



SUSTAINABILITY
DAY 2019

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IMPRESA • SOSTENIBILITÀ • BENESSERE

ENVIRONMENTAL ACCOUNTS

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SCOPE

The scope of the **Environmental Account** is consistent with the reporting perimeter of the **Sustainability Report** (pursuant to Italian Legislative Decree 254/2016), as defined in the **Methodological Note**.

The water Companies in which Acea has an investment: Acque, AdF, Publiacqua and Umbra Acque – consolidated in the Financial Statements with the equity method – are marginally included in the Environmental Accounts and only relative to the aspects which are specifically signalled in the text. Please see the chapter **Water Company data sheets** and overseas activities (outside the perimeter of the **Consolidated Non-Financial Statement**). The Company Gori, which joined the scope of consolidation on a line-by-line basis in November 2018, was included within the scope of the consolidated non-financial statement for the first time. In this regard, the data for the three-year period have been updated.

The **Environmental Accounts**, integral part of the **Sustainability Report**, combines and presents systematically the information and environmental performance data of the principal Companies of the Group.

The data is divided into “product systems” pertaining to the energy, “environment” and water fields, according to the Life Cycle Assessment approach (standard ISO Series 14040), which assesses the entire life cycle of the systems.

The report comprises **about 400 items and parameters monitored** which quantify the physical flows generated by the activities and some performance indicators.

The substances used by the Group – whether natural, like water, or not natural, like chemicals, the “products” and the emissions, the effluents and waste related to the activities managed, are reported for the three-year period, since they are significant in terms of **producing and distributing energy, collecting and**

distributing drinking water, purification processes and for all the processes connected to **waste management**, including **waste-to-energy**. Every use is reduced to a minimum in terms of quantity and every substance is selected carefully in terms of quality, safety and environmental sustainability.

The resources used, both **renewable and non-renewable**, are explained in the three areas. In particular, among the renewable resources listed we highlight water and the biomasses used for the production of compost. The energy produced from renewable sources (photovoltaic and biogas) is used where possible in the closest factories or installations (see *Relations with the environment*). In the *Explanatory Notes* we provide additional information regarding the **quality of the data presented**, in particular whether it was **measured, estimated or calculated**, and the principal items of the *Environmental Accounts*, indicated in the tables and in the text by a number in brackets, including a brief description.

PRODUCT SYSTEMS



ENERGY SEGMENT

- ENERGY GENERATION (HYDROELECTRIC + THERMOELECTRIC + PHOTOVOLTAIC + FROM WASTE AND BIOGAS)
- DISTRIBUTION OF ELECTRICITY
- PRODUCTION AND DISTRIBUTION OF HEAT
- PUBLIC LIGHTING
- CONTROLS AND MEASUREMENTS



ENVIRONMENT SEGMENT

- WASTE DISPOSED OF
- PRODUCTION OF COMPOST
- ANALYSIS AND MEASUREMENTS



WATER SEGMENT

- DRINKING WATER SUPPLY
- NON-DRINKING WATER SUPPLY
- WATER DISTRIBUTION
- ADDUCTION/PURIFICATION WASTEWATER
- ANALYSIS AND MEASUREMENTS

The data are provided for the 2017-2019 three-year period and aggregated in three homogeneous categories:

- **the products supplied,**
- **the resources used,**
- **the waste produced.**

The service indicators and the principal environmental performance indicators are explained below for every area.

PRODUCTS – ENERGY SEGMENT

The financial statement data for the generation of electricity refer to Acea Produzione and Acea Ambiente – Waste-to-Energy (San Vittore del Lazio and Terni plants) and Biogas Production (Orvieto plant).

