WATER COMPANIES DATA SHEETS AND OVERSEAS ACTIVITIES

This chapter illustrates activities and provides information and environmental accounts data for the main companies of the Group outside the scope of the *consolidated non-financial statement* (see *Disclosing Sustainability: methodological note*). The first part concerns the Companies operating in the water sector in Umbria and Tuscany[137], consolidated using the equity method in the statutory financial statements, and the second part refers to companies that are active abroad.

WATER ACTIVITIES IN UMBRIA AND TUSCANY

For the preparation of water balances, the Companies followed the criteria specified by ARERA with Resolution 917/17 R/IDR.

UMBRA ACQUE

Umbra Acque SpA is a company with predominantly public capital, 40% owned by Acea SpA, which since 2003 has managed 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 over 500,000 inhabitants.

HUMAN RESOURCES IN FIGURES

UMBRA ACQUE EMPLOYEES: BREAKDOWN OF HUMAN RESOURCES (2018-2019)

(no.)	2018				2019			
	men	women	**total**	weight %	men	women	**total**	weight %
executives	4	0	**4**	1.1	4	0	**4**	1.1
managers	9	2	**11**	2.9	6	2	**8**	2.1
clerical workers	72	75	**147**	39.1	70	81	**151**	40.4
workers	214	0	**214**	56.9	211	0	**211**	56.4
total	**299**	**77**	**376**	**100.0**	**291**	**83**	**374**	**100.0**

UMBRA ACQUE EMPLOYEES: CONTRACT TYPE (2018-2019)

(no.)	2018			2019		
	men	women	**total**	men	women	**total**
staff with permanent contract	255	51	**306**	251	63	**314**
(of which) part-time staff	*2*	*6*	***8***	*2*	*6*	***8***
permanent staff	36	24	**60**	29	17	**46**
staff under apprenticeship contracts	8	2	**10**	11	3	**14**
total	**299**	**77**	**376**	**291**	**83**	**374**

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2018-2019)(*)

	2018	2019
accidents (no.)	19	9
total days of absence	818	554
hours worked	615,479	689,112
frequency index (FI) (number of accidents per 1,000,000/working hours)	**30.87**	**13.06**
severity index (SI) (days of absence per 1,000/working hours)	**1.33**	**0.80**

(*) The data have been estimated.

COURSES AND TRAINING COSTS IN UMBRA ACQUE (2018-2019)

course type	courses (no.)		editions (no.)		training (hours)		costs (€)	
	2018	2019	2018	2019	2018	2019	2018	2019
advanced training	1	2	1	2	4	25	2,600	0
technical-specialized	62	72	87	92	3,561	4,011	71,714	46,438
legal	6	5	6	5	92	71	8,384	1,396
managerial	10	7	15	7	1,016	202	27,307	4,593
safety	16	24	39	71	1,366	4,331	13,240	46,600
total	**95**	**110**	**148**	**177**	**6,039**	**8,640**	**123,245**	**99,027**

[137] AdF, which joined the scope of consolidation on a line-by-line basis in October, has not been included in the 2019 NFS but is considered to be the same as the other investee Water Companies.

TRAINED EMPLOYEES (2018-2019)

(no.)	2018			2019		
	men	women	**total**	men	women	**total**
	182	64	**283**	282	66	**348**

NETWORK AND PLANT CONSISTENCY

WATER SYSTEM MANAGED BY UMBRA ACQUE (2017-2019)

	2017	2018	2019
water network (km)	6,071	6,124	6,315
aqueducts and transport networks (km)	*1,363*	*1,388*	*1,372*
distribution network (km)	*4,708*	*4,736*	*4,943*
well intake structures (no.)	222	219	219
spring intake structures (no.)	289	285	283
river intake structures (no.)	2	2	2
pumping stations (no.)	250	261	262
piezometers (no.)	1	1	1
reservoirs (no.)	587	587	592
disinfection/treatment plants (no.)	250	250	270

PURIFICATION AND SEWERAGE PLANTS MANAGED BY UMBRA ACQUE (2017-2019)

	2017	2018	2019
purification plants (no.)	117	114	149
sewerage pumping stations (no.)	216	223	244
sewerage network (km)(*)	3,543	1,620	1,685

(*) The significant change starting from 2018 is attributable to the different way in which data are recorded using the GIS geographical information system.

CERTIFICATIONS

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 BS OHSAS 18001:2007** standards , **SOA certification** for the OG6 (in class II) and OS22 (in class III) categories and **qualification for design and construction** (up to the 8th classification).

In 2019 the Company successfully passed the audit for the renewal of the certification of its Environment and Safety Management Systems. Furthermore, the Laboratory for analyses extended its accreditation, compliant with the **UNI ISO/IEC 17025:2005** standard, to both chemical tests and those for aqueous substances, reaching a total of 96 accredited tests.

ENVIRONMENTAL ACCOUNTS

PRODUCTS AND ANALYTICAL TESTS	m.u.	2017	2018	2019(*)	Δ% 2019/2018
WATER BALANCE					
drinking water from the environment	**Mm³**	**59.84**	**60.06**	**58.13**	**-3.2**
from the surface	*Mm³*	*0*	*0*	*0*	-
from wells	*Mm³*	*46.85*	*46.05*	*44.30*	*-3.8*
from springs	*Mm³*	*11.78*	*12.64*	*11.22*	*-11.2*
of which water from other aqueduct systems	*Mm³*	*1.21*	*1.37*	*2.61*	*90.5*
total drinking water leaving the aqueduct system (c) = (a+b)	**Mm³**	**29.36**	**29.71**	**30.51**	**2.7**
total drinking water dispensed and billed in the network (a)	**Mm³**	**28.20**	**28.72**	**29.50**	**2.7**
measured volume of water delivered to users	*Mm³*	*28.20*	*28.72*	*29.50*	*2.7*
volume consumed by users and not measured	*Mm³*	*0*	*0*	*0*	-
total drinking water authorized and not billed in the network (b)	**Mm³**	**1.16**	**0.99**	**1.01**	**2.0**
measured unbilled authorized consumption	*Mm³*	*0.88*	*0.85*	*0.85*	-
unmeasured unbilled authorized consumption	*Mm³*	*0.28*	*0.14*	*0.16*	*14.3*
LOSS ASSESSMENT ACCORDING TO ARERA RESOLUTION 917/17 R/IDR					
water leaks	Mm³	30.66	30.40	28.13	-7.5
water loss percentages	%	51.2	50.6	48.4	-4.3
TREATED WASTEWATER					
water treated in the main treatment plants	**Mm³**	**56.0**	**61.3**	**56.5**	**-7.8**

PRODUCTS AND ANALYTICAL TESTS (cont.)	m.u.	2017	2018	2019(*)	Δ% 2019/2018
ANALYTICAL TESTS ON DRINKING WATER AND WASTEWATER					
no. analytical tests on drinking water	**no.**	**79,750**	**136,881**	**135,500**	**-1.0**
of which no. analytical tests on surface water	*no.*	*8,500*	*7,500*	*6,500*	*-13.3*
no. analytical tests on wastewater(**)	**no.**	**38,128**	**39,693**	**38,481**	**-3.1**

(*) The 2019 data for the water balance are estimated because they were only partially available at the time of publication.
(**) The figure includes analyses carried out at purification plants and industrial waste.

