WATER COMPANIES DATA SHEETS AND OVERSEAS ACTIVITIES

This chapter illustrates the activities of some Group companies not included in the scope of the *Consolidated Non-Financial Statement* (see *Disclosing sustainability: methodological note*). In particular, data and information are provided relating to the main operating Companies for the water sector in Umbria and Tuscany, consolidated using the equity method in the statutory financial statements, and to the companies that are active abroad in the same sector.

Water activities in Umbria and Tuscany

UMBRA ACQUE

Umbra Acque SpA is a company with predominantly public capital, 40% owned by Acea SpA, which manages the Integrated Water

Service in the area of Optimal Territorial Conference – Umbria 1 consisting of 38 Municipalities, of which 37 in the province of Perugia and 1 in the province of Terni, with a total population of around 490,000 inhabitants served.

MANAGEMENT SYSTEMS

Umbra Acque has an Integrated Quality, Environment and Safety Management System (QAS), in compliance with the UNI ISO 9001:2015, UNI ISO 14001:2015 and ISO 45001:2018 standards. It also holds the SOA certification for the OG6 (in class III)²²⁴ and OS22 (in class II)²²⁵ categories and qualification for design and construction (up to the 8th classification). The analysis laboratory is accredited according to the UNI ISO/IEC 17025:2018 standard and for the purposes of monitoring drinking water.

QUALITY DELIVERED: MAIN INTERVENTIONS ON THE NETWORKS AND CONTROLS ON DRINKING WATER AND WASTE WATER

SIZE OF NETWORK, MAIN WORKS, METERS AND CHECKS ON DRINKING WATER AND NETWORKS (2022)

size of drinking-water network - data in GIS	6,372 km (1,388 km of supply network, 4,984 km of distribution)
type of work	
interventions due to network failure/leak detection	18,343 interventions (18,160 due to faults, 183 leak detection)
meter installations (new installation and replacement)	36,514 interventions (5,941 new installation, 30,573 replacements)
network extension	18.2 km of expanded network
network reclamation	24 km of reclaimed network
drinking water quality control	6,514 samples collected and 116,419 tests performed
SIZE OF NETWORK, WORKS AND CHECKS ON SEWE	RAGE WATER AND NETWORKS (2022)
size of sewerage network - data in GIS	1,912 km
type of work	
interventions due to network failure	1,073 interventions
planned interventions	55 interventions
network extension	9 km of expanded network
network reclamation	20 km of network under video inspection with in-house equipment and personnel
quality control on wastewater for sewerage networks	203 samples collected and 5,502 tests performed

HUMAN RESOURCES IN FIGURES

GENERAL DATA ON PERSONNEL (2021-2022)

		2021				
(no.)	men	women	total	men	women	total
composition of the staff						
executives	5	0	5	5	0	5
managers	10	2	12	14	2	16
clerical workers	72	92	164	77	93	170
workers	209	0	209	212	1	213
total	296	94	390	308	96	404
contract type						
staff with permanent contract	280	89	369	288	92	380
of which part-time staff	0	7	7	0	7	7
permanent staff	12	4	16	19	4	23
staff under apprenticeship contracts	4	1	5	1	0	1
total	296	94	390	308	96	404
changes						
incoming staff	9	3	12	20	6	26
outgoing staff	9	2	11	8	4	12
turnover rate (%)	6.1	5.3	5.9	9.1	10.4	9.4
incoming rate (%)	3.0	3.2	3.1	6.5	6.3	6.4
outgoing rate (%)	3.0	2.1	2.8	2.6	4.2	3.0

224 Aqueducts, gas pipelines, oil pipelines, irrigation and evacuation systems.

225 Drinking water and water treatment plants.

1,468

3,725

2,029

4

3,497

3,729

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2021-2022)

	2021	2022		
accidents (no.)	5	13		
total days of absence	234	8,072		
hours worked (*)	659,520	664,753		
frequency index (FI) (number of accidents per 1,000,000/working hours) (*)	7.58	19.56		
severity index (SI) (days of absence per 1,000/working hours) (*)	0.35	12.14		

(*) The 2022 figure is estimated.

TRAINING 2021-2022

course type, hours provided and costs						
	cours	es (no.)	trainin	g (hours)	costs	(€)
course type	2021	2022	2021	2022	2021	2022
advanced training	1	1	6	42	310	0
technical-specialised	77	120	7,842	4,849	82,211	115,935
legal	2	8	8	65	538	2,495
managerial	10	9	149	71	2,689	3,125
safety	20	31	1,780	2,802	16,716	36,752
total	110	169	9,785	7,829	102,464	158,307
employees trained						
		2021 (*)			2022	
(no.)	men	women	total	men	women	total
	303	96	399	308	96	404
breakdown of training hours by qualification						
executives	219	0	219	216	0	216
managers	359	61	420	313	74	387

(*) The figures are higher than the number of employees as they include employees who provided services only for a few months of the year.

2,396

3,441

Training provided during the year covered a variety of topics, such as anti-corruption and privacy, and safety training continued in accordance with current regulations.

3,309

5,705

3,441

ENVIRONMENTAL ACCOUNTS

clerical workers

workers

PRODUCTS AND ANALYTICAL TESTS	u. m.	2020	2021	2022	∆% 2022/2021
WATER BALANCE					
drinking water from the environment	Mm ³	58.6	56.3	56.0	-0.5
from the surface	Mm ³	0	0	0	-
from wells	Mm ³	44.82	42.80	45.16	5.6
from springs	Mm ³	10.61	10.20	8.14	-20.6
of which water from other aqueduct systems	Mm ³	3.17	3.34	2.65	-18.2
total drinking water leaving the aqueduct system (c) = (a+b)	Mm³	31.3	31.0	31.7	2.3
total drinking water dispensed and billed in the network (a)	Mm ³	28.7	28.6	28.7	0.3
measured volume of water delivered to users	Mm ³	28.7	28.6	28.6	0.3
volume consumed by users and not measured	Мт³	0	0	0	-
total drinking water authorised and not billed in the network (b)	Mm³	2.6	2.4	3.0	25.0
measured unbilled authorised consumption	Мт`	1.2	0.7	0.5	-28.6
unmeasured unbilled authorised consumption	Mm ³	1.4	1.7	2.5	47.1
LOSS ASSESSMENT ACCORDING TO ARERA RESOLUTION S	917/17 R/IDR				
water leaks	Mm ³	27.3	25.3	24.3	-4.0
water loss percentages	%	46.6	44.9	43.3	-3.6
TREATED WASTE WATER					
water treated in the main treatment plants (*)	Mm ³	56.8	59.3	45.5	-23.3
ANALYTICAL TESTS ON DRINKING WATER AND WASTE WAT	ER				
no. analytical tests on drinking water	no.	107,257	116,891	116,419	-0.4
of which no. analytical tests on surface water	no.	7,209	7,350	6,822	-7.2
no. analytical tests on wastewater (**)	no.	35,610	42,404	42,160	-0.6