ELECTRICITY – GENERATION^(*)	m.u.	2017	2018	2019	Δ% 2019/2018
summary data					
total gross electricity produced (1) = (3+11+14+19)	Gwh	837.90	968.38	904.12	-6.6
total net electricity produced (2) = (10+13+18+21)	Gwh	773.32	900.19	839.36	-6.8
<i>from fossil fuels (thermoelectric) (5 + 0.49x 15 San Vittore del Lazio +0.53x 16 Terni)</i>	<i>GWh</i>	<i>229.45 27.4% of (1)</i>	<i>272.88 28.2% of (1)</i>	<i>269.10 29.8% of (1)</i>	<i>-1.4</i>
<i>from renewable sources (hydroelectric, solar, biodegradable waste fraction) (4+0.51x15 San Vittore del Lazio+0.47 x 16 Terni +11+19)</i>	<i>GWh</i>	<i>608.45 72.6% of (1)</i>	<i>695.51 71.8% of (1)</i>	<i>635.02 70.2% of (1)</i>	<i>-8.7</i>
Acea production – hydroelectric and thermoelectric					
total gross electricity produced (3) = (4+5)	GWh	420.18	549.84	516.23	-6.1
total gross hydroelectric energy (4)	GWh	380.48	476.52	425.95	-10.6
<i>A. Volta Castel Madama</i>	<i>GWh</i>	<i>6.92</i>	<i>31.64</i>	<i>26.17</i>	<i>-17.3</i>
<i>G. Ferraris Mandela</i>	<i>GWh</i>	<i>3.27</i>	<i>0.00</i>	<i>0.00</i>	<i>-</i>
<i>G. Marconi Orte</i>	<i>GWh</i>	<i>56.32</i>	<i>73.01</i>	<i>57.06</i>	<i>-21.8</i>
<i>Sant'Angelo</i>	<i>GWh</i>	<i>128.42</i>	<i>188.68</i>	<i>162.05</i>	<i>-14.1</i>
<i>Salisano</i>	<i>GWh</i>	<i>182.82</i>	<i>180.49</i>	<i>178.42</i>	<i>-1.1</i>
<i>Other minor</i>	<i>GWh</i>	<i>2.73</i>	<i>2.70</i>	<i>2.24</i>	<i>-17.0</i>
total gross thermoelectric energy (5)	GWh	39.70	73.32	90.29	23.1
<i>from diesel Montemartini power plant^(**)</i>	<i>GWh</i>	<i>2.15</i>	<i>0.56</i>	<i>1.36</i>	<i>143.1</i>
<i>from natural gas</i>	<i>GWh</i>	<i>37.55</i>	<i>72.76</i>	<i>88.93</i>	<i>22.2</i>
<i>Tor di Valle cogeneration</i>	<i>GWh</i>	<i>8.22</i>	<i>0.00</i>	<i>0.00</i>	<i>-</i>
<i>Tor di Valle CAR module</i>	<i>GWh</i>	<i>29.33</i>	<i>72.76</i>	<i>88.93</i>	<i>22.2</i>
total losses of electricity (6) = (7+8+9)	GWh	10.12	12.32	12.19	-1.0
<i>self consumption hydro plants (7)</i>	<i>GWh</i>	<i>1.98</i>	<i>2.00</i>	<i>2.40</i>	<i>19.8</i>
<i>self consumption thermo plants (Tor di Valle, Montemartini) (8)</i>	<i>GWh</i>	<i>3.63</i>	<i>5.39</i>	<i>5.27</i>	<i>-2.1</i>
<i>first processing losses (9)</i>	<i>GWh</i>	<i>4.51</i>	<i>4.93</i>	<i>4.52</i>	<i>-8.3</i>
total net electricity produced by Acea Produzione (10) = (3-6)	GWh	410.06	537.52	504.04	-6.2
Acea production – photovoltaic					
gross photovoltaic electrical energy (11)	GWh	11.60	10.20	10.89^(***)	6.8
total electricity losses including own consumption (12)	GWh	1.98	2.18	2.29	5.0
net photovoltaic energy (13) = (11-12)	GWh	9.62	8.02	8.61	7.2
Acea Ambiente – waste-to-energy					
total gross electricity produced (14) = (15)+(16)	GWh	384.25	389.71	357.20	-8.3
<i>San Vittore del Lazio plant (15)</i>	<i>GWh</i>	<i>301.15</i>	<i>307.30</i>	<i>276.27</i>	<i>-10.1</i>
<i>Terni plant (16)</i>	<i>GWh</i>	<i>83.10</i>	<i>82.41</i>	<i>80.93</i>	<i>-1.8</i>
self consumption + losses from first processing (17)	GWh	51.30	52.73	49.12	-6.8
<i>San Vittore del Lazio plant</i>	<i>GWh</i>	<i>42.78</i>	<i>44.35</i>	<i>41.12</i>	<i>-7.3</i>
<i>Terni plant</i>	<i>GWh</i>	<i>8.52</i>	<i>8.38</i>	<i>8.00</i>	<i>-4.6</i>
total net electricity produced (18) = (14-17)	GWh	332.95	336.98	308.08	-8.6
Acea Ambiente – Biogas					
total gross electricity produced from biogas (19)	GWh	21.87	18.63	19.79	6.3
<i>Orvieto plant</i>	<i>GWh</i>	<i>21.87</i>	<i>18.63</i>	<i>19.79</i>	<i>6.3</i>
<i>self consumption (20)</i>	<i>GWh</i>	<i>1.17</i>	<i>0.97</i>	<i>1.16</i>	<i>19.4</i>
total electricity transferred in network (21) = (19-20)	GWh	20.69	17.66	18.63	5.5