RESOURCES USED(*)	m.u.	2017	2018	2019	Δ% 2019/2018
COLLECTION, SUPPLY AND DISTRIBUTION DRINKING AND NON-DRINKING WATER					
materials					
sodium hypochlorite	t	60.0	60.0	60.0	-
sodium chloride	t	200.0	200.0	200.0	-
hydrochloric acid	t	200.0	200.0	200.0	-
aluminium polychloride	t	12.0	12.0	12.0	-
phosphoric acid (10%)	t	9.0	9.0	9.0	-
acetic acid	t	100.0	0.0	0.0	-
WASTEWATER TREATMENT					
materials					
polyelectrolyte emulsion	t	80.0	90.9	90.9	-
ferric chloride (40%)	t	40.0	28.0	28.0	-
mineral oil and fats	t	1.40	1.40	1.40	-
OTHER CONSUMPTION					
drinking water	**m^3**	**28,889**	**28,889**	**28,889**	**-**
drinking water consumed for non-industrial water uses (offices, outside showers, etc.)	*m^3*	*2,282*	*2,282*	*2,282*	-
drinking water consumed for process water uses (washing machinery and bays, etc.)	*m^3*	*26,607*	*26,607*	*26,607*	-

(*) Data are estimated.

ENERGY CONSUMPTION	m.u.	2017	2018	2019	Δ% 2019/2018
FUELS					
vehicle fuels					
diesel	l	475,491	436,371	422,430	-3.2
petrol	l	10,928	8,645	7,497	-13.3
electricity					
total electricity for drinking water	**GWh**	**71.86**	**71.46**	**72.82**	**1.9**
electricity for water pumping stations	*GWh*	*71.49*	*71.08*	*72.45*	*1.9*
electricity for offices	*GWh*	*0.37*	*0.38*	*0.37*	*-2.6*
total electricity for wastewater	**GWh**	**20.93**	**21.02**	**22.56**	**7.3**
electricity for treatment	*GWh*	*16.97*	*16.29*	*17.70*	*8.7*
electricity for pumping stations	*GWh*	*3.84*	*4.62*	*4.74*	*2.6*
electricity for offices	*GWh*	*0.12*	*0.11*	*0.11*	-

WASTE	m.u.	2017	2018	2019	Δ% 2019/2018
SPECIFIC WASTE FROM TREATMENT OF WASTEWATER					
treatment sludge(*)	t	19,573	13,185	16,436	24.7
sand and sediment from treatment	t	1,238	841	1,332	58.3
WASTE PURSUANT TO LEGISLATIVE DECREE NO. 152/06 EXCLUDING SLUDGE AND SAND					
hazardous waste	t	8.9	6.0	7.2	20.0
non-hazardous waste(*)	t	9,605	6,693	5,931	-11.4

(*) The figure includes liquid sludge transported to other plants for the dewatering process, for a value of 8,100 t in 2017 and 4,913 t in 2018.

TOTAL COD IN INPUT AND OUTPUT (2017-2019)

(t/year)	2017	2018	2019
COD_{in}	24,015.5	33,394.8	18,481.6
COD_{out}	3,079.5	2,777.0	2,365.5

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS MANAGED BY UMBRA ACQUE (2017-2019)

parameter	average values (mg/l) 2017	average values (mg/l) 2018	average values (mg/l) 2019
BOD_5	24.4	21.6	20.1
COD	55.0	45.3	41.9
SST	25.1	24.6	25.5
NH_4^+	7.3	8.0	6.5
phosphorus	2.3	2.0	2.0

TREATMENT EFFICIENCY OF THE MAIN TREATMENT PLANTS MANAGED BY UMBRA ACQUE (2017-2019)

parameter	average values (%) 2017	average values (%) 2018	average values (%) 2019
$100x(COD_{in} - COD_{out})/COD_{in}$	87.2	91.7	87.2
$100x(SST_{in} - SST_{out})/SST_{in}$	94.5	90.3	89.1
$100x(NH_{4\ in}^+ - NH_{4\ out}^+)/NH_{4\ in}^+$	83.3	80.7	83.5
$100x(PO_{4\ in}^{-3} - PO_{4\ out}^{-3})/PO_{4\ in}^{-3}$	35.9	31.4	n.a.

PUBLIACQUA

Publiacqua SpA is a mixed-ownership Company with a majority public interest, owned by Acea through Acque Blu Fiorentine SpA, which since 2002 has managed the integrated water service in the area of Optimal Territorial Conference no. 3 – Medio Valdarno, with over 1.2 million inhabitants, equal to approximately 397,000 user accounts served, including cities of great artistic and environmental value such as Florence, Prato and Pistoia.

The water and sewerage networks are respectively 6,800 km and 3,700 km long.

HUMAN RESOURCES IN FIGURES

PUBLIACQUA EMPLOYEES: STAFF BREAKDOWN (2018-2019)

(no.)	2018				2019			
	men	women	**total**	weight %	men	women	**total**	weight %
executives	3	1	**4**	0.7	3	1	**4**	0.7
managers	9	8	**17**	3.0	11	8	**19**	3.2
clerical workers	172	127	**299**	52.3	176	133	**309**	52.2
workers	245	6	**251**	44.0	254	6	**260**	43.9
total	**429**	**142**	**571**	**100.0**	**444**	**148**	**592**	**100.0**

PUBLIACQUA EMPLOYEES: CONTRACT TYPE (2018-2019)

(no.)	2018			2019		
	men	women	**total**	men	women	**total**
staff with permanent contract	425	142	**567**	425	148	**573**
(of which) part-time staff	*3*	*12*	***15***	*3*	*11*	***14***
permanent staff	4	0	**4**	7	0	**7**
staff under apprenticeship contracts	0	0	**0**	12	0	**12**
total	**429**	**142**	**571**	**444**	**148**	**592**

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2018-2019)

	2018(*)	2019
accidents (no.)	25	24
total days of absence(**)	594	592
hours worked	930,282	957,478
frequency index (FI) (number of accidents per 1,000,000/working hours)	**26.87**	**25.07**
severity index (SI) (days of absence per 1,000/working hours)	**0.64**	**0.62**

(*) The figure related to the hours worked was consolidated in 2019 and differs from what was published in 2018. The frequency and severity indices were therefore recalculated on the basis of the consolidated data.
(**) The value also excludes days of absent related to persistent or reopened injuries from previous years.

TRAINING COURSES AND COSTS IN PUBLIACQUA (2018-2019)(*)

course type	courses (no.)		editions (no.)		training (hours)		costs (€)	
	2018	2019	2018	2019	2018	2019	2018	2019
advanced training	1	4	8	6	581	372	0	0
IT	4	2	5	2	85	32	11,700	2,200
languages	1	0	15	0	109	0	6,000	0
technical-specialized	37	42	62	78	4,104	4,524	64,500	64,500
managerial	9	15	14	32	371	1,423	19,300	30,000
administrative-managerial	52	32	97	37	1,580	939	28,500	43,000
safety	42	52	135	125	5,554	5,027	68,000	72,300
total	**146**	**147**	**336**	**280**	**12,384**	**12,317**	**198,000**	**212,000**

(*) Figures for 2018 have been restated compared to last year's publication.
(**) The advanced training courses provided to employees are managed by Acea SpA, which bears the costs.

TRAINED EMPLOYEES (2018-2019)

(no.)	2018(*)			2019		
	men	women	**total**	men	women	**total**
	440	148	**588**	433	142	**575**

(*) The number of employees trained in 2018 is higher than the number of employed staff since the figure also includes trained employees no longer present in the workforce as at 31.12.2018.

NETWORK AND PLANT CONSISTENCY

WATER SYSTEM MANAGED BY PUBLIACQUA (2017-2019)(*)

	2017	2018(**)	2019
water network (km)	6,715	6,785	6,805
aqueducts and transport networks (km)	*1,347*	*1,372*	*1,375*
distribution network (km)	*5,368*	*5,413*	*5,430*
well intake structures (no.)	595	576	579
spring intake structures (no.)	846	842	842
river intake structures (no.)	60	61	61
lake intake structures (no.)	22	22	22
pumping stations (no.)	423	426	427
reservoirs (no.)	910	913	913
disinfection/treatment plants (no.)	106	99	99

(*) The data are consistent with the communication to ARERA concerning the managed infrastructures.
(**) The figures for 2018 have been restated compared to what was previously published.