(*) two-year data for 2020-2021 are estimated; 2022 data are partially measured (for treatment plants above 10,000 PE). The sharp decline is due in part to the new reporting method and in part to the modest precipitation in 2022, which reduced the quantity of mixed water input.
(**) The figure includes analyses carried out at treatment plants and industrial waste.

RESOURCES USED	u. m.	2020	2021	2022	∆% 2022/2021		
COLLECTION, SUPPLY AND DISTRIBUTION OF DRINKING AND NON-DRINKING WATER							
materials							
sodium hypochlorite	t	92	93	87	-6.5		
sodium chloride	t	214	222	217	-2.3		
hydrochloric acid	t	207	210	214	1.9		
aluminium polychloride	t	12	11	9	-18.2		
phosphoric acid (10%)	t	0	0	0	-		
WASTE WATER TREATMENT							
materials							
polyelectrolyte emulsion	t	123	95	138	45.3		
ferric chloride (40%)	t	62	114	201	76.3		
mineral oil and fats	t	0	0	0	-		
OTHER CONSUMPTION							
drinking water (*)	m ³	20,222	53,178	32,438	-45.2		
drinking water consumed for non-industrial water uses (offices, outside showers, etc.)	m ³	1,597	10,416	6,270	-39.8		
drinking water consumed for process water uses (washing machinery and bays, etc.)	m ³	18,625	42,762	26,168	-38.8		

(*) The figures for 2020 and 2021 are estimated considering the partial closure of offices and the different organisation of work following the health emergency.

There are no active internal water reuse processes, but the Company has supplied 273,940 m³ of non-potable water for industrial use to two local businesses.

ENERGY CONSUMPTION	u. m.	2020	2021	2022	∆% 2022/2021
FUELS					
vehicle fuels					
diesel	I	410,000	456,600	444,900	-2.6
petrol	I	7,000	5,800	4,900	-15.5
ELECTRICITY					
total electricity for drinking water	GWh	69.2	69.4	74.9	7.9
electricity for water pumping stations	GWh	68.8	69.1	74.5	7.8
electricity for offices	GWh	0.4	0.3	0.4	33.3
total electricity for waste water	GWh	22.7	23.1	22.5	-2.6
electricity for treatment	GWh	17.9	17.9	17.8	-0.6
electricity for pumping stations	GWh	4.8	5.2	4.7	-9.6
electricity for offices	GWh	0.1	0.1	0.1	-

ENERGY EFFICIENCY (2020-2022)

action		energy savings achieved (k	Wh)
action	2020	2021	2022
extraordinary maintenance on plants	75,000	150,000	415,000

The completion of extraordinary maintenance on the Raggio water plant in the municipality of Gubbio (one of the primary water lifts) and extraordinary maintenance on the oxidative systems of five treatment plants in 2022 resulted in an estimated energy savings of 415,000 kWh.

WASTE	u. m.	2020	2021	2022	∆% 2022/2021
SPECIFIC WASTE FROM TREATMENT OF WASTE WATER					
treatment sludge (*)	t	14,941	13,868	17,356	25.2
sand and sediment from treatment	t	1,057	1,353	1,548	14.4
WASTE EXCLUDING SLUDGE AND SAND					
hazardous waste (**)	t	20.2	8.0	16.2	102.5
non-hazardous waste	t	4,940	3,767	3,255	-13.6

(*) The item includes liquid sludge transported to other plants for the dewatering process, for a value of 4,940 t in 2020, 2,525 t in 2021 and 5,253 t in 2022. (**) The increase in 2020 and 2022 is due to the exceptional disposal of vehicles and company cars.

TOTAL COD IN INPUT AND OUTPUT (2020-2022)

(t/year)	2020	2021	2022
COD _{in}	17,135	13,401	11,086
COD _{out}	2,288	1,556	960

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS (2020-2022)

parameter	average values (mg/l) 2020	average values (mg/l) 2021	average values (mg/l) 2022
BOD ₅ (*)	18.6	12.3	12.9
COD	40.3	21.0	21.0
SST	30.8	12.0	13.7
NH_4^+	5.0	2.0	2.0
phosphorous	2.0	2.0	1.9

(*) The output BODs value is expressed with the value of the limit of quantification (LOQ) equal to 12.3, resulting in all analytical calculations being lower than this value.

PURIFICATION EFFICIENCY OF THE MAIN TREATMENT PLANTS (2020-2022)

parameter	average values (%) 2020	average values (%) 2021	average values (%) 2022
100x(COD _{in} - COD _{out})/COD _{in}	87.0	88.4	91.3
100x(SSTin - SSTout)/SSTin	89.4	95.7	93.4
100x(NH₄⁺in - NH₄⁺out)/NH₄⁺in (*)	86.4	93.8	93.1
100x(P _{in} - P _{out})/ P _{in} (*)	33.0	35.0	27.8

(*) Umbra Acque does not detect phosphates leaving treatment plants, as the standard does not establish a limit, but rather total phosphorus as specified in Table no. 2 of Annex 5 to Part III of the Consolidated Environmental Law (TUA), with more stringent monitoring of the nutrient discharged into surface water bodies.

PUBLIACQUA

Publiacqua SpA is a mixed ownership Company with a majority public interest, owned by Acea through Acque Blu Fiorentine SpA, which manages the Integrated Water Service in the area of Optimal Territorial Conference no. 3 - Medio Valdarno, with a total population of over 1.2 million citizens served.