(*) Some data of the two-year period preceding the year of publication has been adjusted since they were estimated.

(**) The Montemartini power plant is maintained operational but in reserve mode.

(***) The energy produced by PV does not include the energy produced by the plants acquired in the second half of 2019.

THERMAL ENERGY – GENERATION, DISTRIBUTION AND SALES	m.u.	2017	2018	2019	Δ% 2019/2018
Acea Produzione					
gross thermal energy produced Tor di Valle power plant (22) ^(*)	GWht	96.19	98.38	95.92	-2.5
total losses of thermal energy (23)	GWht	20.14	28.93	30.47	5.3
<i>distribution losses</i>	GWht	14.06	18.45	21.66	17.4
<i>production losses</i>	GWht	6.08	10.48	8.80	-16.0
net thermal energy sold (24) = (22-23)	GWht	76.04	69.45	65.45	-5.8
(*) The figures for 2018 have been restated after the final calculations.					
ELECTRICITY – TRANSPORT AND SALE	m.u.	2017	2018	2019	Δ% 2019/2018
in Rome and Formello – summary data					
supply from Acea Group (25)	GWh	3.21	2.62	2.65	1.3
electricity from the market (26)	GWh	10,832.86	10,610.06	10,606.69	-
<i>from Single Buyer</i>	GWh	2,620.42	2,321.83	2,537.45	9.3
<i>from importation</i>	GWh	389.13	389.14	n.a.	-
<i>from wholesalers + other producers</i>	GWh	7,823.31	7,899.09	8,069.24	2.2
electricity requested on the grid (27) = (25+26) = (28+29+30+31+32)	GWh	10,836.07	10,612.68	10,609.35	-
<i>distribution, transport and commercial losses (28)</i>	GWh	747.40 6.90% of (27)	763.74 7.20% of (27)	741.14 7.0% of (27)	-3.0
<i>uses for own transmission and distribution (29)</i>	GWh	40.39	39.63	39.47	-0.4
<i>net electricity transferred to third parties (30)</i>	GWh	2.59	2.59	16.45	535.1
net electricity conveyed from Acea to clients of the open market (31)	GWh	7,393.80	7,463.10	7,615.16	2.0
<i>net electricity sold by Acea Energia to clients of the open market on distribution company grid (Areti)</i>	GWh	5,847.37	6,041.16	6,119.50	1.3
<i>net electricity sold by other sellers to clients of the open market on distribution company grid (Areti)</i>	GWh	1,546.43	1,421.94	1,495.66	5.2
net electricity sold to managed clients (32)	GWh	2,651.90	2,343.60	2,197.13	-6.2
sale in Italy – summary data					
net electricity sold by Acea on the open market – including sale on Rome (33)	GWh	4,190.94	3,684.54	4,234.54	14.9
<i>Acea Energia</i>	GWh	3,852.12	3,322.62	3,825.82	15.1
<i>other associated companies</i>	GWh	338.82	361.92	408.72	12.9
net electricity sold by Acea in Italy (open market + managed) (34) = (32+33)	GWh	6,842.84	6,028.14	6,431.67	6.7
GAS – SALES	m.u.	2017	2018	2019	Δ% 2019/2018
gas sold by Acea Energia in Italy (35)	M ³	102.98	128.29	139.75	8.9
<i>Acea Energia</i>	M ³	77.73	98.17	108.38	10.4
<i>other associated companies</i>	M ³	25.25	30.12	31.37	4.1
PUBLIC LIGHTING	m.u.	2017	2018	2019	Δ% 2019/2018
luminous flux to Rome (36)	Mlumen	1,991	2,010	2,002	-0.4
CONTROLS AND MEASUREMENTS	m.u.	2017	2018	2019	Δ% 2019/2018
measurement and control activity (37)	no.	371	526	375	-28.7
<i>electro-magnetic field measurements</i>	no.	25	27	26	-3.7
<i>noise measurements</i>	no.	27	17	20	17.6
<i>PCB chemical analyses</i>	no.	43	59	68	15.3
<i>waste classification</i>	no.	28	130	40	-69.2
<i>transformer diagnostics</i>	no.	216	261	200	-23.4
<i>other</i>	no.	32	32	21	-34.4

