipe) [km]	DIP (Ductile Iron Pipe) [%]	SP (Steel Pipe) [km]	SP (Steel) [%]	PVC (Poly Vinyl Chloride pipe) [km]	PVC (Poly Vinyl Chloride pipe) [%]	PE (Poly Ethylene pipe) [km]	PE (Poly Ethylene pipe) [%]	SUS (Stainless Steel pipe) [km]	SUS (Stainless Steel pipe) [%]	Concrete Pipe [km]	Concrete Pipe [%]	Others [km]	Others [%]	Total [km]	Total [%]				
India	2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	2017	7,032.8	53.5%	1,474.0	11.2%	2,031.7	15.5%	828.4	6.3%	22.9	0.2%	N/A	N/A	1,748.6	13%	13,138.4	100.0%	26022.9	70.2%	4499.3	12.1%	2497.8	6.7%	1778.6	4.8%	81.4	0.2%	N/A	N/A	2,176.4	6%	37056.4	100%				
Malaysia	2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
South Korea	2017	893.0	28.7%	2,149.0	69.1%	20.0	0.6%	48.0	1.5%	N/A	N/A	N/A	N/A	N/A	N/A	3,110.0	100.0%	6,349	55.6%	4,522	39.6%	313	2.7%	226	2.0%	N/A	N/A	N/A	N/A	N/A	N/A	11410.0	100%				
Taiwan	2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	278	29.7%	365	39.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	292.0	31%	N/A	N/A	935.0	100%		
Thailand (MWA)	2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	190.92	100.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	190.9	100%			
Thailand (PWA)	2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
USA	2014-2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Philippines	2013-2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Global Water Works Statistics Table		Grand Total: Length and Proportion by Materials																Revenue Water		4. Analysis of Water Supply Volume Non-Revenue Water						Total: System Input Volume	
Country	Date of Data	DIP (Ductile Iron Pipe) [km]	DIP (Ductile Iron Pipe) [%]	SP (Steel Pipe) [km]	SP (Steel) [%]	PVC (Poly Vinyl Chloride pipe) [km]	PVC (Poly Vinyl Chloride pipe) [%]	PE (Poly Ethylene pipe) [km]	PE (Poly Ethylene pipe) [%]	SUS (Stainless Steel pipe) [km]	SUS (Stainless Steel pipe) [%]	Concrete Pipe [km]	Concrete Pipe [%]	Others [km]	Others [%]	Total [km]	Total [%]	Revenue Water [m³/year]	Revenue Water [%]	Unbilled Authorized Consumption [m³/year]	Unbilled Authorized Consumption [%]	Non Physical Loss [m³/year]	Non Physical Loss [%]	Physical Loss [m³/year]	Physical Loss [%]		
India	2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	2017	390,118.7	54.8%	18,707.9	2.6%	229,878.8	32.3%	45,810.8	6.4%	986.6	0.1%			26,786.0	4%	712,288.8	100%	13,232,529,000	90%	Included in NPL	Included in NPL	367,814,000	3%	1,109,545,000	8%	14,709,888,000	
Malaysia	2017	11,926.0	8.1%	43,128.0	29.3%	21,517.0	14.6%	28,025.0	19.0%			42,643.0	29%			147,239.0	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
South Korea	2017	64,178.0	29.1%	21,552.0	9.8%	69,588.0	31.6%	40,320.0	18.3%	24,861.0	11.3%					220,499.0	100%	5,799,681,446	86%	270,810,298	4.0%	10,272,256	0.2%	682,459,893	10%	6,763,223,893	
Taiwan	2018	29,360.0	44.2%	897.0	1.4%	30,474.0	45.9%	139.0	0.2%			971.0	1%	4,560.0	7%	66,401.0	100%	2,992,934,698	77%	220,238	0%	306,961,156	8%	573,112,234	15%	3,873,228,326	