MANAGEMENT SYSTEMS

Publiacqua has implemented the Integrated Quality, Environment, and Safety (QAS) Management System, which complies with UNI EN ISO 9001:2015, 14001:2015 and 45001:2018 standards for the primary operating activities. It is certified for the Anti-bribery Management System UNI ISO 37001:2016, and the analysis laboratory is accredited in accordance with UNI ISO/IEC 17025:2005.

QUALITY DELIVERED: MAIN INTERVENTIONS ON THE NETWORKS AND CONTROLS ON DRINKING WATER AND WASTE WATER

SIZE OF NETWORK, MAIN WORKS, METERS AND CHECKS ON DRINKING WATER AND NETWORKS (2022)

size of drinking-water network - data in GIS	6,923 km (1,397 km of supply network, 5,526 km of distribution)
TYPE OF WORK	
interventions due to network failure/leak detection	5,252 interventions (3,886 due to fault reporting, 1,366 due to leak detection activities)
meter installations (new installation and replacement)	6,237 interventions (2,913 new installations and 3,324 replacements due to breakdowns/ breakage) and 28,641 mass replacements under contract
network extension	7.6 km of expanded network
network reclamation	35.1 km of reclaimed network
drinking water quality control	10,477 samples collected and 319,572 tests performed
SIZE OF NETWORK, WORKS AND CHECKS ON	SEWERAGE WATER AND NETWORKS (2022)
size of sewerage network - data in GIS	3.772 km

TYPE OF WORK					
interventions due to network failure	3,908 interventions				
planned interventions	1,442 interventions				
network extension	10.1 km of expanded network				
network reclamation	8.9 km of reclaimed network				
quality control on wastewater for sewerage networ	4.5 3,343 samples collected and 55,794 tests performed				

HUMAN RESOURCES IN FIGURES

GENERAL DATA ON PERSONNEL (2021-2022)

		2021			2022		
(no.)	men	women	total	men	women	total	
composition of the staff							
executives	3	1	4	3	1	4	
managers	15	7	22	14	8	22	
clerical workers	187	142	329	184	156	340	
workers	259	5	264	269	3	272	
total	464	155	619	470	168	638	
contract type							
staff with permanent contract	421	153	574	425	160	585	
of which part-time staff	3	7	10	3	8	11	
permanent staff	6	2	8	10	7	17	
staff under apprenticeship contracts	37	0	37	35	1	36	
total	464	155	619	470	168	638	
changes							
incoming staff	29	7	36	44	25	69	
outgoing staff	22	10	32	39	11	50	
turnover rate (%)	10.99	10.97	10.99	17.66	21.43	18.65	
incoming rate (%)	6.3	4.5	5.8	9.4	14.9	10.8	
outgoing rate (%)	4.7	6.5	5.2	8.3	6.5	7.8	

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2021-2022) (*)

	2021	2022
accidents (no.) (**)	9	10
total days of absence (***)	323	267
hours worked (****)	1,034,611	1,073,177
frequency index (FI) (number of accidents per 1,000,000/working hours)	8.70	9.32
severity index (SI) (days of absence per 1,000/working hours)	0.31	0.25

(*) Some figures for 2021 have been updated following consolidation.

(**) Accidents with effects lasting for more than one day are considered.
(***) The value also excludes days of absence related to persistent or reopened injuries from previous years.
(****) This is the sum of ordinary and overtime hours. As a result of consolidation, the figure for 2021 was amended, requiring a recalculation of the severity and frequency indices as well.

TRAINING (2021-2022) (*)

course type, hours provided and costs							
// /	cours	courses (no.)		training (hours)		costs (€)	
course type	2021	2022	2021	2022	2021	2022	
advanced training (**)	2	0	182	0	2,641	0	
IT	3	2	398	24	3,962	2,100	
technical-specialised	44	112	4,298	5,593	58,104	61,250	
legal	5	4	809	490	6,603	27,290	
managerial	54	30	2,249	1,924	71,309	95,300	
safety	46	40	4,102	2,725	60,745	50,823	
total	154	188	12,038	10,756	203,364	236,763	
employees trained							

(no.)	2021			2022 (***)		
	men	women	total	men	women	total
	464	154	618	485	172	657
breakdown of training hours by qualification						
executives	68	10	78	104	21	125
managers	309	71	380	217	191	408
clerical workers	2,333	1,583	3,916	1,635	1,325	2,960
workers	7,612	52	7,664	7,220	43	7,263

(*) Some figures for 2021 have been updated following consolidation. (**) The advanced training courses provided to employees are managed by Acea SpA, which bears the costs. (***) Figures are higher because they also include employees who left before the year.

Throughout the year, numerous courses on safety, regulations under Legislative Decree no. 231/2001, preventing corruption, and specific technical and operational training were offered.

data protection, and specialized training on regulatory updates was provided for various organisational structures.

In addition, the Reconnect People course for managers was introduced, emphasizing managerial management, organisational conflict, and internal and external communication.

The first course on diversity and inclusion was provided to the entire HR structure, along with an experiential pilot *team-building day*. The entire corporate population was trained on cybersecurity and

