



**Pacific Water and Wastewater Association**

**PWWA Benchmarking report:  
Post-COVID recovery and new frontiers**

**August 2023**

## Message from CEO

While the South Pacific Region surfaces from the worst health crisis of modern times, the regional economy faces a new array of challenges: from the ongoing conflict in Ukraine to bottlenecks in global supply chains; there are also other risks that threaten to disrupt the structure and speed of the post-pandemic recovery. The most obvious indicator of such risks is the significant increase in costs for the operation of the water sector players, specifically construction costs and energy resources. This sudden and unexpected rise in those costs in all other sectors has in turn produced a tightening of national monetary policies with increased interest rates to manage inflation. This will inevitably cause a decrease in economic activity and potentially impact consumer confidence and will inevitably escalate into the water and sanitation sector.

Contributing to these inflationary pressures is a very limited labour market due to the region's isolation, islands' specifics, and lately labour mobility into more developed economies. The labour shortage can be felt in operation, maintenance, rehabilitation and expansion of water and sanitation facilities and infrastructure. Addressing the strong surge in demand for water and sanitation services in such a short period of time since the economic reopening remains a challenge for every PWWA member. Additionally higher input costs will inevitably impact the cost of services. With some rebound of both population and industrial customers revenues, this increases the demand for quality water and sanitation services. However, with higher interest rates preventing utilities own investments, this could represent an important obstacle for water and sanitation sector recovery and development in closed economies of the Pacific countries and territories as well as their water and sanitation markets.

Supply chain disruption affecting a large range of commodities required for operation of water and sanitation utilities resulted in a rapid rise in the price for energy resources including even solar/diesel systems, additional issues with slow operations and cross-border shipment interruptions have a direct impact on the economic health of every utility, further heightening reliance on the national governments' resources.

Climate change remains an existential threat for all our members. This report will present the greenhouse gas accounts for all utilities submitted data in 2023 and suggest some ways on how to reduce the carbon footprint contributing to the global GHG reduction.

Despite the downside risks, the water industry remains confident that the potential for a recovery to 2019 levels within two or three years is possible assuming a short-lived recession of 2023. There is no doubt that many customers will resume demand for water and sanitation services to pre-COVID 19 levels, that will materialize in the form of increased revenues, improved cost-recovery, and customer satisfaction. At PWWA, we believe that this report will add-on to the sector recovery and success.

Thank you for your support to PWWA and its members.

**Lusia Sefo Leau**

**CEO Pacific Water and Wastewater Association**

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## 1. PWWA Key Facts

<b>WATER January 1, 2023</b>
Number of utilities: 30
Total number of people supplied with drinking water by PWWA utilities: 3.729 million or 97% of total residents living in service responsibility zone.
<b>Water is provided to 584 towns and settlements (235 towns served by SWA, Samoa water service zone)</b>
Total Length of water pipes: 14,531 km (4,235 km are in the WAF-Fiji service areas)
<b>Number of water connections in service areas: 489,200 (189,000 are in WAF-Fiji, and 26 are in To Tatou Vai, Cook Islands)</b>
2,455 professionals employed in PWWA utilities' water services
<b>Non-revenue water is 48%; 197 million m<sup>3</sup> of water a year are not invoiced</b>
Annual turnover of the PWWA water services: US\$365 million (Fiscal Year 2022)

<b>WASTEWATER, January 1, 2023</b>
Number of utilities: 17 in 13 countries and territories
Total number of people connected to wastewater network by the PWWA utilities: 1,150,000 or 47% of total residents living in wastewater service responsibility zone
<b>Wastewater collection services provided to 94 cities and towns (27 towns are served by GWA, Guam wastewater services responsibility zone)</b>
Total length of sewerage pipes: 2,960 km (873 in WAF Fiji service areas)
Number of sewerage connections: 125,000 (33,000 in WAF-Fiji and 125 in SWA Samoa service areas)
800 professionals work in sewerage services (wastewater collection and treatment)
Nearly 99% of collected wastewater is treated (86 million m <sup>3</sup> a year) of which 46% primary (mechanical) treatment and 53% both mechanical and secondary (biological) treatment
Annual turnover of PWWA wastewater services: US\$79 million (Fiscal year 2022)

## PWWA Utilities Groups

There are three distinct groups of PWWA utilities determined by the economic development of their host countries:

**Group 1 (High-income countries utilities)** - consists of five (5) well-established and developed utilities from countries and territories with Atlas GNI per capita of US\$20,000 and above. These are American Samoa Water and Power Authority, ASPA (American Samoa); Calédonienne-des-Eaux (New Caledonia), Guam Waterworks Authority (Guam); Polynésienne-des-Eaux (French Polynesia); and Commonwealth Utilities Corporation (Commonwealth of the Northern Mariana Islands). In 2023, ASPA (American Samoa), GWA (Guam), Calédonienne-des-Eaux (New Caledonia), and Polynésienne-des-Eaux (French Polynesia) provided data for assessment.

*The Commonwealth of the Northern Mariana Islands (Saipan) did not participate in benchmarking work since 2015. Its performance will be presented just for comparison purposes.*

**Group 2 (Middle-income countries utilities)** – consist of fourteen (14) utilities in countries with transitional economies with GNI per capita from US\$3,000 to US\$20,000. These are Water Authority of Fiji (WAF); Central Yap State Public Service Corporation (FSM); Chuuk Public Utilities Corporation (FSM); Department of Transportation and Infrastructure, Kosrae (FSM); Northern Yap Gagil Tomil Authority (FSM); Pohnpei Utilities (FSM); and Southern Yap Water Authority (FSM); Kwajalein Atoll Joint Utility Resources, KAJUR; and Majuro Water and Sewer Company Inc., MWSC, (Marshall Islands); Palau Public Utilities Corporation, PPUC (Palau); Eda Ranu and Water-PNG (Papua New Guinea); Kiribati Public Utilities Board (Kiribati); Samoa Water Authority (Samoa); Solomon Islands Water Authority (Solomon Islands); Tonga Water Board (Tonga); Tuvalu Ministry of Utilities and Industries (Tuvalu); and Unelco Vanuatu Limited (Vanuatu); and Water And Electricity company from Wallis and Futuna. In 2023, Only 15 of the 19 utilities provided IBNET data.

*Specifically smaller companies did not participate in 2020-2022 benchmarking work. Their latest available performance reporting will be used in this report for comparison purposes.*

**Group 3 (Utilities in transitional and development stage)** – consist of eleven (11) utilities operating either in a decentralized environment, where a utility type benchmarking is impossible at this stage, or recently established small utilities These are Independent Water Schemes Association (IWSA), Samoa; Niue Public Works Department (Niue); Vanuatu Department of Water Resources (Vanuatu); Cook Islands Ministry of Infrastructure and Planning (ICI) and To Tatou Vai Co Ltd (both Cook Islands), Nauru Utilities Corporation (Nauru), and Tokelau Division of Environment (Tokelau).

*Both utilities from Cook Islands, Vanuatu Department of Water Resources, Vanuatu, and IWSA utilities submitted their performance data in 2022.*

This year PWWA report updates utilities performance considering the first year of operation when the COVID-19 restrictions were lifted.

## Population in the service and coverage with water services

**Table 1. Population served with water by PWWA countries and territories (2022)**

<u>Country/territory</u>	<u>Number of utilities</u>	<u>Joined benchmarking</u>	<u>Population living in the service area</u>	<u>Population served</u>	<u>Coverage with water services</u>
<u>Papua New Guinea</u>	1 (was 2 until 2020)	2011-2022	1,634,068	1,634,068	100%
<u>Fiji</u>	1	2011-2022	897,935	897,935	100%
<u>New Caledonia</u>	1	2015-2022	215,707	215,812	100%
<u>Samoa</u>	2	2011-2022	238,136	212,733	93%
<u>Guam</u>	1	2011-2015, 2020-2022	153,836	153,836	100%
<u>French Polynesia</u>	1	2015-2022	94,124	94,124	100%
<u>Solomon Islands</u>	1	2011-2022	166,330	120,069	72%
<u>Vanuatu</u>	2	2011-2022	82,174	70,728	86%
<u>Tonga</u>	1	2011-2022	45,124	45,124	100%
<u>Northern Marianas Islands</u>	1	2011-2014	53,900	53,900	100%
<u>American Samoa</u>	1	2011-2022	44,273	44,273	100%
<u>Republic of Kiribati</u>	1	2011-2022	66,906	47,697	71%
<u>Federated States of Micronesia</u>	6	2011-2022	57,456	49,410	86%
<u>Marshall Islands</u>	2	2011-2012	37,791	33,581	89%
<u>Palau</u>	1	2011-2014, 2016-2017, 2022	18,055	18,055	100%
<u>Nauru</u>	1	2012-2021	12,550	12,550	100%
<u>Cook Islands</u>	2	2011-2022	14,898	14,898	100%
<u>Tuvalu</u>	1	2011-2019	10,640	5,200	49%
<u>Wallis and Futuna</u>	1	2018	8,333	5,916	71%
<u>Tokelau</u>	1	2017-2018	3,000	1,499	50%
<u>Niue</u>	1	2011-2018	1,800	1,796	97%
<b>Total utilities</b>	<b>30</b>		<b>3,823,036</b>	<b>3,705,158</b>	<b>97%</b>

All PWWA utilities were able to provide water services through difficult 2019-2021 COVID-19 pandemic period. No utility reduced their coverage during this period, and many of the utilities were able even to increase number of customers during these difficult times. For example, PNG-Water added 216,000 and WAF Fiji added 45,000 residents to its services; smaller utilities, such as PUB Kiribati added almost 6,000 residents or almost 10 percent of its services population of 2018. Many of countries rejected even idea of disconnection for non-payment during that difficult period, showing clear social aspect of water and sanitation.