PURIFICATION AND SEWERAGE PLANTS MANAGED BY PUBLIACQUA (2017-2019)(*)

	2017	2018(**)	2019
purification plants (no.)	126	127	126
sewerage pumping stations (no.)	209	210	235
sewerage network (km)	3,622	3,688	3,711

(*) The data are consistent with the communication to ARERA concerning the managed infrastructures.
(**) The figures for 2018 have been restated compared to last year's publication.

CERTIFICATIONS

Publiacqua has an **Integrated Quality, Environment and Safety Management System** (QAS) in compliance with the **UNI ISO 9001:2015**, **UNI ISO 14001:2015** and **BS OHSAS 18001:2007** standards for its main operations. In 2019 the Company successfully passed the audit for the renewal of the three certifications.
The analysis laboratory is accredited according to the **UNI ISO/IEC 17025:2005** standard.

ENVIRONMENTAL ACCOUNTS

PRODUCTS AND ANALYTICAL TESTS	m.u.	2017	2018	2019	Δ% 2019/2018
WATER BALANCE					
drinking water from the environment	**Mm^3**	**166.3**	**163.6**	**158.6**	**-3.1**
from the surface	*Mm^3*	*106.5*	*105.2*	*101.2*	*-3.8*
from wells	*Mm^3*	*48.0*	*46.5*	*44.3*	*-4.7*

PRODUCTS AND ANALYTICAL TESTS (cont.)	m.u.	2017	2018	2019	Δ% 2019/2018
from springs	*Mm^3*	*11.3*	*11.4*	*12.6*	*11.0*
of which water from other aqueduct systems	*Mm^3*	*0.5*	*0.5*	*0.5*	-
total drinking water leaving the aqueduct system (e) = (a+b+c+d)	**Mm^3**	***86.4***	**87.6**	**88.5**	**1.0**
total drinking water dispensed and billed in the network (a)	**Mm^3**	**80.9**	**79.3**	**79.6**	**0.4**
measured volume of water delivered to users	*Mm^3*	*80.9*	*79.3*	*79.6*	*0.4*
volume consumed by users and not measured	*Mm^3*	*0*	*0*	*0*	-
total drinking water authorized and not billed in the network (b)	**Mm^3**	**0.4**	**0.4**	**0.4**	**-**
measured unbilled authorized consumption	*Mm^3*	*0*	*0*	*0*	-
unmeasured unbilled authorized consumption	*Mm^3*	*0.4*	*0.4*	*0.4*	-
drinking water exported (sub-distributors) (c)	**Mm^3**	**0.6**	**0.6**	**0.5**	**-16.7**
measured process losses (d)	**Mm^3**	**4.5**	**7.3**	**8.0**	**9.6**
LOSS ASSESSMENT ACCORDING TO ARERA RESOLUTION 917/17 R/IDR					
water leaks(*)	Mm^3	79.9	75.9	70.1	-7.7
water loss percentages	%	48.0	46.4	44.2	-4.8
TREATED WASTEWATER					
water treated in the main treatment plants	**Mm^3**	**102.0**	**112.9(**)**	**105.0**	**-7.0**
ANALYTICAL TESTS ON DRINKING WATER AND WASTEWATER					
no. analytical tests on drinking water	**no.**	**225,261**	**249,948(**)**	**261,251**	**4.5**
of which no. analytical tests on surface water(***)	*no.*	*22,743*	*23,309*	*24,497*	5.1
no. analytical tests on wastewater	**no.**	**39,535**	**35,668(**)**	**40,127**	**12.5**

(*) 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.
(**) The figures for 2018 have been restated compared to what was previously published.
(***) Analysis of crude surface water (untreated).

RESOURCES USED	m.u.	2017(*)	2018	2019	Δ% 2019/2018
COLLECTION, SUPPLY AND DISTRIBUTION OF DRINKING AND NON-DRINKING WATER					
materials					
sodium hypochlorite	t	1,509	1,354	1,384	2.2
sodium chloride	t	278	276	351	27.2
hydrochloric acid	t	302	312	378	21.2
flocculant	t	4,219	4,611	5,818	26.2
purate	t	431	407	353	-13.3
sulphuric acid	t	709	682	565	-17.2
oxygen	t	31	70	37	-47.1
acetic acid	t	76	104	126	21.2
carbon dioxide excluding drinking fountains	t	791	682	804	17.9
ferrous chloride	t	40	37	30	-18.9
phosphoric acid	t	13	18	16	-11.1
WASTEWATER TREATMENT					
materials					
polyelectrolyte emulsion	t	317	288	378	31.3
sodium hypochlorite	t	18	30	70	133.3
peracetic acid, caustic soda, polyamine/anti-foaming agent	t	7	11	15	36.4
polyaluminium chloride (PAC)	t	4,445	4,080	4,354	6.7
lime	t	338	387	530	37.0
acetic acid 80%	t	304	214	524	144.9
OTHER CONSUMPTION					
drinking water	**m^3**	**n.a.**	**n.a.**	**n.a.**	**-**

(*) The data for wastewater purification materials for the year 2017 have been restated compared to what was previously published.

ENERGY CONSUMPTION	m.u.	2017	2018	2019	Δ% 2019/2018
FUELS					
process fuels – wastewater					
methane	Sm^3	70,234	60,307	63,941	6.0
biogas produced	m^3	472,643	661,663	668,720	1.1
heating fuels					
methane	Sm^3	36,589	30,710	51,059	66.3
diesel fuel	l	5,933	4,000	4,600	13.0
lpg	l	1,400	2,800	1,960	-30.0
vehicle fuels					
diesel	l	370,755	365,047	361,469	-1.0
petrol	l	31,168	23,817	16,404	-31.1
ELECTRICITY					
total electricity for drinking water	**GWh**	**79.3**	**78.2**	**76.9**	**-1.8**
electricity for water pumping stations	*GWh*	*77.8*	*76.8*	*75.4*	*-1.8*
electricity for offices	*GWh*	*1.5*	*1.4*	*1.5*	*2.6*
total electricity for wastewater(*)	**GWh**	**35.5**	**37.4**	**36.3**	**-2.9**
electricity for treatment	*GWh*	*31.3*	*32.7*	*32.5*	*-0.6*
electricity for pumping stations	*GWh*	*4.1*	*4.6*	*3.8*	*-17.4*
electricity for offices	*GWh*	*0.1*	*0.1*	*0.1*	-

(*) Figures for 2018 have been restated compared to last year's publication.

In 2019, relamping and energy efficiency interventions were carried out at the Osmannoro plant.

ENERGY EFFICIENCY PUBLIACQUA (2017-2019)

	energy savings achieved (kWh)		
action	**2017**	**2018**	**2019**
Anconella drinking water conversion plant – check valve	-	130,000	-
Prato acquifer – new pumps	100,000	-	-
San Giovanni V water treatment system – revamping of pump delivery pipes	-	30,000	-
network efficiency improvement	-	300,000	-
Osmannoro plant – new process blower	-		60,000
Villamagna 90 office – LED relamping			6,100

WASTE	m.u.	2017	2018	2019	Δ% 2019/2018
SPECIFIC WASTE FROM TREATMENT OF WASTEWATER					
treatment sludge	t	28,792	29,340	30,145	2.7
sand and sediment from treatment	t	767	793	1,286	62.2
WASTE PURSUANT TO LEGISLATIVE DECREE NO. 152/06 EXCLUDING SLUDGE AND SAND					
hazardous waste	t	39	42	41	-2.4
non-hazardous waste	t	9,606	11,136	8,356	-25.0

TOTAL COD IN INPUT AND OUTPUT (2017-2019)

(t/year)	2017(*)	2018	2019
COD_{in}	18,605	17,031	17,463
COD_{out}	1,756	2,011	1,403

(*) The data have been restated compared to last year's publication.