ENVIRONMENTAL ACCOUNTS

PRODUCTS AND ANALYTICAL TESTS (*)	u. m.	2020	2021	2022	∆% 2022/2021
WATER BALANCE					
drinking water from the environment	Mm ³	148.7	147.0	144.0	-2.0
from the surface	Mm ³	95.4	93.5	92.1	-1.5
from wells	Mm ³	41.9	43.5	42.8	-1.6
from springs	Мт³	10.7	9.3	9.1	-2.2
of which water from other aqueduct systems	Mm ³	0.7	0.66	0.74	12.1
total drinking water leaving the aqueduct system (e) = (a+b+c+d)	Mm ³	84.5	87.9	87.4	-0.6
total drinking water dispensed and billed in the network (a)	Mm ³	76.6	78.8	80.7	2.4
measured volume of water delivered to users	Mm ³	76.6	78.1	80.0	2.4
volume consumed by users and not measured	Mm ³	0	0.66	0.74	12.1
total drinking water authorised and not billed in the network (b)	Mm ³	0.4	0.4	0.4	-
measured unbilled authorised consumption	Mm ³	0	0	0	-
unmeasured unbilled authorised consumption	Mm ³	0.4	0.4	0.4	-
drinking water exported (sub-distributors) (c)	Mm ³	0.7	0.9	0.005	-99.4
measured process losses (d)	Mm ³	6.8	7.8	6.3	-19.2
LOSS ASSESSMENT ACCORDING TO ARERA RESOLUTION 917/17 R/II	DR				
water leaks (**)	Mm ³	64.2	59.1	57.3	-3.0
water loss percentages	%	43.2	40.2	39.6	-1.5
TREATED WASTE WATER					
water treated in the main treatment plants	Mm ³	97.4	98.3	93.4	-5.0
ANALYTICAL TESTS ON DRINKING WATER AND WASTE WATER					
no. analytical tests on drinking water	no.	288,298	296,620	319,572	7.7
of which no. analytical tests on surface water (***)	no.	26,665	24,949	29,435	18.0
no. analytical tests on waste water	no.	38,293	38,676	55,794	44.2

(*) Some figures for the 2020-2021 two year period have been updated following consolidation. The 2022 figures are estimated. (**) The value of the water losses coincides with the "total lost volume (WLtot)" and includes the unmeasured treatment losses, the supply losses and the total distribution water losses.

(***) Analysis of crude surface water (untreated).

RESOURCES USED (*)	u. m.	2020	2021	2022	∆% 2022/2021
COLLECTION, SUPPLY AND DISTRIBUTION OF DRINKING A	ND NON-DRINKI	NG WATER			
materials					
sodium hypochlorite	t	1,117	1,097	1,102	0.5
sodium chloride	t	347	349	376	7.7
hydrochloric acid	t	403	402	392	-2.5
flocculant	t	5,055	5,015	3,883	-22.6
purate	t	349	414	344	-16.9
sulphuric acid	t	523	608	515	-15.3
oxygen	t	90	76	19	-75.0
acetic acid	t	113	112	63	-43.8
carbon dioxide (excluding drinking fountains)	t	634	648	838	29.3
ferrous chloride	t	45	37	22	-40.5
phosphoric acid	t	13	18	15	-16.7
WASTE WATER TREATMENT					
materials					
polyelectrolyte emulsion	t	158	307	275	-10.4
sodium hypochlorite	t	61	64	45	-29.7
peracetic acid, caustic soda, polyamine/anti-foaming agent	t	13	12	12	-
polyaluminium chloride (PAC)	t	4,382	4,122	3,903	-5.3
lime	t	527	693	523	-24.5
acetic acid 80%	t	712	684	743	8.6
OTHER CONSUMPTION					
drinking water	m ³	182,775	275,109	191,432	-30.4

(*) Some figures for 2021 have been updated following consolidation.

ENERGY CONSUMPTION	u. m.	2020	2021	2022	∆% 2022/2021
FUELS (*)					
process fuels - wastewater					
methane	Sm ³	84,214	90,195	93,889	4.1
biogas produced	m ³	609,120	593,478	562,421	-5.2
heating fuels					
methane	Sm ³	60,429	60,641	63,125	4.1
diesel fuel		4,500	5,000	4,125	-17.5
lpg	I	0	1,750	2,170	24.0
vehicle fuels					
diesel		349,724	360,131	363,564	1.0
petrol		26,913	26,172	28,515	9.0
ELECTRICITY (*)					
total electricity for drinking water	GWh	72.6	71.2	73.5	3.2
electricity for water pumping stations	GWh	71.1	69.6	71.1	2.2
electricity for offices	GWh	1.5	1.6	2.4	50.0
total electricity for waste water	GWh	34.6	35.0	34.9	-0.3
electricity for treatment	GWh	30.5	30.5	30.4	-0.3
electricity for pumping stations	GWh	4.0	4.4	4.4	-
electricity for offices	GWh	0.1	0.1	0.1	-

(*) Some figures for the 2020-2021 two year period have been updated following consolidation.

ENERGY EFFICIENCY (2020-2022)

	energy s	energy savings achieved (kWh)				
action	2020	2021	2022			
network efficiency improvement	4,110,000	3,195,000	1,500,000			
Soa Coverciano – <i>Power quality</i> management	-	-	3,990			
Anconella - New pump impellers #3 and #6	-	-	250,000			
offices relamping	-	6,700	-			

Approximately 1.5 GWh of energy reductions are attributed to **optimisation actions in the water distribution network**. New impellers that permit reduced dissipative adjustments at low flow rates have also helped to improve the efficiency of the final thrust section of the Anconella potable water treatment facility. The electronic device test to optimise the Coverciano power plant's input power management (SOA) was also successful, albeit with modest absolute values for the installation situation, but with a 7.5% reduction in consumption.

WASTE	u.m.	2020	2021	2022	∆% 2022/2021
SPECIFIC WASTE FROM TREATMENT OF WASTEWATER (*)					
treatment sludge	t	28,760	30,873	29,978	-2.9
sand and sediment from treatment	t	1,328	1,296	1,199	-7.5
WASTE PURSUANT TO ITALIAN LEGISLATIVE DECREE NO. 152/06 EX	XCLUDING	SLUDGE AN	D SAND (*)		
hazardous waste	t	32.6	83.6	26.8	-67.9
non-hazardous waste	t	12,054	8,009	7,726	-3.5

(*) Some figures for the 2020-2021 two year period have been updated following consolidation.

TOTAL COD IN INPUT AND OUTPUT - SAN COLOMBANO TREATMENT PLANT (2020-2022)

(t/year)	2020	2021	2022
COD _{in}	14,536	14,851	13,084
COD _{out}	1,321	1,691	1,415

OUTPUT PARAMETERS - SAN COLOMBANO TREATMENT PLANT (2020-2022) (*)

parameter	average values (mg/l) 2020	average values (mg/l) 2021	average values (mg/l) 2022
BOD₅	2.2	2.1	2.3
COD	13.8	15.6	15.8
SST	4.8	4.9	4.9
NH_4^+	0.5	1.0	0.8
phosphorous	0.8	0.7	0.8

(*) The San Colombano waste water treatment plant (600,000 population equivalent) treats about half of Publiacqua's global waste water.