## Coverage with wastewater collection and treatment services

**Table 2. Population served with wastewater by PWWA countries and territories (2022)**

Country/territory	Number of utilities	Population within the sewerage service area	Population served	Coverage with sewerage services
American Samoa	1	24,000	23,500	98%
Federated States Of Micronesia	4	26,037	16,376	63%
Fiji	1	555,800	168,399	30%
French Polynesia	1	24,500	24,500	100%
Guam	1	153,836	153,836	100%
Marshall Islands	2	37,791	31,831	84%
New Caledonia	1	183,437	128,415	70%
Palau	1	12,074	12,074	100%
Republic Of Kiribati	1	66,906	28,086	42%
Samoa	1	10,300	2,150	21%
Solomon Islands	1	154,166	6,825	4%
Papua New Guinea	1	1,220,003	565,551	46%
Northern Mariana Islands	1	48,000	21,000	44%
Total	17	2,558,622	1,215,598	48%

Sewerage services in other counties and their utilities are provided by municipal authorities. Uncontrolled sewage, however, is a great issue. In addition to unhealthy and even poisonous environment, wet and poorly managed latrines and inadequate wastewater collection and treatment are the key factors of greenhouse gases emissions and carbon footprint for all utilities.

## Water production, consumption, and non-revenue water (2022)

	Production, lpcd	Consumption, lpcd	Residential consumption, lpcd	Non- revenue water, %	Non revenue water m3/km/day
	Group 1				
American Samoa Power and Water Authority, ASPA	1,074	421	230	61%	36.32
SPE, French Polynesia	388	260	155	33%	23.06
GWA, Guam	956	356	233	63%	97.82
Calédonienne des Eaux, New Caledonia	439	339	200	23%	9.30
Commonwealth Utilities, Northern Marianas	851	255	255	70%	50.97
	Group 2				
Chuuk Public Utilities (CPU), Micronesia	169	78	42	54%	19.59
Water Authority of Fiji (WAF)	410	211	154	49%	40.54
Palau Public Utilities Corporation (PPUC), Palau	361	345	200	4%	0.89
Solomon Islands Water Authority (SIWA)	294	117	79	60%	58.17
Tonga Water Board, TWB	348	250	188	28%	15.84
Unelco Vanuatu	254	166	128	35%	24.55
Public Utilities Board, Kiribati	35	5	3	87%	7.72
Samoa Water Authority (SWA)	383	203	160	47%	23.83
Central Yap State Public Service (CYSPS), Micronesia	311	183	116	41%	11.58
Southern Yap Water Authority (SYWA), Micronesia	194	155	155	20%	1.32
National Company Water PNG Group Limited	155	77	22	50%	0.09
Pohnpei Utilities, Micronesia	458	279	200	39%	31.50
Department of Transportation and Infrastructure, Kosrae, Micronesia	10	5	5	50%	1.93
Northern Yap Gagil Tomil Authority (NYGTA), Micronesia	114	95	95	17%	1.54
Majuro, Marshall Islands	48	28	19	42%	4.17
KAJUR, Marshall Islands	54	45	44	17%	465.52
National Company Water PNG Group Limited	155	77	19	50%	94.16
	Group 3				
Infrastructure Cook Islands (ICI)	208	156	156	25%	2.19
To Tatou Vai , Cook Islands	1,468	734	150	50%	33.47
Department of Water, Vanuatu	437	210	210	52%	53.91
IWSA, Samoa	322	235	235	27%	11.00
Central Pacific, Nauru	63	35	35	44%	11.71
EEWF	587	342	342	42%	15.44
Public Works Department, Niue	420	389	200	7%	0.48
Ministry of Utilities and Industries, Tuvalu	no data				
Central Pacific, Nauru	63	100	50	50%	26.47
Weighted Average	350	163	119	49%	0.43

Water consumption is an issue for three utilities of the Association, all in Group 2. Water is in short supply in Kiribati PUB, Kosrae, FSM and in Majuro, Marshall Islands – below 20 liters per capita a day (lpcd), the human consumption amount recommended by the World Health Organization (WHO). Residential consumption in Water PNG is just reached this level, 22 lpcd, a significant drop from 2020, when residential consumption was 30 lpcd.



Eleven PWWA-members reported non-revenue water (NRW) 50% or above level. Reported NRW in PUB Kiribati is 87%. Specifically for this utility, it is important to notice that majority of supplied water is provided for free, specifically for domestic users, and cost of this service is compensated by the National budget authority. Highest physical losses of water in terms of cubic meters per km of the network a day have been reported from KAJUR, Marshall Islands. However there the length of network is only 640 meters.

Apparent increase of non-revenue water is reported for virtually all PWWA utilities since 2019. This reflects two possibilities. First, there was no active maintenance and rehabilitation effort during the COVID-19 shock, and second, the majority of water treatment systems are not flexible for demand, and only a few companies, specifically CDE and PDE have demand-adjusted pumping systems. So, while water was provided for all customers, and no disconnection for non-payment was in place, the demand significantly dropped, especially for non-domestic customers and for many utilities; it was cheaper to provide some excess of water rather than adjust is to demand. The highest increase was reported by PNG water by 11% during 2020-2022. The graphs below present examples from SIWA, Solomon Islands and ASPA, American Samoa.

Fig. 1 NRW in SIWA, Solomon Islands

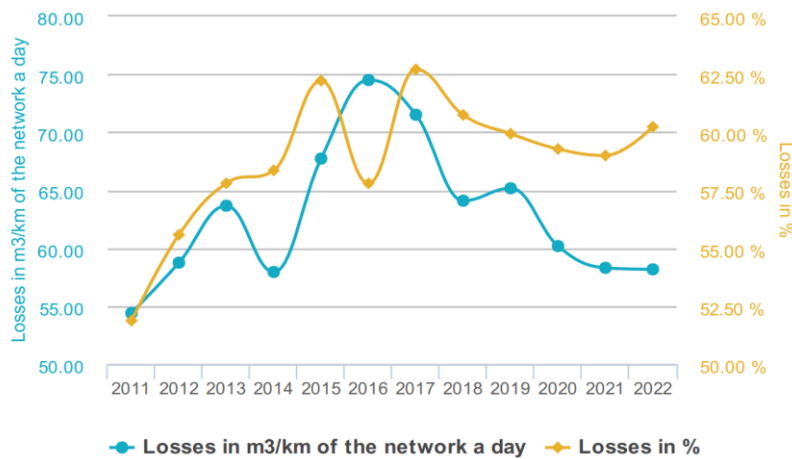
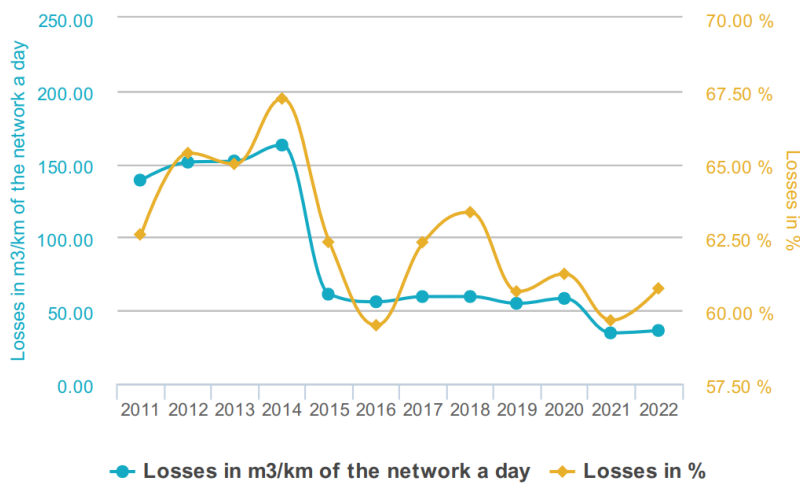


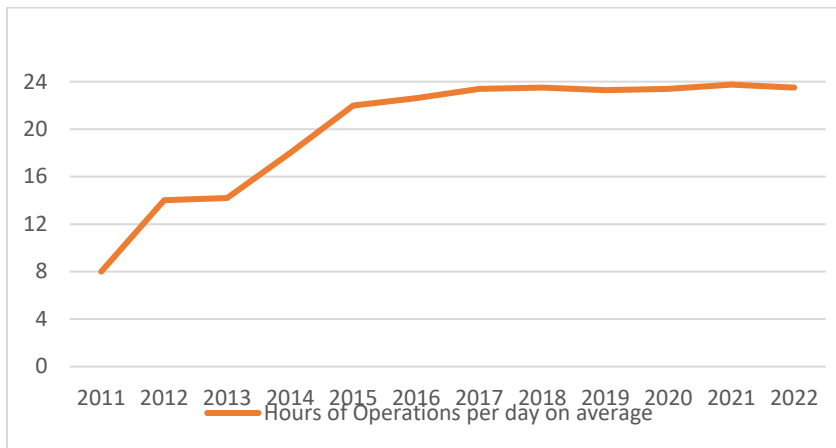
Fig 2. NRW in ASPA, American Samoa



### Hours of operations

KAJUR, Marshall Islands and PUB Kiribati serve their customers 2 hours a day. MAJURO, Marshall Islands serve 6 hours a day, and SIWA, Solomon Islands, provide water 23.5 hours a day. All the rest of PWWA Utilities, including very small companies in Micronesia, and Nauru, provide water 24/7. The following graph present an impressive progress in SIWA, Solomon Islands, in terms of hours of operations for water supply since 2011.