PRODUCTS – ENVIRONMENT SEGMENT

The data refers to the three composting plants (located Aprilia, in Monterotondo Marittimo and Sabaudia) and the waste management plant of Orvieto, all of Acea Ambiente. After the revamping work of recent years, the Aprilia and Monterotondo Marittimo plants have both implemented a new **anaerobic digestion section** that from 2020, after the testing phases, will **recover electrical and thermal energy**.

The **Sabaudia plant** has undergone revamping/maintenance

since 2016, and operations were resumed in August 2018. Since 31.10.2019, they have been suspended again to allow other revamping works. The **Aprilia plant**, which suffered from the vicissitudes of a preventive seizure, was able to operate continuously in 2019, achieving conditions close to full operation and always under the control of the judicial custodian as in the previous year. Since November 2019, it no longer has any restrictions on operations¹⁴⁰.

NON-HAZARDOUS WASTE DISPOSED AND RECOVERED – ORVIETO PLANT	u. m.	2017	2018	2019	Δ% 2019/2018
total incoming waste (38) = (39)+(40)	t	88,273	91,142	99,910	9.6
waste sent for treatment (39)	t	58,297	58,343	65,674	12.6
<i>waste sent to the anaerobic digester and aerobic treatment</i>	<i>t</i>	<i>42,506</i>	<i>43,420</i>	<i>43,958</i>	<i>1.2</i>
<i>sent for aerobic treatment or just shredding</i>	<i>t</i>	<i>15,791</i>	<i>14,923</i>	<i>21,716</i>	<i>45.5</i>
waste sent directly to landfill (40)	t	29,976	32,799	34,236	4.4
waste sent to landfill after treatment (41)	t	13,625	18,469	22,438	21.5
waste recovered (42)	t	336	45	64	41.2
quality compost (43)	t	4,578	5,009	5,240	4.6
reduction for stabilisation (44) = (38) – (40+41+42+43)	t	39,758	34,820	37,933	8.9