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS (2020-2022) (*)

parameter	average values (mg/l) 2020	average values (mg/l) 2021	average values (mg/l) 2022
BOD₅	2.2	2.1	2.3
COD	14.3	17.1	16.0
SST	4.9	4.7	4.7
\mathbb{NH}_{4}^{+}	0.7	1.1	1.0
phosphorous	0.9	0.8	0.9

(*) The figures include 39 treatment plants, including San Colombano, which treat a total of 98% of wastewater and 96% of the organic load (COD) of Publiacqua.

PURIFICATION EFFICIENCY SAN COLOMBANO TREATMENT PLANT (2020-2022)

parameter	average values (%) 2020	average values (%) 2021	average values (%) 2022
100x(COD _{in} - COD _{out})/COD _{in}	89.4	93.2	87.4
100x(SST _{in} -SST _{out})/SST _{in}	95.1	92.3	91.2
$100x(NH_4^{+in} - NH_4^{+out})/NH_4^{+in}$	97.9	95.8	97.3
100x(PO ₄ ⁻³ in -PO ₄ ⁻³ out)/ PO ₄ ⁻³ in	74.0	72.7	73.7

PURIFICATION EFFICIENCY OF THE MAIN TREATMENT PLANTS (2020-2022) (*)

parameter	average values (%) 2020	average values (%) 2021	average values (%) 2022
100x(COD _{in} - COD _{out})/COD _{in}	90.9	88.4	89.2
100x(SSTin-SSTout)/SSTin	96.1	93.9	92.6
$100x(NH_4^{+in} - NH_4^{+out})/NH_4^{+in}$	97.4	95.8	96.9
100x(PO ₄ - ³ in -PO ₄ - ³ out)/ PO ₄ - ³ in	73.3	73.0	73.4

(*) The figures include 39 treatment plants, including San Colombano, which treat a total of 98% of wastewater and 96% of the organic load (COD) of Publiacqua.

ACQUE

Acque SpA manages the Integrated Water Service in the area of Optimal Territorial Conference 2 Lower Valdarno on the basis of the concession agreement issued by the Autorità Idrica Toscana (AIT), consisting of 55 Municipalities in the provinces of Pisa, Lucca, Florence, Pistoia and Siena, with a total population of approximately 735,000 user accounts served.

MANAGEMENT SYSTEMS

Acque has implemented and certified an Integrated Management System based on Quality, Environment, Safety, Energy Efficiency and Social Responsibility, Road Safety and the Prevention of Corruption. In addition, the laboratory is accredited pursuant to the UNI CEI EN ISO/IEC 17025:2018 standard and the Pagnana treatment plant in Empoli has EMAS IV registration.

QUALITY DELIVERED: MAIN INTERVENTIONS ON THE NETWORKS AND CONTROLS ON DRINKING WATER AND WASTE WATER

SIZE OF NETWORK, MAIN WORKS, METERS AND CHECKS ON DRINKING WATER AND NETWORKS (2022)

size of drinking-water network (*) - data in GIS	6,067 km
TYPE OF WORK	
interventions due to network failure/leak detection	25,915 interventions (25,278 due to faults, 637 leak detection)
meter installations (new installation and replacement)	15,640 interventions (6,620 new installation, 9,020 replacements)
network extension	12.4 km of expanded network
network reclamation	51.8 km of reclaimed network
drinking water quality control	11,356 samples collected and 326,759 tests performed
SIZE OF NETWORK, WORKS AND CHECKS ON SEWERA	GE WATER AND NETWORKS (2022)
size of sewerage network(*) - data in GIS	3,095 km
TYPE OF WORK	
interventions due to network failure	4,802 interventions
planned interventions	2,223 interventions
network extension	5.3 km of expanded network
network reclamation	7.4 km of reclaimed network
quality control on wastewater for sewerage networks	7,924 samples collected and 116,775 tests performed

(*) Estimated figure equal to the final figure for 2021.

HUMAN RESOURCES IN FIGURES

GENERAL DATA ON PERSONNEL (2021-2022)

		2021			2022	
(no.)	men	women	total	men	women	total
composition of the staff						
executives	2	2	4	2	2	4
managers	7	4	11	8	4	12
clerical workers	95	159	254	103	167	270
workers	150	0	150	157	1	158
total	254	165	419	270	174	444
contract type						
staff with permanent contract	249	163	412	259	173	432
of which part-time staff	1	30	31	2	34	36
permanent staff	0	2	2	1	1	2
staff under apprenticeship contracts	5	0	5	10	0	10
total	254	165	419	270	174	444
changes						
incoming staff	11	2	13	30	15	45
outgoing staff	10	1	11	14	6	20
turnover rate (%)	8.3	1.8	5.8	16.3	12.1	14.6
incoming rate (%)	4.3	1.2	3.1	11.1	8.6	10.1
outgoing rate (%)	3.9	0.6	2.6	5.2	3.5	4.5

The company's workforce increased significantly from 419 in 2021 to 444 in 2022 as a consequence of the internalization of some areas formerly managed by the associated company Ingegnerie Toscane and the incorporation of new facilities formerly managed by other companies.

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2021-2022)

	2021	2022
accidents (no.)	7	7
total days of absence (*)	359	317
hours worked	654,851	667,351
frequency index (FI) (number of accidents per 1,000,000/working hours)	10.69	10.49
severity index (SI) (days of absence per 1,000/working hours)	0.55	0.48

(*) The value also excludes days of absence related to persistent or reopened injuries from previous years.