Fig. 3 SIWA Hours of Operation progress over the years



## Costs, revenues, and cost recovery, 2022

	Revenues, US\$/m3	Costs, US\$/m3	Cost-recovery, Ratio
	Group 1		
American Samoa Power and Water Authority, ASPA	2.16	2.35	0.92
SPE, French Polynesia	2.58	1.68	1.53
GWA, Guam	5.16	3.24	1.59
Calédonienne des Eaux, New Caledonia	2.01	0.62	3.22
Commonwealth Utilities, Northern Marianas	2.39	2.83	0.84
	Group 2		
Chuuk Public Utilities (CPU), Micronesia	1.44	2.23	0.64
Water Authority of Fiji (WAF)	0.28	0.52	0.53
Palau Public Utilities Corporation (PPUC), Palau	1.80	2.85	0.63
Solomon Islands Water Authority (SIWA)	2.90	3.09	0.94
Tonga Water Board, TWB	0.77	0.61	1.28
Unelco Vanuatu	1.13	0.81	1.39
Public Utilities Board, Kiribati	21.34	18.94	1.13
Samoa Water Authority (SWA)	0.81	0.67	1.20
Central Yap State Public Service (CYSPS), Micronesia	1.44	2.11	0.68
Southern Yap Water Authority (SYWA), Micronesia	0.09	0.00	0.00
National Company Water PNG Group Limited, Papua New Guinea	1.43	1.24	1.16
Pohnpei Utilities, Micronesia	0.78	0.62	1.25
Department of Transportation and Infrastructure, Kosrae, Micronesia	8.81	19.37	0.45
Northern Yap Gagil Tomil Authority (NYGTA), Micronesia	0.63	0.62	1.03
Majuro, Marshall Islands	4.68	5.04	0.93
KAJUR, Marshall Islands	No data		
	Group 3		
Infrastructure Cook Islands (ICI)	No data		
To Tatou Vai , Cook Islands	No data		
ISWA	No data		
Department of Water, Vanuatu	0.35	0.48	0.72
Central Pacific, Nauru	103.76	28.98	3.58
EEWF	1.57		
Public Works Department, Niue	0.03	2.45	0.01
Ministry of Utilities and Industries, Tuvalu	No data		

Extremely high unit costs reported from utilities with limited distribution systems, where domestic water is delivered mainly by trucks. These are Nauru, Kosrae and PUB Kiribati. These companies also reported their efforts in construction of new water networks to start standard pumping operations, and thus reduce costs. In KAJUR and MAJURO cost of water is determined by desalination technology employed. With completion of new ADB project Majuro reduced its costs from US\$12 per m3 (2015) to US\$5.04 in 2022.

Cost-recovery remains an issue for many PWWA utilities. In Group 1 these are ASPA and Commonwealth utilities, Northern Mariana. In Group 2 it is an issue except for Samoa SWA, Tonga TWB, Unelco Vanuatu, PNG-water and Pohnpei Utilities, FSM. All the rest are suffering from insufficient revenues. It is important to notice that all drops of revenues and associated cost-recovery happened during the COVID-19 pandemic period from 2020-2022. It is widely expected that with the end of this emergency, the revenue will bounce back to at least 2019 level making many PWWA companies profitable.

## COVID-19 in PWWA

As part of the 2021 data collection process, and additional studies in 2022 and 2023, several COVID-19 surveys were used for assessment of the pandemic effects on PWWA member utilities. Utilities operations and their sustainability was tested by the on-going COVID-19 pandemic. The pandemic itself did not affect all countries; many places continued to be COVID-19 free or allowed delayed payments. Whilst the overall COVID-19 related protection was well controlled quickly by Governments, still the pandemic seriously affected the overall economy of all PWWA countries. In addition, the quarantine restrictions disrupted supply of spare parts and disposables to many of PWWA water providers. For example, in Fiji, where no cases were reported within the WAF-Fiji operation area, many businesses were closed, and tourism activity was halted. The Government, protecting citizens, imposed leniency towards water bill payments from March 1 to January 1, 2022, and even later (e.g. Samoa), and this immediately resulted in 50 percent drop in revenue collection. The situation was aggravated by the halt of shipping of spare parts and chemicals. WAF Fiji had to stop its US\$32 million investment program until the COVID-19 situation gets cleared. The company developed a COVID-19 recovery plan that estimates that it may need up to US\$23.5 million to restart normal operations after the COVID-19 pandemic is over. It is restarting slowly now.

Similar effects were reported from other places, perhaps with lower magnitude. Water PNG from Papua-New Guinea assessed loss of 12 percent of the annual revenue. Some companies had very few COVID-19 cases or even no COVID-19 cases in some of their operation zones. Still, due to reduction of economic activities, reduced travel and increase delivery costs of disposables, the water demand dropped by 14 percent, payment collection has fallen by 12.5 percent, and associated accounts receivables grew by five percent in annual terms. The total loss of revenue for the period of March-December 2020 is assessed by 15-20 percent in every PWWA utility. Few isolated countries, such as Nauru, Tokelau and Niue did not report any COVID-19 related issues to their water operations.

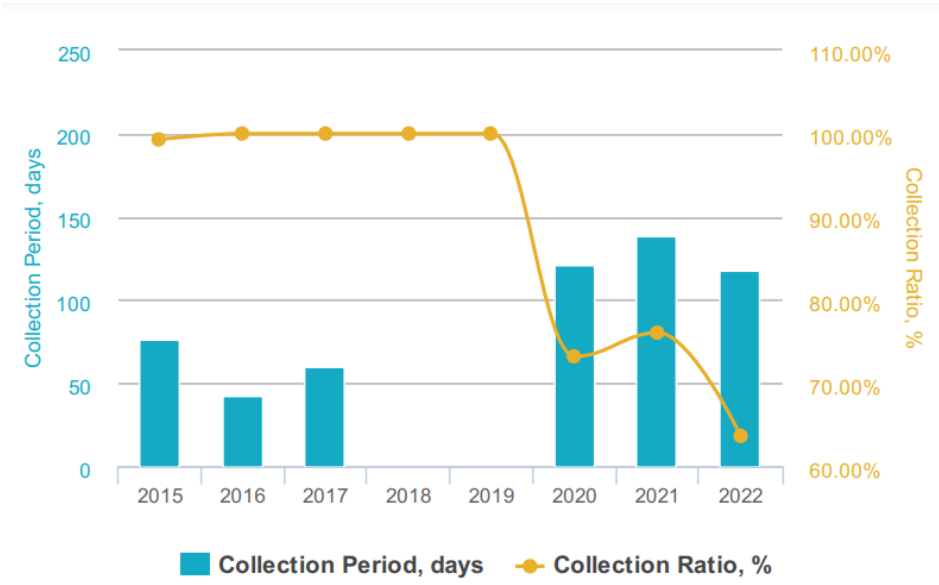
However, the major effect was on growth of accounts receivables and collection of payments.

## Accounts receivable and collection of payments, 2022

	Account receivable days	Collection rate
	Group 1	
American Samoa Power and Water Authority, ASPA	44	97%
SPE French Polynesia	63	100%
GWA, Guam	60	100%
Calédonienne des Eaux	118	64%
Commonwealth Utilities, Northern Marianas	-	118%
	Group 2	
Chuuk Public Utilities (CPU), Micronesia	0	116%
Water Authority of Fiji (WAF)	296	96%
Palau Public Utilities Corporation (PPUC), Palau	41	106%
Solomon Islands Water Authority (SIWA)	188	96%
Tonga Water Board, TWB	45	98%
Unelco Vanuatu	164	95%
Public Utilities Board, Kiribati	433	36%
Samoa Water Authority (SWA)	67	69%
Central Yap State Public Service (CYSPS), Micronesia	36	98%
Southern Yap Water Authority (SYWA), Micronesia	no data	
National Company Water PNG Group Limited	346	100%
Pohnpei Utilities, Micronesia	1,103	25%
Department of Transportation and Infrastructure, Kosrae, Micronesia	146	32%
Northern Yap Gagil Tomil Authority (NYGTA), Micronesia	160	100%
Majuro, Marshall Islands	924	62%
KAJUR, Marshall Islands	no data	
	Group 3	
Infrastructure Cook Islands (ICI)	no data	
To Tatou Vai , Cook Islands	no data	
IWSA, Samoa	No data	
Department of Water, Vanuatu	672	79%
Central Pacific, Nauru	36	90%
EEWF	60	100%
Public Works Department, Niue	no data	
Ministry of Utilities and Industries, Tuvalu	no data	

Low collection rate and high account receivable are usually going hand-to-hand. Calédonniene-des-Eaux had an unusually low collection rate that was a result of COVID-19, and low payment discipline after the pandemic. See fig 5 below. The drop in collection rate provoked increases in the accounts receivables. Both are expected to improve in coming 2023 fiscal year.