OUTPUT PARAMETERS OF THE SAN COLOMBANO TREATMENT PLANT (2017-2019)(*)

parameter	average values (mg/l) 2017	average values (mg/l) 2018	average values (mg/l) 2019
BOD_5	2.1	2.4	1.5
COD	16.0	16.8	12.8
SST	6.0	8.4	4.1
NH_4^+	0.7	0.8	0.6
phosphorus	0.9	0.8	0.8

(*) It should be noted that the San Colombano wastewater treatment plant (600,000 population equivalent) treats about half of Publiacqua's global wastewater.

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS MANAGED BY PUBLIACQUA (2017-2019)(*)

parameter	average values (mg/l) 2017	average values (mg/l) 2018	average values (mg/l) 2019
BOD_5	4.1	3.0	2.6
COD	24.7	21.0	18.2
SST	7.1	11.0	6.3
NH_4^+	3.2	2.5	2.9
phosphorus	2.0	1.6	1.6

(*) The figures include 38 treatment plants, including San Colombano, which treat a total of 98% of wastewater and 96% of the organic load (COD) of Publiacqua.

PURIFICATION EFFICIENCY OF THE MAIN PURIFICATION PLANTS MANAGED BY PUBLIACQUA (2017-2019)

parameter	average values (%) 2017	average values (%) 2018	average values (%) 2019
$100x(COD_{in} - COD_{out})/COD_{in}$	89.4	86.1	91.2
$100x(SST_{in}-SST_{out})/SST_{in}$	92.1	88.4	94.8
$100x(NH_{4\ in}^{+} - NH_{4\ out}^{+})/NH_{4\ in}^{+}$	97.1	96.1	98.0
$100x(PO_{4\ in}^{-3} - PO_{4\ out}^{-3})/PO_{4\ in}^{-3}$	70.9	68.3	74.8

PURIFICATION EFFICIENCY OF THE MAIN PURIFICATION PLANTS MANAGED BY PUBLIACQUA (2017-2019)(*)

parameter	average values (%) 2017	average values (%) 2018	average values (%) 2019
$100x(COD_{in} - COD_{out})/COD_{in}$	90.6	93.3	92.0
$100x(SST_{in}-SST_{out})/SST_{in}$	93.2	91.8	95.6
$100x(NH_{4\ in}^{+} - NH_{4\ out}^{+})/NH_{4\ in}^{+}$	95.5	91.9	96.7
$100x(PO_{4\ in}^{-3} - PO_{4\ out}^{-3})/PO_{4\ in}^{-3}$	67.4	60.6	72.0

(*) The figures include 38 treatment plants, including San Colombano, which treat a total of 98% of wastewater and 96% of the organic load (COD) of Publiacqua.

ADF

AdF SpA manages the integrated water service in the area of Optimal Territorial Conference 6 Ombrone (formerly OTA 6), consisting of 55 municipalities in the province of Grosseto and 27 municipalities in the province of Siena, with a total population of approximately 402,000 inhabitants and a surface area of over 7,600 km^2.

The water and sewerage networks are respectively 8,233 km and 1,614 km long.

HUMAN RESOURCES IN FIGURES

ADF EMPLOYEES: STAFF BREAKDOWN (2018-2019)

(no.)	2018				2019			
	men	women	**total**	weight %	men	women	**total**	weight %
executives	1	0	**1**	0.2	1	1	**2**	0.5
managers	11	5	**16**	3.9	11	4	**15**	3.8
clerical workers	122	101	**223**	54.5	121	100	**221**	56.4
workers	168	1	**169**	41.3	153	1	**154**	39.3
total	**302**	**107**	**409**	**100.0**	**286**	**106**	**392**	**100.0**

ADF EMPLOYEES: CONTRACT TYPE (2018-2019)

(no.)	2018			2019		
	men	women	**total**	men	women	**total**
staff with permanent contract	298	102	**400**	283	103	**386**
(of which) part-time staff	*4*	*15*	***19***	5	*16*	***21***
permanent staff	4	4	**8**	1	1	**2**
staff under apprenticeship contracts	1	0	**1**	2	2	**4**
total	**303**	**106**	**409**	**286**	**106**	**392**

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2018-2019)

	2018	2019
accidents (no.)	11	9
total days of absence(*)	264	284
hours worked	670,106	669,472
frequency index (FI) (number of accidents per 1,000,000/working hours)	**16.42**	**13.44**
severity index (SI) (days of absence per 1,000/working hours)	**0.58**	**0.42**

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

TRAINING COURSES AND COSTS IN ADF (2018-2019)

course type	courses (no.)		editions (no.)		training (hours)		costs (€)	
	2018	2019	2018	2019	2018	2019	2018	2019
IT	8	6	22	9	750	958	10,632	0
new hires	1	1	4	3	84	52	0	0
technical-specialized	18	11	39	22	926	453	27,140	26,182
managerial	3	5	3	7	976	296	0	9,280
administrative-managerial	16	16	20	18	844	890	14,505	4,450
safety	28	19	75	40	3,879	3,053	13,449	3,990
total	**74**	**58**	**163**	**99**	**7,459**	**5,702**	**65,726**	**43,902**

TRAINED EMPLOYEES (2018-2019)

(no.)	2018			2019		
	men	women	**total**	men	women	**total**
	236	80	**316**	268	84	**352**

In 2019, the Company carried out professional refresher courses for employees on technical and commercial quality. Moreover, in the field of occupational safety, in addition to the required training it held further training sessions in the field of risk management related to operations.

NETWORK AND PLANT CONSISTENCY

WATER SYSTEM MANAGED BY ADF (active plants) (2017-2019)

	2017	2018	2019
water network (km)	9,315	8,168(*)	8,233
aqueducts and transport networks (km)	*1,967*	*1,966*	*1,984*
distribution network (km)(**)	*7,348*	*6,194*	*6,249*
well intake structures (no.)	184	188	159
spring intake structures (no.)	248	248	250
river intake structures (no.)	1	1	1
lake intake structures (no.)	3	3	3
pumping stations (no.)	284	291	292
piezometers (no.)	13	13	13
reservoirs (no.)	796	800	800
disinfection/treatment plants (no.)	31	32	32
seawater desalination plant (n.)	3	3	3

(*) The figure for 2018 has been restated compared to what was previously published.
(**) Note that from 2018 the total length of the water network does not include the connections, as resolved by ARERA 917/2017.

PURIFICATION AND SEWERAGE PLANTS MANAGED BY ADF (2017-2019)

	2017	2018	2019
treatment plants (no.)(*)	144	145	146
sewerage pumping stations (no.)	271	273	285
sewerage network (km)(**)	3,215	1,594	1,644

(*) The data do not include the Imhoff pits.
(**) The figure for 2018 was adjusted following the survey carried out with the GIS geographic information system.

CERTIFICATIONS

In 2019 AdF maintained its **Integrated Quality and Safety Certification** according to the **UNI ISO 9001:2018 standard** and the **BS OHSAS 18001:2007 standard**.