TRAINING 2021-2022

course type, hours provided and costs (*)						
	cours	es (no.)	trainir	ng (hours)	с	osts (€)
course type	2021	2022	2021	2022	2021	2022
IT	2	4	403	1,000	0	1,320
new hires	1	1	1,001	2,162	0	0
technical-specialised	33	35	1,766	1,857	12,488	29,600
managerial	3	4	97	311	270	2,800
safety	36	27	4,105	3,325	9,891	21,208
environment	1	3	8	50	0	2,701
cross-cutting	4	9	148	311	0	6,386
training pursuant to Legislative Decree no. 231/01	1	1	250	41	0	0
e-learning training	7	11	386	77	0	0
total	88	95	8,164	9,134	22,649	64,015
employees trained						
		2021 (**)			2022	
(no.)	men	women	total	men	women	total
	286	174	460	274	161	435
breakdown of training hours by qualification						
executives	116	32	148	99.5	70.5	170
managers	161	43	204	229.5	112.5	342
clerical workers	1,933	3,314	5,247	3,251	3,610	6,861
workers	2,565	0	2,565	1,740	21	1,761

(*) Emergency tests are excluded; by new hires, we mean the coaching of new staff by more experienced workers. E-learning training is training on the usable integrated management system through SAP Success Factor. (**) The figures are higher than the number of employees, as they include employees of other companies, posted workers and workers who provided services only for a few months

(**) I he figures are higher than the number of employees, as they include employees of other companies, posted workers and workers who provided services only for a few months of the year.

ENVIRONMENTAL ACCOUNTS

PRODUCTS AND ANALYTICAL TESTS	u. m.	2020	2021	2022	∆% 2022/2021
WATER BALANCE (*)					
drinking water from the environment	Mm³	74.8	74.4	74.4	-
from the surface	Mm ³	3.3	3.1	3.1	-
from wells	Mm ³	57.3	57.5	57.5	-
from springs	Mm ³	6.3	6.3	6.3	-
of which water from other aqueduct systems	Mm ³	7.9	7.5	7.5	-
total drinking water leaving the aqueduct system (e) = (a+b+c+d)	Mm ³	46.3	47.3	47.3	-
total drinking water dispensed and billed in the network (a)	Mm ³	43.9	44.2	44.2	-
measured volume of water delivered to users	Mm ³	43.7	43.9	43.9	-
volume consumed by users and not measured	Mm ³	0.2	0.3	0.3	-
total drinking water authorised and not billed in the network (b)	Mm ³	0.3	0.3	0.3	-
measured unbilled authorised consumption	Mm ³	0.1	0.1	0.1	-
unmeasured unbilled authorised consumption	Mm ³	0.2	0.2	0.2	-
drinking water exported to other systems (c)	Mm ³	1.0	1.2	1.2	-
measured process losses (d)	Mm ³	1.1	1.6	1.6	-
LOSS ASSESSMENT ACCORDING TO ARERA RESOLUTION 917/17 R/	IDR				
water leaks	Mm ³	28.5	27.1	27.1	-
water loss percentages	%	38.1	36.4	36.4	-
TREATED WASTE WATER					
water treated in the main treatment plants	Mm ³	46.4	44.6	41.9	-6.0
ANALYTICAL TESTS ON DRINKING WATER AND WASTE WATER					
no. analytical tests on drinking water (including analytical tests on surface water)	no.	357,585	297,342	362,759	22.0
no. analytical tests on waste water	no.	122,766	122,803	116,775	-4.9

(*) The 2021 figures have been restated following consolidation and differ from those previously published. The 2022 figures are estimated to be equal to those for 2021.

RESOURCES USED	u. m.	2020	2021	2022	∆% 2022/2021
COLLECTION, SUPPLY AND DISTRIBUTION OF DRINKING AND N	ION-DRINKING	G WATER (*)			
materials					
laboratory reagents (chemical section and microbiological section)	t	2	2	2	0.0
sodium hypochlorite	t	180	231	240	3.9
hydrochloric acid	t	478	339	343	1.2
potassium permanganate	t	4	4	5	25.0
aluminium polychloride	t	209	194	210	8.2
DREFLO 908 PG powder	t	0	0	1	-
salt in bags	t	1	1	0	-100
sodium chloride	t	367	362	341	-5.8
caustic soda	t	2	1	2	100
citric acid	t	3	1	0	-100
alifons L	t	0.13	0	0.05	-
oxalic acid	t	0	0	0.025	-
sodium hydroxide sol. 30%	t	0	0	0.25	-
DRYFLOC™ Polyelectrolyte EM494SFC	t	0	0	0.10	-
WASTE WATER TREATMENT					
materials					
polyelectrolyte emulsion	t	234	194	194	-
aluminium polychloride	t	20	8	6	-25.0
ferric chloride for sludge dehydration	t	528	546	570	4.4
sodium hypochlorite for final disinfection	t	29	11	42	281.8
acetic acid	t	0	0.05	0	-100.0
sulphuric acid	t	1	0	0	-
caustic soda (sodium hydroxide) - Solvay	t	2	1	0	-100.0
citric acid removed	t	0	0.05	0.15	200.0
biotek base L - biological reactivator	t	0.04	0	0	-
biotek clar – biological reactivator	t	0.3	0.3	0	-100.0
desmell Bio L – odorogenic emissions treatment	t	0	0.1	0.1	-
nutrients	t	1,136	1,320	867	-34.3
hydrochloric acid 9%	t	0	0	0.5	-

OTHER CONSUMPTION					
drinking water (*)	m ³	284,305	295,508	295,508	-
drinking water consumed for non-industrial water uses (offices, outside showers, etc.)	m ³	215,604	225,835	225,835	-
drinking water consumed for process water uses (washing machinery and bays, etc.)	m ³	68,701	69,673	69,673	-

(*) Due to consolidation, figures for 2021 have been revised. It is estimated that figures for 2022 will be identical to those for 2021.

In 2022, Acque reused approximately 201,501 m³ of recovered water for washing the sheets of sludge dehydration equipment (belt presses).