Fig. 5 Accounts receivables and collection rate at CDE



### Carbon Footprint pilot

All utilities are contributing to the GHG emissions and do have a utility specific carbon footprint. Carbon emissions are coming from the consumption of electricity (and excessive non-revenue water), use of charcoal and wood to boil water for utilities that have a significant number of residents without connections, use of wet latrines, poor wastewater treatment and discharge of untreated wastewater into deep lagoons.

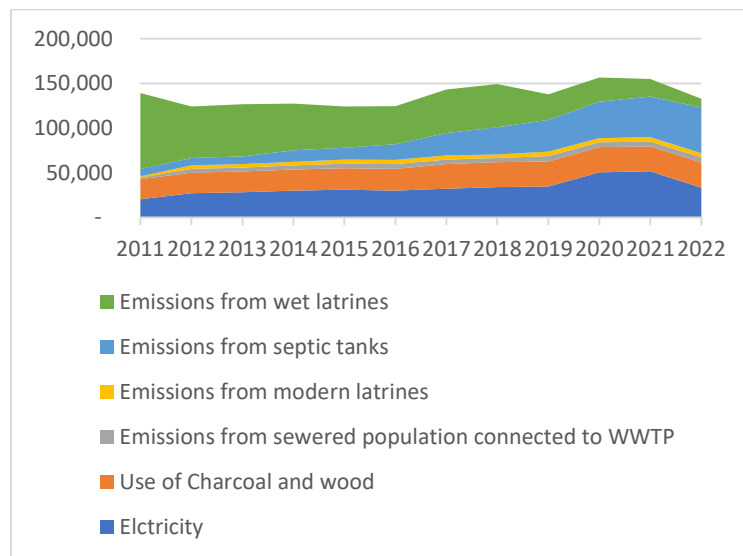
The PWWA collected data have a great potential for assessment of such footprint and its changes can be tracked having PWWA database.

The following data are needed for the carbon footprint assessment:

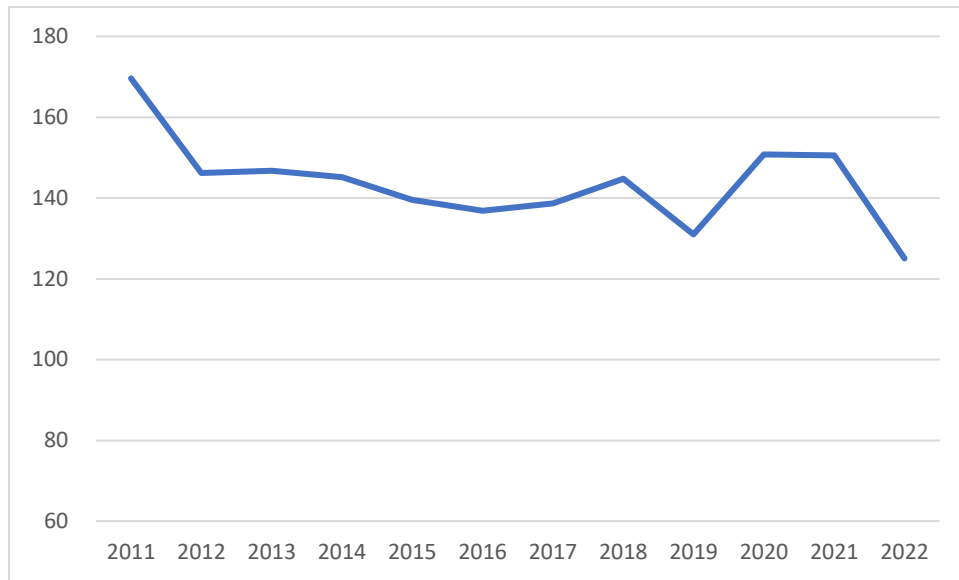
- Population in service area, people (available in IBNET)
- Population served, people (available in IBNET)
- Sources for water boiling in service area, e.g., wood, charcoal (Environmental reports, JMP data)
- Electricity consumption kWh/year – water (available in IBNET)
- Electricity consumption – wastewater, kWh/year (available in IBNET)
- Country specific energy conversion factor, gCO<sub>2</sub>/kWh, based on the country power mix, index (available from International Energy Agency)
- Wastewater /sanitation/sludge collection and treatment breakdown, % (open defecation, wet latrines, dry latrines, volume, wastewater discharged into deep lagoons, WWTP, etc.) – available in IBNET and country reports.
- Methane emission factor (MCF), per each of sanitation process (available at IPCC).

Unfortunately, only few utilities provided all necessary data. The following graph shows the results for WAF Fiji which provided all the above information:

**Fig 6. GHG accounting for WAF Fiji 2011-2022**



**Fig. 7 GHG emissions per capita, kgCO2e/capita 2011-2022**



Potential for Carbon footprint reduction is nearly 76% of which:

- (i) 8% with reduction of unaccounted water to 25% and associated electricity consumption (with overall cost reduction by 10%),
- (ii) connection of all residents to piped water systems thus reducing use of wood and charcoal (reduction is 22%), and
- (iii) (iii) connection of all residents to wastewater collection systems (another 48%).

The PWWA team will conduct these assessments for all PWWA members with a separate document to be prepared in 2023.



Summary performance for PWWA utilities 2011-2022, Group 1

American Samoa Power and Water Authority, ASPA	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1.1 - Water Coverage (%)	100%	100%	100%	100%	96%	96%	96%	96%	97%	100%	98%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	1.94	2.04	2.28	2.41	2.3	2.1	2.31	2.38	1.91	1.83	2.23	2.35
12.3 - Staff Water/000 Water pop served (#/000 W pop served)				1.42	0.98	1.26	1.0	1.3	1.37	1.44	1.36	1.87
18.1 - Average Revenue W&WW (US\$/m3 water sold)	1.43	1.83	1.84	1.81	1.71	1.61	1.76	1.85	1.97	1.97	1.95	2.16
2.1 - Sewerage Coverage (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	96%	98%
23.1 - Collection Period (days)	37	38	41	39	40	32	38	27	36	38	32	44
23.2 - Collection ratio (%)	90%	94%	98%	95%	100%	97%	98%	100%	100%	100%	100%	97%
24.1 - Operating Cost Coverage (ratio)	0.74	0.9	0.81	0.75	0.74	0.77	0.76	0.78	1.03	1.07	0.87	0.92
4.1 - Total Water Consumption (liters/person/day)	344	332	339	327	336	352	332	320	326	350	342	421
4.7 - Residential Consumption (liters/person/day)	211	197	188	181	183	183	183	174	169	183	184	230
6.1 - Non Revenue Water (%)	63%	65%	65%	67%	62%	59%	62%	63%	61%	61%	60%	61%
6.2 - Non Revenue Water (m3/km/day)	139	151	152	163	61	56	59	59	55	58	35	36
8.1 - Water sold that is metered % (%)	100%	100%	100%	67%	100%	100%	100%	100%	100%	100%	100%	100%

<b>Caledonienne des Eaux</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
1.1 - Water Coverage (%)	94%	91%	95%	97%	97%	98%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	1.55	1.66	1.69	1.59	1.23	1.3	0.55	0.62
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	0.45	0.45	0.43	0.32	0.52	0.52	0.54	0.54
18.1 - Average Revenue W&WW (US\$/m3 water sold)	2.37	2.48	2.35	2.23	2.39	2.12	1.59	2.01
2.1 - Sewerage Coverage (%)	67%	67%	71%	72%	71%	69%	69%	70%
23.1 - Collection Period (days)	77	43	60	0	0	121	138	118
23.2 - Collection ratio (%)	99%	100%	100%	100%	100%	73%	76%	64%
24.1 - Operating Cost Coverage (ratio)	1.53	1.49	1.39	1.41	1.94	1.63	2.88	3.22
4.1 - Total Water Consumption (liters/person/day)	288	298	296	288	290	295	353	339
4.7 - Residential Consumption (liters/person/day)								
6.1 - Non Revenue Water (%)	23%	21%	22%	22%	28%	35%	23%	23%
6.2 - Non Revenue Water (m3/km/day)	11	10	11	10	11	15	10	9
8.1 - Water sold that is metered % (%)	100%	100%	100%	100%	100%	100%	100%	100%

Guam Waterworks Authority	2011	2012	2013	2014	2015	2020	2021	2022
1.1 - Water Coverage (%)	95%	96%	93%	94%	73%	100%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	2.74	2.78	2.99	0.0		2.91	3.34	3.24
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	0.6	0.58	0.66	0.61		1.21	1.28	1.35
18.1 - Average Revenue W&WW (US\$/m3 water sold)	2.9	3.01	3.21	0.0		4.82	5.05	5.16
2.1 - Sewerage Coverage (%)	47%	47%	48%	47%		100%	100%	100%
23.1 - Collection Period (days)	52	64	70			75	84	60
23.2 - Collection ratio (%)	97%	97%	98%		99%		99%	100%
24.1 - Operating Cost Coverage (ratio)	1.06	1.08	1.07			1.66	1.51	1.59
4.1 - Total Water Consumption (liters/person/day)	420	412	426	416		354	360	356
4.7 - Residential Consumption (liters/person/day)	242	230	254	240		229	244	233
6.1 - Non Revenue Water (%)	57%	56%	53%	55%		60%	62%	63%
6.2 - Non Revenue Water (m3/km/day)	67	63	56	61		95	96	98
8.1 - Water sold that is metered % (%)	100%	100%	100%	100%		100%	100%	100%