PRODUCTION OF COMPOST	m.u.	2017	2018	2019	Δ% 2019/2018
total incoming organic waste (45) = (46+47+48)	t	56,474.33	28,714.78	53,419.28	86.0
incoming sludge (46)	t	10,593.60	3,385.40	8,809.26	160.2
<i>Aprilia plant</i>	<i>t</i>	<i>5,464.54</i>	<i>1,286.60</i>	<i>3,644.44</i>	<i>183.3</i>
<i>Monterotondo Marittimo plant</i>	<i>t</i>	<i>5,129.06</i>	<i>0.00</i>	<i>585.74</i>	<i>-</i>
<i>Sabaudia plant</i>	<i>t</i>	<i>0.00</i>	<i>2,098.80</i>	<i>4,579.08</i>	<i>118.2</i>
incoming green (47)	t	11,220.33	3,679.95	10,459.84	184.2
<i>Aprilia plant</i>	<i>t</i>	<i>8,585.21</i>	<i>2,626.81</i>	<i>5,287.70</i>	<i>101.3</i>
<i>Monterotondo Marittimo plant</i>	<i>t</i>	<i>2,635.12</i>	<i>0.00</i>	<i>1,839.96</i>	<i>-</i>
<i>Sabaudia plant</i>	<i>t</i>	<i>0.00</i>	<i>1,053.14</i>	<i>3,332.18</i>	<i>216.4</i>
organic fraction from separate incoming collection and other agrifood waste (48)	t	34,660.40	21,649.43	34,150.18	57.7
<i>Aprilia plant</i>	<i>t</i>	<i>33,141.62</i>	<i>21,649.43</i>	<i>32,588.90</i>	<i>50.5</i>
<i>Monterotondo Marittimo plant</i>	<i>t</i>	<i>1,518.78</i>	<i>0.00</i>	<i>1,561.28</i>	<i>-</i>
quality compost (49)^(*)	t	12,538.00	6,779.00	11,300.00	66.7
<i>Aprilia plant</i>	<i>t</i>	<i>10,238.00</i>	<i>5,082.00</i>	<i>9,400.00</i>	<i>85.0</i>
<i>Monterotondo Marittimo plant</i>	<i>t</i>	<i>2,300.00</i>	<i>767.00</i>	<i>0</i>	<i>-</i>
<i>Sabaudia plant</i>	<i>t</i>	<i>0.00</i>	<i>930.00</i>	<i>1,900.00</i>	<i>104.3</i>
non-compostable material for disposal (50)	t	9,361.97	3,565.50	6,753.22	89.4
<i>Aprilia plant</i>	<i>t</i>	<i>9,163.36</i>	<i>2,799.28</i>	<i>6,149.06</i>	<i>119.7</i>
<i>Monterotondo Marittimo and Sabaudia plants</i>	<i>t</i>	<i>198.61</i>	<i>766.22</i>	<i>604.16</i>	<i>-21.2</i>
reduction through stabilisation (51) = (46+47-49-50)	t	34,574.4	18,370.3	35,366.1	92.5

(*) The quantities of compost produced in 2018 were adjusted, as they had been estimated for the previous report.

¹⁴⁰ The Aprilia plant, placed under preventive seizure in 2017 by the Latina Public Prosecutor's Office for aspects related to odorous emissions, was able to restart operations in April of the same year, under close in almost full operation, having responded to the notices of compliance prescribed by the relevant Authorities (Arpa, Lazio Region, NOE). On 15 February 2019, the quantitative limitations were completely removed and the plant was able to operate under normal conditions. On 8 July 2019, the deliveries were again reduced under order of the Judicial Custodian and the Public Prosecutor's Office. Finally, the restrictions were removed on 18 November 2019.

ANALYTICAL DETERMINATIONS ON WASTE AND ON QUALITY COMPOST	m.u.	2017	2018	2019	Δ% 2019/2018
total analytical determinations (52)	no.	104	60	122	103.3
<i>analytical determinations on compost – Orvieto plant</i>	<i>no.</i>	<i>12</i>	<i>12</i>	<i>13</i>	<i>8.3</i>
<i>analytical determinations on compost – Aprilia, Monterotondo Marittimo and Sabaudia plants</i>	<i>no.</i>	<i>30</i>	<i>17</i>	<i>30</i>	<i>76.5</i>
<i>analytical determinations on waste – Orvieto plant</i>	<i>no.</i>	<i>62</i>	<i>31</i>	<i>79</i>	<i>154.8</i>