ENERGY CONSUMPTION	u. m.	2020	2021	2022	∆% 2022/2021
FUELS					
process fuels - drinking water/non-drinking water					
diesel fuel		1,500	2,050	1,100	-46.3
process fuels - wastewater					
diesel fuel		0	500	550	10.0
heating fuels					
methane	Sm ³	50,743	55,583	49,576	-10.8
lpg		15,419	17,847	11,130	-37.6
vehicle fuels					
diesel		228,802	240,882	247,012	2.5
petrol		15,373	26,950	44,215	64.1
methane	kg	23,884	15,308	9,589	-37.4
ELECTRICITY					
total electricity for drinking water	GWh	51.1	51.0	53.3	4.5
electricity for water pumping stations	GWh	50.7	50.3	52.6	4.6
electricity for offices	GWh	0.4	0.7	0.7	-
total electricity for waste water	GWh	32.3	31.9	30.3	-5.0
electricity for treatment	GWh	24.7	24.5	23.9	-2.4
electricity for pumping stations	GWh	7.4	7.0	6.0	-14.3
electricity for offices	GWh	0.2	0.4	0.4	2.4

ENERGY EFFICIENCY (2020-2022)

	energy savings achieved (kWh)		
action	2020	2021	2022
Pieve a Nievole (PT) inter-municipal treatment plant: implementation of microbubbles oxidative section Line 2	-	303,095	324,517
treatment plant via Hangar Pontedera (PI): implementation of microbubbles oxidative section	252,650	208,020	198,328
La Fontina (PI) treatment plant: replacement of air distribution plates lines 1 and 2	577,230	472,605	589,760

Acque has implemented energy efficiency improvements, such as the replacement of the oxygenation system on the Pieve a Nievole and Pontedera (PI) treatment plants, which led to the 2022 energy savings indicated in the table.

WASTE	u. m.	2020	2021	2022	∆% 2022/2021
SPECIFIC WASTE FROM TREATMENT OF WASTE WATER					
treatment sludge	t	19,880	20,247	18,660	-7.8
sand and sediment from treatment	t	1,982	1,413	1,359	-3.8
WASTE EXCLUDING SLUDGE AND SAND					
hazardous waste	t	25.0	16.8	20.2	20.2
non-hazardous waste (*)	t	72,920	63,778	59,025	-7.5

TOTAL COD IN INPUT AND OUTPUT (2020-2022) (*)

(t/year)	2020	2021	2022
COD _{in}	22,808	22,021	16,860
COD _{out}	1,268	1,212	988

(*) Installations with a treatment capacity greater than or equal to 10,000 population equivalent are considered.

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS MANAGED BY ACQUE (2020-2022) (*)

parameter	average values (mg/l) 2020	average values (mg/l) 2021	average values (mg/l) 2022
BOD₅	5.5	4.7	7.2
COD	25.5	24.3	32.0
SST	5.0	5.9	8.3
NH_4^+	3.0	3.3	3.9
phosphorous	2.0	2.2	2.6

(*) Installations with a treatment capacity greater than or equal to 10,000 population equivalent are considered.

TREATMENT EFFICIENCY OF THE MAIN TREATMENT PLANTS MANAGED BY ACQUE (2020-2022) (*)

parameter	average values (%) 2020	average values (%) 2021	average values (%) 2022
100x(COD _{in} - COD _{out})/COD _{in}	95.0	95.4	94.1
100x(SSTin-SSTout)/SSTin	97.8	98.2	97.3
$100x(NH_4^{+in} - NH_4^{+out})/NH_4^{+in}$	92.7	92.7	91.9
100x(PO ₄ ⁻³ in -PO ₄ ⁻³ out)/ PO ₄ ⁻³ in	73.0	68.3	71.3

(*) Installations with a treatment capacity greater than or equal to 10,000 population equivalent are considered.

Overseas activities

Acea operates abroad, in the water sector²²⁶, with regards to **technical aspects or the commercial management of the service**. In particular, it is present in Honduras, Dominican Republic and Peru through companies created **in partnership with local and international stakeholders**, in an area with approximately 10 million people.

AGUAS DE SAN PEDRO

Aguas de San Pedro SA holds a 30-year contract and operates the integrated water service in San Pedro Sula in Honduras, which be-

gan in 2001, and, in 2022, it continued with the projects for the **expansion**, **treatment and improvement of the water service and sewerage network** in the city. The water network stretches 2,186 km and the sewerage network 1,281 km.

The Company has a Quality Management System certified according to the UNI ISO 9001:2008 standard and the laboratories are accredited according to the UNI ISO/IEC 17025:2005 standard. In 2022, it also obtained a certificate for the Anti-bribery Management System according to the UNI ISO 37001:2016 standard.

AGUAS DE SAN PEDRO SA - MAIN COMPANY AND OPERATING DATA

country (area)	Honduras (San Pedro Sula)
users	123,433
inhabitants served	801,000 (estimated figure)
customer	municipal administration
duration of the contract	01.02.2001 - 01.02.2031
purpose of the project	concession of the integrated water service for the town of San Pedro de Sula
shareholders	Acea SpA 60.65%, Ireti SpA 39.35%
no. of employees	410
turnover (in € thousand)	43,332

226 Overseas activities have a limited incidence from an economic and financial viewpoint, in terms of consolidation percentage, but a brief description of them is given here because of their social importance.

The company has provided **65 training seminars** in a variety of areas, such as Quality Management Systems, gender equality, anti-bribery management, environmental sustainability, and climate change, with the goal of enhancing and developing people's skills. In addition, **occupational health and safety** training continued, with 70 courses on timely medical care, mental health, and occupational health. All employees were vaccinated and updated on **Biosafety and Personnel Protection Measures and Biosafety Protocols** as part of a **vaccination programme** that included specific **training** on **COVID-19 risks**.

In addition, during the period under review, the Company supported community and environmental initiatives, especially in the **El Merendón Nature Reserve**, which has been designated a protected area for water production in San Pedro Sula. In this area, the Company has implemented the **reforestation** project *Un millón de árboles para el Merendón* (One Million Trees for el Meredón), which was initiated in 2006 to restore degraded areas of the reserve, with the aim of planting 1 million fruit and timber trees on 876 hectares by 2022. In addition, **fire prevention and suppression** activities continued. Due to the watch towers constructed over the past few years, a dedicated team is able to intercept and extinguish numerous fires before they spread (3 cases in 2022). Finally, **guidance was provided on the 6 Sectoral Committees for Water Management**, including support in preparing reports and plans to preserve supply micro-basins.

With a focus on the **rural communities of Merendón**, Aguas de San Pedro organised **24 workshops** dedicated to **health and environmental protection** and, in particular, hygiene in the communities of the Rio Manchaguala, Rio Frio and El Palmar micro-basins, with sessions dedicated to children belonging to the Children's Health Committees.