Polynésienne des Eaux	2015	2016	2017	2018	2019	2020	2021	2022
1.1 - Water Coverage (%)	100%	100%	100%	100%	100%	100%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	2.25	1.22	1.37	1.38	1.39	1.55	1.89	1.68
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	1.21	1.13	1.18	1.16	1.15	1.11	1.07	
18.1 - Average Revenue W&WW (US\$/m3 water sold)	2.17	2.49	2.77	3.07	3.01	2.49	2.74	2.58
2.1 - Sewerage Coverage (%)	45%	100%	100%	100%	100%	100%	100%	100%
23.1 - Collection Period (days)	27	11	55	52	53	62	63	63
23.2 - Collection ratio (%)	100%	100%	100%	100%	100%	100%	100%	100%
24.1 - Operating Cost Coverage (ratio)	0.96	2.05	2.02	2.23	2.16	1.61	1.45	1.53
4.1 - Total Water Consumption (liters/person/day)	230	225	266	268	275	272	260	260
4.7 - Residential Consumption (liters/person/day)	109	138	153	156	162	162	156	155
6.1 - Non Revenue Water (%)	27%	28%	29%	41%	38%	38%	33%	33%
6.2 - Non Revenue Water (m3/km/day)	24	26	22	36	30	29	23	23
8.1 - Water sold that is metered % (%)	63%	73%	100%	100%	100%	100%	100%	100%

Commonwealth Utilities Corporation, Northern Mariannas	2011	2012	2013
1.1 - Water Coverage (%)	96%	96%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	1.84	1.84	2.83
12.3 - Staff Water/000 Water pop served (#/000 W pop served)			
18.1 - Average Revenue W&WW (US\$/m3 water sold)	1.85	1.76	2.39
2.1 - Sewerage Coverage (%)		62%	44%
23.1 - Collection Period (days)	43.94	46.17	
23.2 - Collection ratio (%)	83%	85%	100%
24.1 - Operating Cost Coverage (ratio)	1.01	0.96	0.84
4.1 - Total Water Consumption (liters/person/day)	373	373	255
4.7 - Residential Consumption (liters/person/day)			
6.1 - Non Revenue Water (%)	48%	48%	70%
6.2 - Non Revenue Water (m3/km/day)	70	70	51
8.1 - Water sold that is metered % (%)	95%	95%	98%

## Summary performance for PWWA utilities 2011-2022, Group 2

Chuuk Public Utilities Corporation, Micronesia	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1.1 - Water Coverage (%)	20%	49%	18%	22%	20%	22%	29%	100%	100%	100%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)		0.76	2.68	2.99	2.9	2.72	3.14	3.07	2.42	1.77	2.09	2.23
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	0.0	0.0	2.45	1.94	2.12	2.9	3.22	0.87	0.94	0.87	0.87	0.72
18.1 - Average Revenue W&WW (US\$/m3 water sold)		0.2	1.08	1.38	1.46	1.51	1.46	1.61	1.52	1.43	1.54	1.44
2.1 - Sewerage Coverage (%)	14%	50%	12%	24%	18%	20%	81%	20%	20%	20%	20%	30%
23.1 - Collection Period (days)		134	248	261	310	247	240	265	289	245	242	220
23.2 - Collection ratio (%)	100%	98%	53%	83%	86%	100%	100%	97%	99%	94%	97%	100%
24.1 - Operating Cost Coverage (ratio)	0.29	0.26	0.4	0.46	0.5	0.55	0.47	0.52	0.63	0.81	0.74	0.64
4.1 - Total Water Consumption (liters/person/day)		352	271	222	238	253	188	55	66	78	77	78
4.7 - Residential Consumption (liters/person/day)			188	137	144	134	92	31	33	40	41	42
6.1 - Non Revenue Water (%)		39%	82%	75%	75%	67%	64%	71%	64%	52%	53%	54%
6.2 - Non Revenue Water (m3/km/day)		27	92	63	59	30	26	36	41	30	30	20
8.1 - Water sold that is metered % (%)			100%	100%	100%	100%	100%	100%	100%	100%	100%	96%

Water Authority of Fiji	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1.1 - Water Coverage (%)	100%	100%	100%	100%	100%	99%	97%	85%	93%	100%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	0.41	0.43	0.42	0.48	0.4	0.36	0.46	0.51	0.36	0.39	0.4	0.52
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	1.02	0.96	0.95	0.92	1.53	1.37	1.11	1.19	1.2	0.94	0.95	0.64
18.1 - Average Revenue W&WW (US\$/m3 water sold)	0.22	0.29	0.28	0.28	0.27	0.3	0.32	0.33	0.31	0.35	0.29	0.28
2.1 - Sewerage Coverage (%)	49%	87%	66%	67%	91%	35%	34%	27%	34%	32%	31%	30%
23.1 - Collection Period (days)	333	202	317	174	115	328	304	300	325	348	303	296
23.2 - Collection ratio (%)	100%	100%	100%	100%	100%	100%	99%	93%	96%	77%	96%	96%
24.1 - Operating Cost Coverage (ratio)	0.54	0.67	0.67	0.59	0.67	0.83	0.7	0.64	0.87	0.91	0.72	0.53
4.1 - Total Water Consumption (liters/person/day)	241	205	207	204	206	237	224	263	242	213	212	211
4.7 - Residential Consumption (liters/person/day)	168	141	144	142	162	176	163	188	173	156	155	154
6.1 - Non Revenue Water (%)	40%	51%	50%	51%	51%	45%	48%	45%	46%	49%	48%	49%
6.2 - Non Revenue Water (m3/km/day)	36	48	42	42	42	39	45	40	41	44	40	41
8.1 - Water sold that is metered % (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Palau Public Utilities Corporation (PPUC), Palau	2011	2012	2013	2016	2017	2019	2020	2021	2022
1.1 - Water Coverage (%)		95%	99%	99%	100%	99%	99%	99%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	1.04	1.42	2.11	2.21	1.56	2.24	2.41	2.25	2.85
12.3 - Staff Water/000 Water pop served (#/000 W pop served)				5.16	6.37	4.71	5.75	4.61	4.54
18.1 - Average Revenue W&WW (US\$/m3 water sold)	0.23	0.58	0.57	2.0	1.88	1.9	1.83	1.9	1.8
2.1 - Sewerage Coverage (%)		53%	59%	100%	69%	100%	100%	100%	100%
23.1 - Collection Period (days)	14		50	49	68	120	149	69	41
23.2 - Collection ratio (%)	99%	68%	100%	81%	72%	88%	96%	100%	100%
24.1 - Operating Cost Coverage (ratio)	0.22	0.41	0.27	0.9	1.2	0.85	0.76	0.84	0.63
4.1 - Total Water Consumption (liters/person/day)		447	438	436	576	400	404	362	345
4.7 - Residential Consumption (liters/person/day)				246	344	245	256	241	225
6.1 - Non Revenue Water (%)	41%	41%	50%	59%	41%	34%	34%	28%	4%
6.2 - Non Revenue Water (m3/km/day)	41	37	42	35	18	11	11	8	1
8.1 - Water sold that is metered % (%)	84%	75%	70%	100%	100%	100%	100%	100%	100%



Solomon Islands Water Authority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1.1 - Water Coverage (%)	87%	71%	70%	67%	55%	62%	55%	56%	61%	64%	74%	72%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	0.77	1.06	1.3	1.52	2.29	1.41	1.66	2.73	2.61	2.72	3.49	3.09
12.3 - Staff Water/000 Water pop served (#/000 W pop served)				1.05	2.8	1.12	1.31	0.87	1.34	1.16	1.01	0.99
18.1 - Average Revenue W&WW (US\$/m3 water sold)	0.79	0.84	1.49	1.99	2.58	2.07	2.28	2.53	2.35	2.36	2.83	2.9
2.1 - Sewerage Coverage (%)	11%	10%	9%	11%	9%	6%	6%	5%	5%	4%	5%	4%
23.1 - Collection Period (days)	197	405	295	255	146	150	143	116	113	124	151	188
23.2 - Collection ratio (%)	63%	94%	92%	100%	84%	100%	96%	98%	89%	100%	79%	96%
24.1 - Operating Cost Coverage (ratio)	1.02	0.79	1.14	1.31	1.13	1.47	1.37	0.93	0.9	0.87	0.81	0.94
4.1 - Total Water Consumption (liters/person/day)	185	208	207	209	258	194	212	194	187	146	123	117
4.7 - Residential Consumption (liters/person/day)		145	136	132	177	129	144	122	124	98	83	80
6.1 - Non Revenue Water (%)	52%	56%	58%	58%	62%	58%	63%	61%	60%	59%	59%	60%
6.2 - Non Revenue Water (m3/km/day)	54	59	64	58	68	75	72	64	65	60	58	58
8.1 - Water sold that is metered % (%)	58%	72%	67%	75%	99%	100%	95%	92%	92%	90%	100%	100%