PRODUCTS – WATER SEGMENT

The water data **summarized at the national level** include the principal water Companies of the Acea Group: Acea Ato 2 and Acea Ato 5 (Lazio), Gesesa and Gori (Campania), Umbra Acque (Umbria), Acque, Publicacqua and AdF (Tuscany). The details of the water balances are presented only for the Companies in the reporting scope of the *Consolidated Non-Financial Statement* (NFS, pursuant to Legislative Decree no. 254/2016): Acea Ato 2, Acea Ato 5, Gori and Gesesa. For the first time, Gori's data were also included for the two-year period 2017-2018, making the data comparable. Please see the chapter *Water Companies data sheets and overseas activities* for the water balance sheets of

the other Companies of the Group not in the scope of the NFS. In recent years, **ARERA** has intervened at a regulatory level, introducing progressive changes to the process for calculating the water balance. The Loss Assessment was therefore carried out for the entire three-year period, according to Resolution ARERA 917/17 R/IDR. In contrast, until last year the calculation model was presented according to the model specified in Ministerial Decree 99/97. In particular, the new ARERA procedures establish that water losses are calculated on the entire scope of the aqueduct system (and therefore not only on the distribution network) and include apparent losses.

SUMMARIZED WATER DATA OF THE GROUP IN ITALY ^(*)	m.u.	2017	2018	2019	Δ% 2019/2018
total drinking water collected from the environment or from other systems and fed into the aqueduct systems (53)	Mm³	1,436.9	1,396.6	1,371.4	-1.8
total drinking water supplied and billed (54)^(*)	Mm³	622.9	615.1	628.9	2.2

(*) Some 2019 items were estimated and will be consolidated in the months following publication.

(**) Items 2017 and 2018 do not contain the Gesesa data, not available in the new formulation of the water balance according to the ARERA model.

SUMMARY WATER DATA OF THE OPERATING COMPANIES IN THE NFS SCOPE: ACEA ATO 2, ACEA ATO 5, GORI AND GESESA	m.u.	2017	2018	2019	Δ% 2019/2018
total drinking water collected from the environment or from other systems and fed into the aqueduct systems (55)	Mm³	1,067.0	1,033.4	1,017.8	-1.5
total drinking water supplied (56)^(*)	Mm³	440.1	434.8	446.8	2.8

(*) Items 2017 and 2018 do not contain the data of Gesesa, not available in the new formulation of the water balance according to the ARERA model.

WATER BALANCES OF THE COMPANIES OPERATING IN THE NFS SCOPE ^(*)	m.u.	2017	2018	2019	Δ% 2019/2018
Acea Ato 2 for Ato 2 – central Lazio (Rome + municipalities acquired as at 31.12.2019)					
drinking water collected from the environment or from other systems and fed into the aqueduct systems (57)	Mm³	737.2	697.2	689.5	-1.1
<i>surface (lakes and rivers)</i>	<i>Mm³</i>	<i>22.8</i>	<i>0.0</i>	<i>0.0</i>	<i>-</i>
<i>from wells</i>	<i>Mm³</i>	<i>115.7</i>	<i>89.4</i>	<i>86.5</i>	<i>-3.3</i>
<i>from springs</i>	<i>Mm³</i>	<i>593.0</i>	<i>601.6</i>	<i>596.8</i>	<i>-0.8</i>
<i>from other aqueduct systems</i>	<i>Mm³</i>	<i>5.7</i>	<i>6.2</i>	<i>6.3</i>	<i>1.6</i>
total drinking water leaving the aqueduct system (58) = (59+60+61+62)	Mm³	370.7	371.4	384.3	3.5
total drinking water released and invoiced into the Ato 2 network (59)	Mm³	330.9	324.1	328.4	1.3
<i>measured volume of water delivered to users</i>	<i>Mm³</i>	<i>300.0</i>	<i>300.4</i>	<i>300.3</i>	<i>-</i>
<i>volume consumed by users and not measured</i>	<i>Mm³</i>	<i>30.9</i>	<i>23.7</i>	<i>28.2</i>	<i>18.8</i>
total drinking water authorized and not billed in the network (60)	Mm³	1.5	1.5	13.2	-
<i>measured unbilled authorized consumption</i>	<i>Mm³</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>-</i>
<i>unmeasured unbilled authorized consumption</i>	<i>Mm³</i>	<i>1.5</i>	<i>1.5</i>	<i>13.2</i>	<i>-</i>
drinking water exported to other systems (61)	Mm³	38.3	45.5	42.6	-6.4
measured drinking water losses (62)	Mm³	0.0	0.3	0.1	-70.0
loss assessment according to ARERA Resolution 917/17 R/IDR					
water losses (63)	Mm³	366.5	325.8	305.3	-6.3