ACEA DOMINICANA SA

Acea Dominicana deals with the commercial management of the water service in the northern and eastern areas of Santo Domingo in the Dominican Republic. The activities include the management of customer relations, the billing cycle and cost estimates, the installation of new meters, maintenance of existing meters and directing the works for new connections.

The Company implemented a **Quality Management System** certified according to the **UNI ISO 9001:2015** standard, which covers all activities performed.

ACEA DOMINICANA SA - MAIN CORPORATE AND OPERATING DATA

country (area)	Dominican Republic (north and east Santo Domingo)	
users served	194,378	
customers	Corporación del Acueducto y Alcantarillado de Santo Domingo (CAASD) and Corporación de Acueducto y Alcantarillado de Boca Chica (CORAABO)	
duration of the contract	01.10.2003 - 30.09.2023	
purpose of the project	commercial management of the water service	
shareholders	Acea SpA 100%	
no. of employees	148	
turnover (in € thousand)	5,512	

Through the implementation of an educational campaign, Acea Dominicana is **educating** elementary school students in the municipality of Boca Chica about the importance of **water conservation**. The Company conducts **reforestation** activities to **restore and protect forest ecosystems**, which resulted in the planting of 1,050 native and endemic trees in 2022. Taking into account the reforestation activities conducted in previous years, the Company has planted a total of 6,350 trees.

Skill development for employees continued during the year, with courses on customer service, risk assessment, occupational safety, stress management, and on social aspects such as raising awareness about violence against women, for a total of 1,864 hours of training.

OPERATING COMPANIES IN PERU

The Consortia operating in Lima (Peru) manage part of the water services on behalf of the local, publicly owned water company SE-DAPAL (drinking water and sewerage service in Lima) with projects defined in their calls for tenders. These are **Consorcio Agua Azul**, **Consorcio Acea**, **Consorcio Acea Lima Norte**, and **Consorcio Acea Lima Sur**, while **Consorcio Servicio Sur**, which was responsible for the extraordinary maintenance necessary for the operation of the water and sewerage service, improving sanitation and environmental conditions, ended operations in August 2022 and is currently being liquidated.

country (area)	Peru (Lima)
customer	Sedapal (Drinking water and sewerage service in Lima, state owned)
duration of the contracts	Consorcio Agua Azul: 07.04.2000 - 18.06.2027
	Consorcio Acea: 5.12.2020 - 5.12.2023
	Consorcio ACEA Lima Norte: 7.01.2021 - 7.01.2024
	Consorcio Acea Lima Sur: 18.12.2021 – 18.12.2024
shareholders	Consorcio Agua Azul: Acea SpA (44%), Marubeni Co. (29%), Inversiones Liquidas S.A.C (27%)
	Consorcio Acea: Acea Peru SAC (99%), Acea Ato 2 (1%)
	Consorcio ACEA Lima Norte: Acea Peru SAC (99%), Acea Ato 2 (1%)
	Consorcio Acea Lima Sur: Acea Peru SAC (99%), Acea Ato 2 (1%)
	Consorcio Agua Azul: 31
	Consorcio Acea: 987
no. of employees	Consorcio ACEA Lima Norte: 645
	Consorcio Acea Lima Sur: 241
turnover (in € thousand)	Consorcio Agua Azul: 15,309
	Consorcio Acea: 8,323
	Consorcio ACEA Lima Norte: 13,342
	Consorcio Acea Lima Sur: 7,868

MAIN CORPORATE AND OPERATING DATA

Specifically:

- Consorcio Agua Azul, a subsidiary of Acea SpA, manages the treatment and supply of drinking water in the northern area of Lima. To this end, using the surface and underground waters of the Chillón river it built a water treatment plant capable of satisfying the drinking water needs of the area, which it will manage until 2027, when it will be transferred to the State;
- Consorcio Acea, controlled by Acea Peru manages 253 pumping stations for drinking water serving the Ate, Breña and San Juan de Lurigancho areas in the central area of Lima;
- The Consorcio Acea Lima Norte, owned by Acea Peru, manages maintenance for the drinking water and sewerage infrastructure for the Comas and Callao areas in the northern part of Lima;
- the Consorcio Acea Lima Sur, a subsidiary of Acea Peru, carries out maintenance activities on the drinking water and sewerage systems for the Surquillo area in the southern area of Lima.

Below is some significant information from the standpoint of sustainability relating to the various Consortia operating in Peru.

The Consorcio Agua Azul has adopted an Integrated Quality and Environment System according to UNI ISO 9001:2015 and UNI ISO 14001:2015 aimed at optimising production processes and reducing the environmental impact through energy efficiency and the limited use of materials.

The Consortium has continued its occupational safety and first aid training programme, which has made it possible to maintain the result of zero accidents at work in 2022. In addition, specialised staff training continued, including support for the undergraduate and graduate education of two employees.

Because of the improvement in the pandemic situation, Consorcio Agua Azul has been allowed to restart operations aimed at strengthening ties with the community, such as finishing the installation of **new toilette facilities** in the area's seven schools. In the same institutions, 2,182 **educational kits** were delivered with the goal of **boosting school attendance and contributing to education**. For the Christmas holidays, children at local schools and the children of employees were delivered toys and Christmas packages.

Consorcio Acea, Consorcio Acea Lima Norte and Consorcio Acea Lima Sur follow the standards of the Certified Management Systems obtained from the parent company Acea Peru. Specifically, Acea Peru has an Anti-bribery Management System according to the UNI ISO 37001:2016 standard, a Quality System according to the UNI ISO 9001:2015 standard, and a Occupational Health and Safety Management System according to the UNI ISO 45001:2018 certification. The first two certificates cover the activities of Consorcio Acea Lima Norte and Consorcio Acea Lima Sur, while the third covers the activities of Consorcio Acea Lima Norte and Consorcio Acea.

In 2022, the three Consortia began **employee training initiatives on inclusion and organisational wellness**, covering subjects such as gender equality and healthy nutrition, as well as **occupational health and safety**.

To protect the land, the three consortia have taken measures to lower **environmental impact** by disposing of 100% of electromechanical, uniform, and PPE waste appropriately.