<b>Tonga Water Board</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
1.1 - Water Coverage (%)	95%	95%	95%	95%	95%	95%	95%	96%	100%	100%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	0.8	0.38	0.72	0.79	0.86	1.16	1.44	0.85	0.94	1.23	0.73	0.61
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	1.8	1.7	1.61	1.34	1.37	1.58	1.68	1.56	2.17	2.49	3.06	2.99
18.1 - Average Revenue W&WW (US\$/m3 water sold)	1.53	0.59	1.28	1.49	1.15	1.54	1.81	1.2	1.14	1.56	0.88	0.77
2.1 - Sewerage Coverage (%)												
23.1 - Collection Period (days)	52.57	64.42	38.95	53.96	60.27	44.79	21.72	27.97	45.77	24.01	25.75	44.92
23.2 - Collection ratio (%)	81%	100%	81%	81%	85%	87%	63%	100%	99%	89%	92%	98%
24.1 - Operating Cost Coverage (ratio)	1.92	1.57	1.77	1.89	1.34	1.32	1.26	1.41	1.22	1.26	1.2	1.28
4.1 - Total Water Consumption (liters/person/day)	118	169	141	117	137	98	92	105	158	140	236	250
4.7 - Residential Consumption (liters/person/day)					130	90	80	60	95	98	170	188
6.1 - Non Revenue Water (%)	29%	26%	22%	35%	25%	54%	61%	43%	40%	35%	30%	28%
6.2 - Non Revenue Water (m3/km/day)	17	21	15	15	11	27	33	19	17	12	16	16
8.1 - Water sold that is metered % (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Unelco Vanuatu Limited	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1.1 - Water Coverage (%)	60%	68%	70%	71%	75%	61%	69%	68%	55%	80%	89%	88%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	0.67	0.72	0.66	0.64	0.65	0.71	0.68	0.68	0.68	0.74	0.76	0.81
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	0.0	0.0	0.36	0.42	0.36	0.31	0.28	0.28	0.34	0.62	0.54	0.51
18.1 - Average Revenue W&WW (US\$/m3 water sold)	1.01	1.01	1.03	1.01	0.8	0.84	0.91	0.92	0.94	1.07	1.09	1.13
2.1 - Sewerage Coverage (%)												
23.1 - Collection Period (days)	151	157	158	169	166	158	149	158	165	133	154	164
23.2 - Collection ratio (%)	95%	95%	96%	95%	100%	99%	97%	100%	100%	100%	94%	95%
24.1 - Operating Cost Coverage (ratio)	1.5	1.41	1.57	1.58	1.23	1.18	1.34	1.36	1.37	1.45	1.42	1.39
4.1 - Total Water Consumption (liters/person/day)	311	307	318	329	344	306	289	292	283	259	213	222
4.7 - Residential Consumption (liters/person/day)										205	179	172
6.1 - Non Revenue Water (%)	20%	21%	20%	22%	18%	21%	24%	27%	29%	32%	35%	35%
6.2 - Non Revenue Water (m3/km/day)	11	11	11	13	11	14	17	19	21	22	23	25
8.1 - Water sold that is metered % (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Public Utilities Board, Kiribati	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1.1 - Water Coverage (%)	90%	62%	67%	66%	63%	69%	67%	71%	70%	69%	69%	71%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	1.99	5.16	6.48	14.53	17.8	14.66	18.0	16.91	15.82	21.87	21.87	18.94
12.3 - Staff Water/000 Water pop served (#/000 W pop served)				0.88	0.79	0.8	0.7	0.63	0.66		0.71	
18.1 - Average Revenue W&WW (US\$/m3 water sold)	2.63	7.61	6.0	18.2	12.55	27.35	19.53	21.91	19.18	25.69	23.37	21.34
2.1 - Sewerage Coverage (%)	42%	26%	32%	36%	35%	33%	28%	32%	32%			42%
23.1 - Collection Period (days)	1,103	1,128	0	81	185	67	146	154	225	279	407	433
23.2 - Collection ratio (%)	44%	42%	66%	51%	14%	76%	70%	69%	66%	54%	42%	36%
24.1 - Operating Cost Coverage (ratio)	1.32	1.47	0.93	1.25	0.71	1.87	1.09	1.3	1.21	1.17	1.07	1.13
4.1 - Total Water Consumption (liters/person/day)	37.4	15.7	11.3	5.3	4.1	5.3	5.2	5.5	5.2	4.1	4.5	4.5
4.7 - Residential Consumption (liters/person/day)	0.0	0.0	0.0	5.3	0.5	2.1	1.6	2.0	3.0	3.0	3.9	3.6
6.1 - Non Revenue Water (%)	31%	75%	81%	91%	92%	88%	89%	86%	87%	90%	89%	87%
6.2 - Non Revenue Water (m3/km/day)	4	11	11	13	12	11	12	8	8	8	8	8
8.1 - Water sold that is metered % (%)		22%	100%	100%	100%	61%	69%	100%	100%	100%	100%	100%

Samoa Water Authority	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1.1 - Water Coverage (%)	96%	88%	88%	81%	81%	82%	77%	81%	88%	89%	88%	90%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	0.99	0.36	1.0	0.86	0.75	0.65	0.68	0.67	0.62	0.64	0.76	0.67
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	0.0	0.0	0.0	1.86	1.06	0.93	0.89	0.97	0.79	0.81	0.82	0.74
18.1 - Average Revenue W&WW (US\$/m3 water sold)	0.83	0.77	0.76	0.69	0.95	0.78	0.92	0.85	0.79	0.82	0.96	0.81
2.1 - Sewerage Coverage (%)	0%	0%	1%	1%	6%	7%	7%	8%	7%	21%	25%	21%
23.1 - Collection Period (days)	245	164	154	116	52	45	50	61	48	39	54	67
23.2 - Collection ratio (%)	84%	75%	85%	88%	59%	74%	69%	70%	78%	79%	68%	69%
24.1 - Operating Cost Coverage (ratio)	0.84	2.12	0.76	0.81	1.26	1.2	1.34	1.27	1.29	1.28	1.27	1.2
4.1 - Total Water Consumption (liters/person/day)	117	153	156	181	204	198	202	212	206	210	207	203
4.7 - Residential Consumption (liters/person/day)				137	158	155	153	160	155	160	155	160
6.1 - Non Revenue Water (%)	70%	66%	70%	67%	62%	59%	54%	51%	48%	47%	44%	47%
6.2 - Non Revenue Water (m3/km/day)	54	44	48	47	38	39	31	30	27	26	21	24
8.1 - Water sold that is metered % (%)	65%	94%	94%	100%	100%	89%	97%	100%	100%	97%	100%	100%

Central Yap State Public Service Corporation, Micronesia	2011	2012	2013	2014	2016	2017	2018	2019	2020	2021	2022
1.1 - Water Coverage (%)		50%	47%	100%	80%	100%	100%	100%	77%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	1.21	1.21		1.84	1.32	1.87	2.0	1.88	1.97	2.17	2.11
12.3 - Staff Water/000 Water pop served (#/000 W pop served)				2.89	4.58	2.34	2.75	2.09	3.0	1.79	1.4
18.1 - Average Revenue W&WW (US\$/m3 water sold)	1.53	1.53	1.45	1.57	1.35	1.58	1.58	1.52	1.57	1.52	1.44
2.1 - Sewerage Coverage (%)		100%	63%	63%	65%	65%	100%	100%	100%	100%	100%
23.1 - Collection Period (days)	40	40		32	30	23	32	37	40	52	36
23.2 - Collection ratio (%)	89%	89%	90%	91%	100%	94%	85%	85%	85%	86%	98%
24.1 - Operating Cost Coverage (ratio)	1.27	1.27		0.86	1.02	0.84	0.79	0.81	0.8	0.7	0.68
4.1 - Total Water Consumption (liters/person/day)		472	447	180	357	286	213	214	227	218	183
4.7 - Residential Consumption (liters/person/day)			220	100	205	166	127	121	137	140	116
6.1 - Non Revenue Water (%)	47%	47%	38%	42%	39%	36%	35%	39%	45%	44%	41%
6.2 - Non Revenue Water (m3/km/day)	19	17	11	11	12	9	9	11	13	13	12

8.1 - Water sold that is metered % (%)			91%	100%	99%	100%	100%	100%	99%	99%	100%
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<b>Southern Yap Water Authority, Micronesia</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
1.1 - Water Coverage (%)	100%	100%	100%	100%	100%	100%	100%	90%	94%	95%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	2.95	2.91	2.93	3.02	0.0	0.0	0.0			
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	4.16	4.08	4.0	3.91	1.05	1.05	1.05	4.44	4.27	4.19
18.1 - Average Revenue W&WW (US\$/m3 water sold)	3.45	3.1	3.18	3.17	1.18	1.18	1.18	0.71	0.05	0.09
2.1 - Sewerage Coverage (%)										
23.1 - Collection Period (days)	93	119	96	97	55	55	55			
23.2 - Collection ratio (%)										
24.1 - Operating Cost Coverage (ratio)	1.17	1.07	1.09	1.05						
4.1 - Total Water Consumption (liters/person/day)	36	35	34	34	32	32	32	17	322	155
4.7 - Residential Consumption (liters/person/day)	32	31	29	29	30	30	30	17	322	155
6.1 - Non Revenue Water (%)	17%	17%	17%	17%						
6.2 - Non Revenue Water (m3/km/day)										
8.1 - Water sold that is metered % (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