ENVIRONMENTAL ACCOUNTS

PRODUCTS AND ANALYTICAL TESTS	m.u.	2017	2018	2019(*)	Δ% 2019/2018
WATER BALANCE					
drinking water from the environment	**Mm³**	**63.73**	**61.23**	**60.19**	**-1.7**
from the surface	*Mm³*	*1.27*	*1.29*	*1.06*	*-17.8*
from wells	*Mm³*	*23.71*	*22.80*	*20.22*	*-11.3*
from springs	*Mm³*	*37.81*	*36.55*	*38.16*	*4.4*
of which water from other aqueduct systems	*Mm³*	*0.94*	*0.59*	*0.75*	*27.1*
drinking water transferred to other aqueduct systems	**Mm³**	n.a.	**1.57**	**1.27**	**-19.1**
total drinking water leaving the aqueduct system (c) = (a+b)	**Mm³**	n.a.	**28.41**	**29.15**	**2.6**
total drinking water dispensed and billed in the network (a)	**Mm³**	n.a.	**28.27**	**29.00**	**2.6**
measured volume of water delivered to users	*Mm³*	*n.a.*	*28.27*	*29.00*	*0.4*
volume consumed by users and not measured	*Mm³*	*n.a.*	*0*	*0*	-
total drinking water authorized and not billed in the network (b)	**Mm³**	n.a.	**0.14**	**0.15**	**2.8**
measured unbilled authorized consumption	*Mm³*	*n.a.*	*0*	*0*	-
unmeasured unbilled authorized consumption	*Mm³*	*n.a.*	*0.14*	*0.15*	*2.8*
LOSS ASSESSMENT ACCORDING TO ARERA RESOLUTION 917/17 R/IDR					
water leaks	Mm³	n.a.	29.3	27.84	-5.0
water loss percentages	%	n.a.	47.9	46.3	-3.3
TREATED WASTEWATER(**)					
water treated in the main treatment plants	**Mm³**	**15.70**	**16.92**	**19.97**	**18.0**
water treated in plants with a capacity of more than 2,000 population equivalent	**Mm³**	**23.20**	**25.43**	**27.62**	**8.6**
ANALYTICAL TESTS ON DRINKING WATER AND WASTEWATER					
no. analytical tests on drinking water	**no.**	**77,137**	**80,292**	**83,228**	**3.7**
of which no. analytical tests on surface water	*no.*	*678*	*430*	*408*	*-5.1*
no. analytical tests on wastewater	**no.**	**44,304**	**49,415**	**50,065**	**1.3**

(*) The 2019 data for the water balance are estimated because they were only partially available at the time of publication.
(**) The figures for 2018 have been restated compared to last year's publication.

RESOURCES USED	m.u.	2017(*)	2018	2019	Δ% 2019/2018
COLLECTION, SUPPLY AND DISTRIBUTION OF DRINKING AND NON-DRINKING WATER(*)					
materials					
carbon dioxide	t	26.40	12.84	1.28	-90.0
sodium hypochlorite 15%	t	226.72	220.28	200.12	-9.2
descaling	t	17.27	13.90	8.00	-42.4
hydrochloric acid 30%	t	2.90	3.1	9.65	211.3
sodium chloride 25%	t	4.96	4.4	3.00	-31.8
highly basic aluminium polychloride 10%	t	8.60	7.50	6.93	-7.6
sodium hydroxide 30%	t	3.54	6.17	22.21	260.0
magnesium sulphate heptahydrate	t	14.00	10.00	17.00	70
semicalcium dolomite	t	10.00	9.00	6.00	-33.3
calcium carbonate	t	11.00	9.00	6.00	-33.3
food polyphosphates	t	2.25	0.70	0.75	-7.1
potassium permanganate	t	-	-	0.60	-
ferric chloride	t	-	-	3.96	-
sodium hydroxide 50%	t	-	-	16.92	-
sulphuric acid 50%	t	-	-	0.12	-
calcium nitrate 50%	t	-	-	21.00	-
polyamines	t	-	-	0.15	-

RESOURCES USED (cont.)	m.u.	2017(*)	2018	2019	Δ% 2019/2018
WASTEWATER TREATMENT(**)					
materials					
polyelectrolyte	t	155.25	76.65	112.20	46.4
sodium hypochlorite 15%	t	316.05	307.07	278.97	-9.2
peracetic acid 15%	t	26.46	61.12	75.04	22.8
highly basic aluminium polychloride 10%	t	12.65	-	-	-
OTHER CONSUMPTION					
drinking water	**m^3**	**n.a.**	**n.a.**	**n.a.**	**-**

(*) Deviations from previous years result from changes in the quantity and quality of the resource treated and from plant efficiency.
(**) The changes depend on the entry into operation of the disinfection treatment with peracetic acid and on the lower need for aluminium polychloride in the sedimentation phase at the plants that may need it.

In some purification plants of Ponte a Tressa in the municipality of Siena there is an industrial water network supplied by treated wastewater used for washing machinery and for the bathrooms in the offices, and an irrigation network, for example at the purification plant in Punta Ala in the municipality of Castiglione della Pescaia. In particular, during the year, the volume of water reused was around 47,500 m^3 (approximately 50,700 m^3 in 2018 and 74,900 m^3 in 2017).

ENERGY CONSUMPTION	m.u.	2017	2018	2019	Δ% 2019/2018
FUELS					
wastewater process fuels					
methane	Sm^3	204,757	169,382	178,292	5.3
heating fuels					
methane	Sm^3	37,907	33,129	34,048	2.8
diesel fuel	l	0	2,800	1,900	-32.1
vehicle fuels					
diesel(*)	l	365,950	381,477	375,554	-1.6
petrol(**)	l	174	808	759	-6.1
ELECTRICAL AND THERMAL ENERGY					
total electricity for drinking water(***)	**GWh**	**36.95**	**35.27**	**33.77**	**-4.3**
electricity for water pumping stations	*GWh*	*36.42*	*34.42*	*32.99*	*-4.2*
electricity for offices	*GWh*	*0.38*	*0.66*	*0.67*	*1.5*
total electricity for wastewater(***)	**GWh**	**24.09**	**24.96**	**23.21**	**-7.0**
electricity for treatment	*GWh*	*21.77*	*22.35*	*20.53*	*-8.1*
electricity for pumping stations	*GWh*	*2.32*	*2.62*	*2.68*	*2.3*
thermal energy from district heating	**MWh_t**	**39.13**	**40.62**	**43.18**	**6.3**

(*) The figure for 2017 refers to the consumption of diesel for vehicles and other uses (motor pump, small transportable generators, etc.).
(**) The figure for 2017 refers only to the consumption of petrol for motor vehicles and, unlike in 2018 and 2019, does not show the contribution of consumption for other uses (motor pump, small transportable generators, etc.).
(***) The data have been restated compared to last year's publication.

In 2019, as part of its extraordinary maintenance, the Company replaced machines and equipment (e.g. pumps, compressors, lighting fixtures, etc.) with highly efficient machinery that will generate energy savings in the coming years.

ADF ENERGY EFFICIENCY (2017-2019)

	energy savings achieved (kWh)		
action	**2017**	**2018**	**2019**
efficiency improvement of drinking water pumping systems	225,000	-	-
efficiency improvement of treatment processes	-	38,000	-
replacement of lighting fixtures with LED fixtures	2,100	-	-

WASTE(*)	m.u.	2017	2018	2019	Δ% 2019/2018
SPECIFIC WASTE FROM TREATMENT OF WASTEWATER					
treatment sludge	t	11,289.34	8,507.88	8,975.39	5.5
sand and sediment from treatment	t	484.40	524.46	920.89	75.6
WASTE PURSUANT TO LEGISLATIVE DECREE NO. 152/06 EXCLUDING SLUDGE AND SAND					
hazardous waste	t	48.42	10.71	18.27	70.6
non-hazardous waste	t	732.51	379.93	421.21	10.9

(*) It should be noted that the waste produced was delivered for disposal or recovery to Italian destinations. About 10% of the sludge produced was transferred abroad by the same national recipients.

TOTAL COD IN INPUT AND OUTPUT (2017-2019)

(t/year)	2017	2018	2019
COD_{in}	6,428	8,765	8,211
COD_{out}	720	594	606

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS MANAGED BY ADF (2017-2019)(*)

parameter	average values (mg/l) 2017	average values (mg/l) 2018	average values (mg/l) 2019
BOD_5	7.9	8.3	7.6
COD	41.0	35.0	35.8
SST	10.0	9.1	8.5
NH_4^+	6.4	10.4	8.5
phosphorus	2.6	2.8	3.02

(*) Installations with a treatment capacity greater than 20,000 population equivalent are considered.