Thailand (MWA)	2017	29,418.9	78.8%	2,303.4	6.2%	271.2	0.7%	1,739.1	4.7%			3,339.1	9%	267.5	1%	37,339.3	100%	1,380,599,005	67%	27,958,252	1%	68,948,746	3%	586,324,983	28%	2,063,830,986	
Thailand (PWA)	2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
USA	2014-2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,609,340.0	100%	N/A	N/A	56,781,150	Invalid	N/A	N/A	6,435,197,000	N/A	Invalid	
Philippines	2013-2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Global Water Works Statistics Table		<C> Financial Management																			<D> Note	
Country	Date of Data	1. Water Tariff		2. Composition of Supply Cost									3. Calculation Method to Decide Water		4. Tariff Structure (Tariff Table)			5. Affordability (Water Tariff 1household/1month)			Data Collected by	To be noted (E.g. Data references)
		Average Unit Cost per Volume [Currency/m ³]	Average Unit Tariff per Volume [Currency/m ³]	Depreciation Expenses [%]	Cost of Receiving Bulk Water [%]	Personnel Expenses [%]	Outsourcing Expenses [%]	Repair Costs [%]	Interest Expenses [%]	Power Cost [%]	Chemical Cost [%]	Others [%]	Full Cost Recovery Method [%]	Cash Flow Balance Method [%]	Classified by Meter Size [%]	Classified by Customer's Use [%]	Other Classification [%]	Monthly Consumption Expenditure [Local currency]	Monthly Water Tariff [Local currency]	Affordability [%]		
India	2011	N/A	INR 4.90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Provided by IWWA at network meeting 2019	
Japan	2017	JPY 166.41	JPY 173.33	34.3%	15.9%	11.7%	9.0%	8.7%	5.1%	3.7%	0.7%	11.9%	86.2%	13.8%	57.7%	31.5%	10.8%	JPY 286,493	JPY 1,938.00	0.7%	Provided by JWWA at network meeting 2019	Data are from 2017.4-2018.3 Data Reference: Water Statistics published by JWWA
Malaysia	2017	MYR 0.42	MYR 0.60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20.0%	80.0%		100.0%		N/A	N/A	N/A	Provided by MWA at network meeting 2019	
South Korea	2017	KRW 898	KRW 723.3		33.2%	19.0%	N/A	11.9%		7.4%	1.1%	27.4%	100.0%		15.0%	85.0%		KRW 3,361,396	KRW 23,366	0.7%	Provided by KWWA at network meeting 2019	
Taiwan	2018	NTD 10.80	NTD 10.99	33.3%	6.0%	33.2%	N/A	9.5%	6.7%	5.1%	1.9%	4.3%	100.0%		15.7%	51.4%	32.9%	NTD 85,320	NTD 242	0.3%	Provided by CTWWA at network meeting 2019	
Thailand (MWA)	2017	THB 8.23	THB 12.12	39.2%	2.4%	23.9%	N/A		0.4%	11.5%	2.5%	20.2%	N/A	N/A		100.0%		THB 31,000	THB 316	1.0%	Provided by TWWA at network meeting 2018	Data of Metropolitan Waterworks Authority
Thailand (PWA)	2017	THB 16.30	THB 19.64	18.5%	25.2%	16.4%	N/A	4.2%	6.9%	7.5%	21.2%		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Provided by TWWA at network meeting 2018	Data of Provincial Waterworks Authority
USA	2014-2017	USD 1.06	USD 1.25	12.0%	10-43%	18-29%	24.0%	7.0%	22.0%	25-30%	20.0%		N/A	N/A	33.0%	29.3%	1.7%	USD 4,776	USD 65.54	1.4%	Provided by AWWA at network meeting 2019	Data Reference: Read notes attached to each data
Philippines	2013-2015	PHP 16.45	PHP 26.52	19.4%	2.2%	20.0%	N/A	3.8%	30.5%	9.8%	1.3%	12.9%	N/A	N/A			100.0%	USD 17,917	USD 455.97	2.5%	Provided by PWWA at network meeting 2019	Data Reference: Read notes attached to each data