**N.B.! Papua New Guinea presented for Eda Ranu and Water PNG for 2011-2019 and for National Company Water PNG Group Limited for 2020-2022**

<b>Ncd Water &amp; Sewerage Ltd Trading As Eda Ranu</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
1.1 - Water Coverage (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	0.28	0.29	0.28	0.4	0.44	0.55	0.39	0.75	0.36
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	0.37	0.4	0.45	0.45	0.21	0.21	0.2	0.16	0.13
18.1 - Average Revenue W&WW (US\$/m3 water sold)	1.72	1.87	1.8	1.87	1.03	0.89	0.93	1.63	1.09
2.1 - Sewerage Coverage (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
23.1 - Collection Period (days)	136	98	119	127	135	173	151	154	261
23.2 - Collection ratio (%)	100%	100%	100%	96%	96%	100%	99%	92%	98%
24.1 - Operating Cost Coverage (ratio)	6.04	6.42	6.39	4.65	2.37	1.62	2.38	2.17	3.04
4.1 - Total Water Consumption (liters/person/day)	141	149	145	141	221	201	203	126	174
4.7 - Residential Consumption (liters/person/day)	30	29	29	30	31	30	30	19	30
6.1 - Non Revenue Water (%)	59%	54%	56%	59%	35%	40%	41%	63%	49%
6.2 - Non Revenue Water (m3/km/day)	214	189	205	226	98	108	118	182	140
8.1 - Water sold that is metered % (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%

WaterPNG	2011	2012	2013	2014	2015	2016	2017	2018	2019
1.1 - Water Coverage (%)	75%	71%	72%	70%	64%	64%	88%	94%	95%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	1.3	1.72	1.47	1.75	1.0	0.97	1.02	1.51	1.68
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	0.0	0.0	0.0	1.31	0.53	0.56	0.69	0.69	0.65
18.1 - Average Revenue W&WW (US\$/m3 water sold)	1.37	1.06	1.98	2.05	1.87	1.81	2.03	1.89	1.83
2.1 - Sewerage Coverage (%)	6%	7%	8%	8%	11%	11%	11%	13%	13%
23.1 - Collection Period (days)	392	661	319	330	371	103	86	172	169
23.2 - Collection ratio (%)	9%	14%	7%	98%	94%	89%	98%	97%	99%
24.1 - Operating Cost Coverage (ratio)	1.05	0.62	1.35	1.17	1.88	1.88	1.99	1.26	1.09
4.1 - Total Water Consumption (liters/person/day)	200	199	201	205	150	157	102	99	102
4.7 - Residential Consumption (liters/person/day)				75.03	54.38	53.06	42.16	39.25	38.72
6.1 - Non Revenue Water (%)	38%	39%	33%	37%	35%	34%	37%	36%	32%
6.2 - Non Revenue Water (m3/km/day)	42.18	43.74	34.55	41.44	38.99	35.72	37.28	36.04	30.9
8.1 - Water sold that is metered % (%)	100%	100%	100%	100%	99%	98%	97%	100%	97%

Water PNG Ltd	2020	2021	2022
1.1 - Water Coverage (%)	100%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	1.09	1.08	1.24
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	0.25	0.24	0.14
18.1 - Average Revenue W&WW (US\$/m3 water sold)	1.6	1.57	1.43
2.1 - Sewerage Coverage (%)	46%	46%	46%
23.1 - Collection Period (days)	207	306	347
23.2 - Collection ratio (%)	99%	95%	100%
24.1 - Operating Cost Coverage (ratio)	1.46	1.45	1.16
4.1 - Total Water Consumption (liters/person/day)	80	76	77
4.7 - Residential Consumption (liters/person/day)	30	23	22
6.1 - Non Revenue Water (%)	38%	40%	50%
6.2 - Non Revenue Water (m3/km/day)	54	57	94
8.1 - Water sold that is metered % (%)	100%	100%	100%

<b>Pohnpei Utilities. Micronesia</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2020</b>
1.1 - Water Coverage (%)	61%	61%	61%	61%	66%	70%	73%	78%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	0.31	0.27	0.33	0.29			0.56	0.62
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	1.1	1.1	1.33	1.51		0.99	1.12	1.04
18.1 - Average Revenue W&WW (US\$/m3 water sold)	0.5	0.61	0.55	0.63			0.63	0.78
2.1 - Sewerage Coverage (%)	22%	100%	100%	100%	65%	65%	65%	100%
23.1 - Collection Period (days)	73	365	948	785	965	1,275	1,275	1,103
23.2 - Collection ratio (%)	84%	99%	71%	50%				
24.1 - Operating Cost Coverage (ratio)	1.6	2.25	1.69	2.14		1.57	1.11	1.25
4.1 - Total Water Consumption (liters/person/day)	325	254	326	365			264	279
4.7 - Residential Consumption (liters/person/day)	272	199	260	279			202	287
6.1 - Non Revenue Water (%)	9%	11%	10%	9%			47%	39%
6.2 - Non Revenue Water (m3/km/day)	9	8	10	9			41	32
8.1 - Water sold that is metered % (%)	100%	100%	100%	100%			100%	100%

Department of Transportation and Infrastructure, Kosrae, Micronesia	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1.1 - Water Coverage (%)	53%	64%	82%	90%	25%	25%	25%	75%	75%	75%	67%	67%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)					0.96	0.88	0.89	11.61	12.77	12.77	19.37	19.37
12.3 - Staff Water/000 Water pop served (#/000 W pop served)											1.0	1.0
18.1 - Average Revenue W&WW (US\$/m3 water sold)			0.0	0.0	0.18	0.21	0.22	2.88	2.91	2.91	8.81	8.81
2.1 - Sewerage Coverage (%)	100%	67%	40%	20%	32%	32%	32%	32%	32%	32%	56%	56%
23.1 - Collection Period (days)											146	146
23.2 - Collection ratio (%)								0%	38%	38%	32%	32%
24.1 - Operating Cost Coverage (ratio)					0.18	0.24	0.25	0.25	0.23	0.23	0.45	0.45
4.1 - Total Water Consumption (liters/person/day)			8	7	31	36	37	1	1	1	5	5
4.7 - Residential Consumption (liters/person/day)				6								
6.1 - Non Revenue Water (%)			93%	93%	95%	94%	95%	100%	100%	100%	50%	50%
6.2 - Non Revenue Water (m3/km/day)			36,088	28,256	62,446	53,430	51,467	54,757	54,776	54,776	2	2
8.1 - Water sold that is metered % (%)					100%	100%	100%	100%	100%	100%	100%	100%

Northern Yap Gagil Tomil Authority, Micronesia	2011	2012	2013
1.1 - Water Coverage (%)	90%	90%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	0.61	0.63	0.62
12.3 - Staff Water/000 Water pop served (#/000 W pop served)			0.0
18.1 - Average Revenue W&WW (US\$/m3 water sold)	0.58	0.55	0.63
2.1 - Sewerage Coverage (%)			
23.1 - Collection Period (days)	187	130	160
23.2 - Collection ratio (%)	90%	97%	100%
24.1 - Operating Cost Coverage (ratio)	0.95	0.87	1.03
4.1 - Total Water Consumption (liters/person/day)	137	144	95
4.7 - Residential Consumption (liters/person/day)			0.0
6.1 - Non Revenue Water (%)		9%	
6.2 - Non Revenue Water (m3/km/day)		1.3	
8.1 - Water sold that is metered % (%)	100%	90%	100%

<b>Majuro Water And Sewer Company (MWSC), Inc. Marshall Islands</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2022</b>
1.1 - Water Coverage (%)	27%	29%	19%	26%	29%	29%	29%	29%	89%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	7.21	5.29	5.04	4.23	5.83	8.88	12.08	5.37	5.04
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	6.9	6.23	9.79	2.17	2.09	2.33	2.58	2.46	0.97
18.1 - Average Revenue W&WW (US\$/m3 water sold)	6.88	5.09	6.31	5.58	5.48	5.44	9.17	5.59	4.68
2.1 - Sewerage Coverage (%)	53%	53%	56%	60%	60%	60%	60%	60%	82%
23.1 - Collection Period (days)	570	275	445	450	395	463	584	588	924
23.2 - Collection ratio (%)	58%	90%	62%	83%	81%	71%	95%	85%	62%
24.1 - Operating Cost Coverage (ratio)	0.95	0.96	1.25	1.32	0.94	0.61	0.76	1.04	0.93
4.1 - Total Water Consumption (liters/person/day)	68	100	140	99	99	98	45	86	28
4.7 - Residential Consumption (liters/person/day)	61	100	140	47	28	35	45	45	20
6.1 - Non Revenue Water (%)	72%	45%	50%	30%	9%	38%	72%	42%	42%
6.2 - Non Revenue Water (m3/km/day)	11	5	6	3	1	4	8	4	4
8.1 - Water sold that is metered % (%)	89%	100%	100%	93%	41%	100%	100%	88%	99%