TREATMENT EFFICIENCY OF THE MAIN TREATMENT PLANTS MANAGED BY ADF (2017-2019)(*)

parameter	average values (%) 2017	average values (%) 2018	average values (%) 2019
$100x(BOD_{in} - BOD_{out})/BOD_{in}$	94.9	96.4	96.9
$100x(COD_{in} - COD_{out})/COD_{in}$	88.8	93.2	92.6
$100x(SST_{in}-SST_{out})/SST_{in}$	92.9	95.7	94.6
$100x(NH_{4\,in}^{+} - NH_{4\,out}^{+})/NH_{4\,in}^{+}$	81.8	76.9	81.2
$100x(PO_{4\,in}^{-3}-PO_{4\,out}^{-3})/PO_{4\,in}^{-3}$	46.0	57.8	57.5

(*) Installations with a treatment capacity greater than 20,000 population equivalent are considered.

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 53 municipalities in the provinces of Pisa, Lucca, Florence, Pistoia and Siena, with a total population of 740,000 inhabitants equal to approximately 328,000 user accounts.
The water and sewerage networks cover about 5,950 km and 3,000 km, respectively.

HUMAN RESOURCES IN FIGURES

ACQUE EMPLOYEES: STAFF BREAKDOWN (2018-2019)

(no.)	2018				2019			
	men	women	**total**	weight %	men	women	**total**	weight %
executives	3	2	**5**	1.2	3	2	**5**	1.2
managers	5	4	**9**	2.2	6	4	**10**	2.4
clerical workers	91	151	**242**	60.0	93	153	**246**	59.9
workers	147	0	**147**	36.5	150	0	**150**	36.5
total	**246**	**157**	**403**	**100.0**	**252**	**159**	**411**	**100.0**

ACQUE EMPLOYEES: CONTRACT TYPE (2018-2019)

(no.)	2018			2019		
	men	women	total	men	women	**total**
staff with permanent contract	239	146	**385**	240	157	**397**
(of which) part-time staff	*4*	*29*	***33***	*3*	*30*	***33***
permanent staff	7	11	**18**	12	2	**14**
staff under apprenticeship contracts	0	0	**0**	0	0	**0**
total	**246**	**157**	**403**	**252**	**159**	**411**

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2018-2019)

	2018	2019
accidents (no.)	6	5
total days of absence(*)	99	108
hours worked	646,149	670,705
frequency index (FI) (number of accidents per 1,000,000/working hours)	**9.29**	**7.45**
severity index (SI) (days of absence per 1,000/working hours)	**0.15**	**0.16**

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

TRAINING COURSES AND COSTS IN ACQUE (2018-2019)(*)

course type	courses (no.)		sessions (no.)		training (hours)		costs (€)(**)	
	2018	2019	2018	2019	2018	2019	2018	2019
IT	7	7	14	8	489	261	n.a.	n.a.
new hires	1	1	3	1	326	87	n.a.	n.a.
technical-specialized	51	42	61	67	1,029	1,861	n.a.	n.a.
managerial	4	0	11	0	504	0	n.a.	n.a.
safety	27	32	86	71	4,663	2,477	n.a.	n.a.
environment	2	3	9	17	164	351	n.a.	n.a.
cross-cutting	5	9	20	25	896	933	n.a.	n.a.
training pursuant to Legislative Decree 231/01	1	2	1	6	7	298	n.a.	n.a.
e-learning training	2	1	2	1	40	100	n.a.	n.a.
total	**100**	**97**	**207**	**196**	**8,118**	**6,368**	**50,844**	**42,085**

(*) The figures for 2018 have been restated compared to last year's publication, adding the final figures as at 31.12.
(**) No cost data are available broken down by type of training.

TRAINED EMPLOYEES (2018-2019)(*)

(no.)	2018(**)			2019		
	men	women	**total**	men	women	**total**
	260	140	**400**	262	170	**432**

(*) 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 of the year.
(**) The figures for 2018 have been restated compared to last year's publication, adding the final figures as at 31.12.

In 2019 **training** was provided to all Company personnel for a **total of 6,368 hours**. New for this year are courses on the **UNI ISO 37001:2016 management system** for the prevention of corruption and others on updates to the 231 Model, courses on the proper management of waste and on ADR regulations and those on the new European privacy regulation. Occupational safety training remains at the top for hours of training.

NETWORK AND PLANT CONSISTENCY

WATER SYSTEM MANAGED BY ACQUE (active plants) (2017-2019)

	2017	2018	2019
water network (km)	5,921	5,943	5,954
aqueducts and transport networks (km)	*834*	*835*	*835*
distribution network (km)	*5,087*	*5,107*	*5,119*
well intake structures (no.)	531	525	518
spring intake structures (no.)	299	297	298

WATER SYSTEM MANAGED BY ACQUE (active plants) (2017-2019) (cont.)

	2017	2018	2019
river and lake intake structures (no.)	21	20	20
reservoirs (no.)	568	561	558
disinfection/treatment plants (no.)(*)	240	234	175
pumping stations (no.)	415	409	406

(*) In 2019 the significant reduction in the number of plants compared to the previous two years is due to a downgrading of some facilities identified as chlorination from a single source and no longer as plants.

PURIFICATION AND SEWERAGE PLANTS MANAGED BY ACQUE (2017-2019)

	2017	2018	2019
purification plants (no.)	139	138	137
sewerage pumping stations (no.)	531	544	536
sewerage network (km)	3,066	3,048	3,062

CERTIFICATIONS

Acque has implemented an Integrated Management System certified according to a scheme based on quality, environment, safety, energy and social responsibility, road safety and the prevention of corruption. These are complemented by the accreditation of the test laboratories according to the **UNI CEI EN ISO/IEC 17025:2005** standard, for which transition to the new 2018 edition of the standard was completed during the year, and the **EMAS registration** of the Pagnana purification plant in Empoli (Florence).

ENVIRONMENTAL ACCOUNTS

PRODUCTS AND ANALYTICAL TESTS	m.u.	2017	2018(*)	2019(**)	Δ% 2019/2018
WATER BALANCE					
drinking water from the environment	**Mm^3**	**80.06**	**78.43**	**76.73**	**-2.0%**
from the surface	*Mm^3*	*3.48*	*3.78*	*3.70*	*-2.0%*
from wells	*Mm^3*	*63.38*	*59.39*	*58.21*	-2.0%
from springs	*Mm^3*	*6.43*	*7.04*	*6.90*	-2.0%
of which water from other aqueduct systems	*Mm^3*	*6.77*	*8.22*	*7.92*	*-3.6%*
drinking water transferred to other aqueduct systems	**Mm^3**	**1.08**	**0.86**	**1.06**	**23.2%**
total drinking water leaving the aqueduct system (c) = (a+b)	**Mm^3**	**44.60**	**44.20**	**44.20**	-
total drinking water dispensed and billed in the network (a)	**Mm^3**	**44.33**	**43.98**	**43.98**	-
measured volume of water delivered to users	*Mm^3*	*44.33*	*43.98*	*43.98*	-
volume consumed by users and not measured	*Mm^3*	*0*	*0*	*0*	-
total drinking water authorized and not billed in the network (b)	**Mm^3**	**0.27**	**0.22**	**0.22**	**-**
measured unbilled authorized consumption	*Mm^3*	*0.05*	*0.06*	*0.06*	-
unmeasured unbilled authorized consumption	*Mm^3*	*0.22*	*0.16*	*0.16*	-
LOSS ASSESSMENT ACCORDING TO ARERA RESOLUTION 917/17 R/IDR					
water leaks	Mm^3	15.85	15.03	14.4	-4.2
water loss percentages	%	42.94	41.66	40.55	-2.7
TREATED WASTEWATER					
water treated in the main treatment plants	**Mm^3**	**45.31**	**47.35**	**46.74**	**-1.3**
ANALYTICAL TESTS ON DRINKING WATER AND WASTEWATER(**)					
no. of analyses of drinking water *(including surface water tests)*	**no.**	**266,850**	**285,174**	**329,582**	**15.6**
no. of analytical tests on wastewater	**no.**	**119,742**	**116,636**	**128,450**	**10.1**

(*) The figures for 2018 have been corrected by entering the final figures as at 31.12.
(**) The 2019 figures are estimated.

RESOURCES USED	m.u.	2017	2018	2019	Δ% 2019/2018
COLLECTION, SUPPLY AND DISTRIBUTION DRINKING AND NON-DRINKING WATER					
materials					
laboratory reagents (chemical section and microbiological section)	t	2.37	2.51	2.03	-19.1
sodium hypochlorite	t	220.30	187.92	208.82	11.1
hydrochloric acid	t	394.51	383.53	351.09	-8.5
potassium permanganate	t	3.85	2.12	2.75	29.7
aluminium polychloride	t	9.41	30.60	181.73	493.9
DREWO 8155 PG powder	t	0	1.20	5.00	316.7
DREFLO 908 PG powder	t	0	0.12	3.98	-
salt in bags	t	7.05	0	7.20	-
sodium chloride	t	377.47	384.68	354.34	-7.9
caustic soda	t	1.12	0	0.55	-
sodium metabisulphite	t	2.17	0	0	-
citric acid	t	1.98	0.45	1.23	173.3
alifons L	t	0.02	0.10	0	-
aluminium polychlorosulphate	t	170.22	154.83	11.55	-92.5
WASTEWATER TREATMENT					
materials					
polyelectrolyte emulsion	t	140.98	137.93	169.08	22.6
aluminium polychloride	t	9.00	15.70	12.00	-23.6
ferric chloride for sludge dehydration	t	437.83	471.76	496.03	5.1
sodium hypochlorite for final disinfection	t	14.42	64.90	11.55	-82.2
peracetic acid for disinfection	t	12.00	4.00	0	-
acetic acid	t	0	0	0.10	-
sulphuric acid	t	2.30	0	1.25	-
ferrous chloride	t	10.22	5.37	0	-
caustic soda (sodium hydroxide) – Solvay	t	1.57	0.38	1.15	202.6
citric acid	t	0.10	0	0	-
biotek base L – biological reactivator	t	0.12	0	0.04	-
biotek clar – biological reactivator	t	1.12	0.25	0.25	-
desmell Bio L – odorogenic emissions treatment	t	0.05	0.10	0.08	-25.0
nutrients	t	479.40	514.85	545.50	6.0
other	t	0.26	0.01	0	-
OTHER CONSUMPTION					
drinking water(*)	**m^3**	**277,104**	**199,821**	**210,021**	**-26.0**
drinking water consumed for non-industrial water uses (offices, outside showers, etc.)	m^3	*55,459*	*72,423*	*82,623*	14.1
drinking water consumed for process water uses (washing machinery and bays, etc.)	m^3	*221,645*	*127,398*	*127,398*	0

(*) The 2019 data are estimated for December and the figure for 2018 has been adjusted with the final value.

The company reuses about 464,000 m^3 of water recovered from industrial processes for the washing the sheets of sludge dehydration equipment (belt presses) and for the backwashing of the Pollino water plant filters in Porcari (Lucca).

ENERGY CONSUMPTION	m.u.	2017	2018	2019	Δ% 2019/2018
FUELS					
process fuels – drinking/non-drinking					
diesel fuel	l	2,000	1,200	1,300	8.3
process fuels – wastewater					
diesel fuel	l	1,560	0	1100	-
heating fuels					
methane	Sm^3	51,846	56,357	56,244	-0.2
diesel fuel	l	4,000	-	-	-
lpg	l	8,682	16,803	17,781	5.8

ENERGY CONSUMPTION (cont.)	m.u.	2017	2018	2019	Δ% 2019/2018
vehicle fuels					
diesel	l	147,649	176,154	202,128	14.7
petrol	l	21,559	17,730	33,962	91.3
methane	kg	108,150	81,450	52,084	-36.1
ELECTRICITY					
total electricity for drinking water(*)	**GWh**	**55.41**	**53.36**	**53.80**	**0.8**
electricity for water pumping stations	*GWh*	*55.09*	*52.81*	53.34	1.0
electricity for offices	*GWh*	*0.32*	*0.55*	0.46	-16.4
total electricity for wastewater(*)	**GWh**	**31.83**	**33.41**	**32.83**	**-1.7**
electricity for treatment	*GWh*	*26.12*	*26.00*	*25.70*	-1.2
electricity for pumping stations	*GWh*	*5.53*	*7.07*	*6.85*	-3.1
electricity for offices	*GWh*	*0.18*	*0.34*	*0.28*	-17.6

(*) The 2019 data are estimated for December, and the figure for 2018 has been adjusted compared to what was published last year.

Acque has completed energy efficiency projects that have led to the energy savings shown in the table below.

ENERGY EFFICIENCY OF ACQUE (2017-2019)

	energy savings achieved (kWh)		
action	**2017**	**2018**	**2019**
Pagnana plant – logical changes in operation	22,061	-	-
Le Lame plant – replacement of the aeration system	50,767	97,585	85,429
S. Jacopo system – replacement of the aeration system	-	328,184	257,383
smaller plants – efficiency improvements of pumps	55,986	-	-

WASTE(*)	m.u.	2017	2018	2019	Δ% 2019/2018
SPECIFIC WASTE FROM TREATMENT OF WASTEWATER					
treatment sludge	t	21,577.26	17,634.77	21,953.18	19.7
sand and sediment from treatment	t	2,308.86	3,500.43	1,279.04	-63.5
WASTE PURSUANT TO LEGISLATIVE DECREE NO. 152/06 EXCLUDING SLUDGE AND SAND					
hazardous waste	t	30.15	31.82	42.93	34.9
non-hazardous waste	t	49,410.19	63,179.64	61,408.12	-2.80

TOTAL COD IN INPUT AND OUTPUT (2017-2019)

(t/year)	2017	2018	2019
COD_{in}	22,789	21,708	22,017
COD_{out}	1,603	1,521	1,382

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS MANAGED BY ACQUE (2017-2019)(*)

parameter	average values (mg/l) 2017	average values (mg/l) 2018	average values (mg/l) 2019
BOD_5	5.3	6.2	6.3
COD	34.3	30.6	27.9
SST	7.6	7.4	7.0
NH_4^+	4.7	5.0	3.5
phosphorus	2.4	2.1	2.3

(*) 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 (2017-2019)(*)

parameter	average values (%) 2017	average values (%) 2018	average values (%) 2019
$100x(COD_{in} - COD_{out})/COD_{in}$	93.5	93.5	93.7
$100x(SST_{in} - SST_{out})/SST_{in}$	97.2	97.5	95.7
$100x(NH_{4\,in}^{+} - NH_{4\,out}^{+})/NH_{4\,in}^{+}$	87.4	87.2	90.6
$100x(PO_{4\,in}^{-3} - PO_{4\,out}^{-3})/PO_{4\,in}^{-3}$	74.6	73.0	68.8

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

OVERSEAS ACTIVITIES

Acea works abroad in the water sector[138] to improve the service, especially as regards **technical and management aspects**, including through **staff training** and the **transfer of know-how** to local businesses.
In particular, it is present in Peru, Honduras and the Dominican Republic through companies created **in partnership with local and international stakeholders**, and serves a total of about 4.2 million people.

CONSORCIO AGUA AZUL SA

The Agua Azul Consortium manages the supply of drinking water to the local publicly owned water company SEDAPAL (Lima Drinking Water and Sewerage Service). To this end, using the surface and underground waters of the Chillón river it built infrastructure capable of satisfying part of the drinking water needs of the **northern areas of Lima** (Peru), for which it will be responsible for management until 2027, when it will be transferred to the State.