<b>Kwajalein Atoll Joint Utility Resources (KAJUR), Marshall Islands</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2022</b>
1.1 - Water Coverage (%)	100%	100%	100%	91%	100%	100%	90%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	96	113	194	286	3	6	
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	0.93	0.93	0.92	0.86	1.02	1.02	0.89
18.1 - Average Revenue W&WW (US\$/m3 water sold)	28	38	60	33	1	2	
2.1 - Sewerage Coverage (%)	84%	85%	85%	100%	85%	100%	90%
23.1 - Collection Period (days)	535	792	875	1,035	1,855	29	
23.2 - Collection ratio (%)		100%	100%	100%	100%	93%	
24.1 - Operating Cost Coverage (ratio)	0.29	0.34	0.31	0.11	0.34	0.31	
4.1 - Total Water Consumption (liters/person/day)	4	2	1	2	44	35	167
4.7 - Residential Consumption (liters/person/day)					40		165
6.1 - Non Revenue Water (%)	21%	56%	63%	54%	9%	1%	17%
6.2 - Non Revenue Water (m3/km/day)	2	6	5	4	62	7	466
8.1 - Water sold that is metered % (%)	100%	100%	100%	100%	2%	3%	1%



### Summary performance for PWWA utilities 2011-2022, Group 3

Cook Islands Ministry Of Infrastructure And Planning	2011	2012	2013	2014	2015	2020	2021	2022
1.1 - Water Coverage (%)	100%	82%	82%	100%	100%	100%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)								
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	0.9	1.07	1.43	1.14	1.14	4.76	4.76	4.76
18.1 - Average Revenue W&WW (US\$/m3 water sold)								
2.1 - Sewerage Coverage (%)								
23.1 - Collection Period (days)								
23.2 - Collection ratio (%)								
24.1 - Operating Cost Coverage (ratio)								
4.1 - Total Water Consumption (liters/person/day)						156	156	156
4.7 - Residential Consumption (liters/person/day)								
6.1 - Non Revenue Water (%)	100%	100%	100%	100%		25%	25%	25%
6.2 - Non Revenue Water (m3/km/day)	167	152	152	152		2	2	2
8.1 - Water sold that is metered % (%)								

To Tatou Vai , Cook Islands	2019	2020	2021	2022
1.1 - Water Coverage (%)	100%	100%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	59.52			
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	1.77	2.03	2.75	2.94
18.1 - Average Revenue W&WW (US\$/m3 water sold)	0.0			
2.1 - Sewerage Coverage (%)				
23.1 - Collection Period (days)				
23.2 - Collection ratio (%)				
24.1 - Operating Cost Coverage (ratio)	0.0			
4.1 - Total Water Consumption (liters/person/day)	3.54			
4.7 - Residential Consumption (liters/person/day)				
6.1 - Non Revenue Water (%)	20.0%			
6.2 - Non Revenue Water (m3/km/day)	0.08			
8.1 - Water sold that is metered % (%)				

Department of Water, Vanuatu	2016	2017	2018	2019	2020	2021	2022
1.1 - Water Coverage (%)	75%	75%	79%	82%	82%	82%	82%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)		0.34	0.28	0.53	0.87	1.0	0.48
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	1.13	1.13	0.89	0.94	0.94	0.94	0.94
18.1 - Average Revenue W&WW (US\$/m3 water sold)	0.24	0.25	0.21	0.49	0.61	0.55	0.35
2.1 - Sewerage Coverage (%)							
23.1 - Collection Period (days)		96	93	104	310	451	672
23.2 - Collection ratio (%)				72%	39%	79%	79%
24.1 - Operating Cost Coverage (ratio)		0.73	0.76	0.94	0.7	0.55	0.72
4.1 - Total Water Consumption (liters/person/day)	273	282	242	198	190	175	210
4.7 - Residential Consumption (liters/person/day)							
6.1 - Non Revenue Water (%)	43%	43%	43%	52%	52%	52%	52%
6.2 - Non Revenue Water (m3/km/day)	43	42	46	51	49	45	54
8.1 - Water sold that is metered % (%)	100%	100%	100%	100%	100%	100%	100%

Nauru Utilities Corporation	2011	2012	2013	2014	2018	2019	2020	2021
1.1 - Water Coverage (%)	98%	99%	99%	99%	100%	100%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)					68	114	22	29
12.3 - Staff Water/000 Water pop served (#/000 W pop served)					2.62	2.59	2.64	2.63
18.1 - Average Revenue W&WW (US\$/m3 water sold)	122	122	122	120	195	300	83	104
2.1 - Sewerage Coverage (%)								
23.1 - Collection Period (days)	0.0	0.0	0.0	0.0	56.3	7.9	2.73	35.87
23.2 - Collection ratio (%)	100%	100%	100%	100%	85%	98%	99%	90%
24.1 - Operating Cost Coverage (ratio)					2.86	2.64	3.87	3.58
4.1 - Total Water Consumption (liters/person/day)	20	20	20	20	17	10	35	35
4.7 - Residential Consumption (liters/person/day)	16	16	16	16	13	6	22	22
6.1 - Non Revenue Water (%)					75%	80%	32%	44%
6.2 - Non Revenue Water (m3/km/day)								11.71
8.1 - Water sold that is metered % (%)								

Eau et Electricite de Wallis et Futuna	2018
1.1 - Water Coverage (%)	72%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)	
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	0.6
18.1 - Average Revenue W&WW (US\$/m3 water sold)	1.57
2.1 - Sewerage Coverage (%)	
23.1 - Collection Period (days)	
23.2 - Collection ratio (%)	100.00%
24.1 - Operating Cost Coverage (ratio)	
4.1 - Total Water Consumption (liters/person/day)	342
4.7 - Residential Consumption (liters/person/day)	342
6.1 - Non Revenue Water (%)	42%
6.2 - Non Revenue Water (m3/km/day)	15
8.1 - Water sold that is metered % (%)	0%

Public Works Department, Niue	2011	2012	2015
1.1 - Water Coverage (%)	90%	100%	98%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)			2.45
12.3 - Staff Water/000 Water pop served (#/000 W pop served)			7.39
18.1 - Average Revenue W&WW (US\$/m3 water sold)			0.03
2.1 - Sewerage Coverage (%)			
23.1 - Collection Period (days)	365	365	
23.2 - Collection ratio (%)	60.0%	100.0%	
24.1 - Operating Cost Coverage (ratio)	0.01	0.01	0.01
4.1 - Total Water Consumption (liters/person/day)			389
4.7 - Residential Consumption (liters/person/day)			0.0
6.1 - Non Revenue Water (%)			7%
6.2 - Non Revenue Water (m3/km/day)			1
8.1 - Water sold that is metered % (%)			0%

Ministry of Utilities and Industries, Tuvalu	2013	2014	2015	2016	2017	2018	2019	2022
1.1 - Water Coverage (%)	94%	90%	98%	96%	98%	95%	87%	90%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)								
12.3 - Staff Water/000 Water pop served (#/000 W pop served)	1.49	1.56	1.43	1.46	1.43	1.35	1.35	1.67
18.1 - Average Revenue W&WW (US\$/m3 water sold)								
2.1 - Sewerage Coverage (%)								
23.1 - Collection Period (days)								
23.2 - Collection ratio (%)								
24.1 - Operating Cost Coverage (ratio)								
4.1 - Total Water Consumption (liters/person/day)	6	8	8	9	9	13	13	18
4.7 - Residential Consumption (liters/person/day)								
6.1 - Non Revenue Water (%)							10.7%	1.4%
6.2 - Non Revenue Water (m3/km/day)								
8.1 - Water sold that is metered % (%)								

Independent Water Schemes Association, Samoa	2012	2013	2020	2021	2022
1.1 - Water Coverage (%)	100%	100%	100%	100%	100%
11.1 - Unit Operational Cost Water and Wastewater (W&WW) (US\$/m3 sold)					
12.3 - Staff Water/000 Water pop served (#/000 W pop served)			0.18	0.22	0.21
18.1 - Average Revenue W&WW (US\$/m3 water sold)					
2.1 - Sewerage Coverage (%)					
23.1 - Collection Period (days)					
23.2 - Collection ratio (%)	60%	100%			
24.1 - Operating Cost Coverage (ratio)	1.0	0.6			
4.1 - Total Water Consumption (liters/person/day)			294	260	235
4.7 - Residential Consumption (liters/person/day)			294	260	235
6.1 - Non Revenue Water (%)			35%	34%	27%
6.2 - Non Revenue Water (m3/km/day)			19	17	11
8.1 - Water sold that is metered % (%)			0%	3%	10%



Tokelau Division for Environment		2016	2017
Do you have water distribution system?	Yes/no	No	No
If yes, how much water you produced?	m3	-	-
Length of water distribution system	km	0	0
Do you charge/having fees for water?	Yes/no	No	No
If yes, please post the collected	Units of local currency	-	-
Does your utility has permanent staff?	Yes/no	Yes	Yes
How many staff members?	Number	1 per island	1 per island
Does your company pays to your staff from collected revenues?	Yes/no	No	No
If yes, how much in 2016 financial year?	Units of local currency	-	-
Does your company pays for electricity?	Yes/no	No	No
If yes, how much in 2016 financial year?	Units of local currency		
Do you produce financial reports	Yes/no		
If yes, please attach			