CONSORCIO AGUA AZUL SA – MAIN CORPORATE AND OPERATIONAL DATA

country (area)	Peru (north Lima – Cono Norte)
inhabitants served	834,000
customer	Sedapal (Drinking water and sewerage service in Lima, state owned)
sources of financing	equity capital and bonds issued on the Peruvian market
duration of the contract	07.04.2000 – 18.06.2027
purpose of the project	BOT (Build-Operate-Transfer) project for the construction and management of a drinking water supply system that draws on the water of the Chillón river and the underlying aquifer
shareholders	Acea SpA (25.5%), Impregilo International Infrastructures N.V. (25.5%), Marubeni Co. (29%), Inversiones Liquidas S.A.C (20%)
no. of employees	32
turnover (in € thousand)	13,369

The Consorcio has adopted an **Integrated Quality and Environment System** according to **UNI ISO 9001:2008** and **UNI ISO 14001:2004** aimed at optimising production processes and reducing the environmental impact through energy efficiency and the limited use of materials.
The year saw the continuation of the **training programme on safety at work and first aid**, carried out at university departments, specialisation centres and local companies of primary importance, providing **2,939 hours of training** for internal staff and contractors, including **safety drills**, coordinated by the Carabayllo fire brigade. Continuous training on the issue made it possible to **reach the goal of zero accidents at work** in 2019.
The Company has also held theoretical and hands-on courses organized with the Asociación de Productores Ecológicos of the Chillón valley on the **use of fertilizers, crop treatment and the maintenance of organic certification of agricultural products** for a total of **1,066 hours**. With regard to corporate welfare, in addition to administering the **annual assessment questionnaire on company climate**, which again this year registered a level of satisfaction equal to 100%, the Consorcio promoted an **influenza vaccination and pneumococcal vaccination campaign** for employees and their families.
The relationship with the education world has been the subject of great attention. In partnership with the Faculty of Engineering of the National University of Peru training courses were organized on the **design and management of treatment plants with rapid filtration** for graduates of Latin American countries, and continued the **internship** programme for students and recent graduates in the area. Also in 2019, the company hosted **555 visitors at its facilities**, including students, delegations of companies operating in the sector and representatives of foreign institutions (Costa Rica and Japan).
With the aim of developing a link with local communities, the Consorcio Agua Azul confirmed its **support to state entities** (such as the State Police, schools, the Ministry of Agriculture and the Ministry of Health), **non-profit organizations** (such as associations for the rehabilitation of drug addicts) **and consumer associations**. Indeed, to promote school attendance **1,725 educational kits** were distributed to nursery, primary and secondary schools made of **recycled plastic materials** and decorated with phrases on the **proper use of water resources**. Finally, for the Christmas holidays **1,965 toys and lunch vouchers were donated to the children of the area and to the children of employees** for lunch at the restaurant with their families.

CONSORCIO SERVICIO SUR

Consorcio Servicio Sur is a special purpose vehicle led by Acea International in partnership with Peruvian partners, which manages the preventive and corrective maintenance contract for the water and sewerage system in the **area south of Lima** (Peru), for the publicly owned Peruvian water company SEDAPAL.

CONSORCIO SERVICIO SUR – MAIN CORPORATE AND OPERATING DATA

country (area)	Peru (south Lima)
inhabitants served	1,121,886
customer	Sedapal (drinking water and sewerage service in Lima, state owned)
sources of financing	equity
duration of the contract	24.08.2018 – 24.08.2021
purpose of the project	preventive and corrective maintenance of the water and sewerage system in the area south of Lima
shareholders	Acea International (50%), Acea Ato 2 (1%), Conhydra (29%), Valjo (14%), India (6%)
no. of employees	176
turnover (in € thousand)	5,580

[138] 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.

From the standpoint of the the **sharing economy**, the company allows employees to use **company cars** for **commuting** and to share **them** with other employees.

CONSORCIO SERVICIO NORTE

A special purpose vehicle led by Acea International, in December 2019 the tender was awarded by the Peruvian state water company SEDAPAL following the emergency situation for the management of preventive and corrective maintenance of the water and sewerage systems in the area north of Lima (Peru) for a period of six months.

CONSORCIO SERVICIO NORTE – MAIN CORPORATE AND OPERATING DATA

country (area)	Peru (north Lima)
inhabitants served	3,028,000
customer	Sedapal (drinking water and sewerage service in Lima, state owned)
sources of financing	equity
duration of the contract	6 months from the award of the tender
purpose of the project	preventive and corrective maintenance of the water and sewerage system in the area north of Lima
shareholders	Acea International SA , Acea Peru SAC
no. of employees	454
turnover (in € thousand)	430

AGUAS DE SAN PEDRO

Aguas de San Pedro ASP is the holder of a 30-year contract for the management of the integrated water service in the city of San Pedro Sula in Honduras, and during the year it continued with the projects for the **expansion, treatment and improvement of the water service and sewerage network** in the city. 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.**

AGUAS DE SAN PEDRO SA – MAIN COMPANY AND OPERATING DATA

country (area)	Honduras (San Pedro Sula)
inhabitants served	755,000
customer	municipal administration
sources of financing	equity capital and loans from commercial banks
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	411
turnover (in € thousand)	36,787

In line with previous years, in 2019 the company offered **technical assistance to rural communities**, and promoted **initiatives to protect the environment**, continuing the **programme for the conservation of the El Merendón nature reserve**, declared a protected area for the production of water in San Pedro Sula.
The initiatives include:

- the "Un millon de Árboles para el Merendón" **reforestation** project, planting 61,656 fruit and wood trees (about 826,000 plants from the start of the project);
- **environmental training**, with 12 courses involving a total of 266 people including farmers benefiting from the reforestation project, members of the firefighting team, students of the Virgen de Suyapa agricultural school and staff of the cocoa producer cooperative;
- the **construction of 4 surveillance towers** to facilitate the detection and control of fires in the basins of the Rio Manchaguala and Rio Frio rivers;
- **fire prevention**, with campaigns for the protection of the local region, and the involvement of the fire team that has intervened in the **extinguishing of 19 fires** in Merendón on about 90 hectares of forests;
- **social and technical assistance** for the rural communities of Merendon.

In particular, the programme for **technical assistance to rural communities** involved 14 workshops for the community leaders who manage **water systems**, to increase their knowledge on the quality of water, the management and maintenance of systems and the basic principles of hydraulics. In addition, **108 bio-filters for drinking water** were installed in the homes of the residents of the Merendón and quarterly checks were carried out on approximately **2,400** devices already supplied.
In order to **teach good hygiene** to children, **4 committees** were formed and the maintenance of water and sanitation equipment was performed in schools.
Implementation of the **workplace health plan** continued, as envisaged in the *EMS-IHSS-ASP Corporate Medical System*, with **targeted campaigns** on nutrition and healthy lifestyles. Finally, **vaccination campaigns** were offered against influenza, medical examinations for patients with chronic diseases and preventive dermatology and cardiology checks.

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 and directing the works for new connections.
The framework of a contractual addendum already signed by Acea Dominicana and Corporacion del Acueducto y Alcantarillado De Santo Domingo (CAASD), which extended the contract duration until 2023, also includes the financing, supply and installation of 30,000 meters for new users and the replacement of 10,000 meters for existing users.

Apart from the foregoing, the company also carries out maintenance on the entire meter park. The Company implemented a Quality Management System certified according to the **UNI ISO 9001:2015** standard.

ACEA DOMINICANA SA – MAIN CORPORATE AND OPERATING DATA

country (area)	Dominican Republic (north and east Santo Domingo)
inhabitants served	1,500,000
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	161
turnover (in € thousand)	4,143

With regard to the social dimension, in collaboration with CAASD, **educational campaigns for 800 students from schools in the capital** were organized to **raise awareness among them about the proper use of water**, distributing gadgets and kits containing school supplies and launching a campaign dedicated to primary schools in Boca Chica.
In the environmental field, the Company supported the **project for the reforestation of the basin of the Brujuelas river – CORAABO** involving entrepreneurs, students and citizens of Boca Chica and neighbouring areas in the planting of about 10,000 trees to preserve the wetlands, lagoon and spring essential for the water supply of Boca Chica and neighbouring countries.
In the **poorest areas of Santo Domingo** and **Boca Chica**, the promotional campaign **"Plan Deuda Cero" (Zero Debt Plan)** continued, aimed at users who are in arrears, to cancel their debt with personalized payment plans.