	m.u.	2017	2018	2019	Δ% 2019/2018
water loss percentages (64)	%	49.7	46.7	44.3	-
Acea Ato 5 for Ato 5 – Southern Lazio – Frosinone (85 municipalities)					
drinking water collected from the environment or from other systems and fed into the aqueduct systems (65)	Mm³	111.9	124.7	121.8	-2.3
<i>from wells</i>	<i>Mm³</i>	58.2	59.5	58.7	-1.2
<i>from springs</i>	<i>Mm³</i>	42.4	51.3	49.5	-3.5
<i>from other aqueduct systems</i>	<i>Mm³</i>	11.2	14.0	13.7	-2.0
total drinking water leaving the aqueduct system (66) = (67+68+69)	Mm³	26.1	27.8	29.0	4.3
total drinking water dispensed and billed in the network (67)	Mm³	19.7	20.8	21.6	4.1
<i>measured volume of water delivered to users</i>	<i>Mm³</i>	19.2	20.3	20.2	-0.7
<i>volume consumed by users and not measured</i>	<i>Mm³</i>	0.5	0.5	1.5	196.0
total drinking water authorized and not billed in the network (68)	Mm³	0.10	0.10	0.61	-
<i>measured unbilled authorized consumption</i>	<i>Mm³</i>	0.0	0.0	0.0	-
<i>unmeasured unbilled authorized consumption</i>	<i>Mm³</i>	0.097	0.099	0.61	-
drinking water exported to other systems (69)	Mm³	6.3	6.9	6.7	-2.3
loss assessment according to ARERA Resolution 917/17 R/IDR					
water losses (70)	Mm³	85.8	96.9	92.8	-4.1
water loss percentages (71)	%	76.7	77.7	76.2	-1.9
Gesesa – Ato Calore Irpino – Benevento (21 municipalities)					
drinking water collected from the environment or from other systems and fed into the aqueduct systems (72)	Mm³	15.4	16.2	17.6	8.9
<i>from wells</i>	<i>Mm³</i>	6.6	7.1	6.6	-7.1
<i>from springs</i>	<i>Mm³</i>	1.5	1.6	2.4	46.3
<i>drinking water collected from other aqueduct systems</i>	<i>Mm³</i>	7.4	7.5	8.7	15.8
total drinking water leaving the aqueduct system (73) = (74+75+75 B)	Mm³	n.a.	n.a.	7.8	-
total drinking water dispensed and billed in the network (74)	Mm³	n.a.	n.a.	7.7	-
<i>measured volume of water delivered to users</i>	<i>Mm³</i>	<i>n.a.</i>	<i>n.a.</i>	7.7	-
<i>volume consumed by users and not measured</i>	<i>Mm³</i>	<i>n.a.</i>	<i>n.a.</i>	0.0	-
total drinking water authorized and not billed in the network (75)	Mm³	n.a.	n.a.	0.0	-
drinking water exported to other systems (75 B)	Mm³	0	0	0.1	-
loss assessment according to ARERA Resolution 917/17 R/IDR					
water losses (76)	Mm³	n.a.	n.a.	9.9	-
water loss percentages (77)	%	n.a.	n.a.	56.0	-
Gori – Sarnese-Vesuviano District (76 municipalities)					
drinking water collected from the environment or from other systems and fed into the aqueduct systems (78)	Mm³	202.5	195.4	188.8	-3.4
<i>from wells</i>	<i>Mm³</i>	69.1	54.1	59.4	9.6
<i>from springs</i>	<i>Mm³</i>	1.9	1.7	2.7	52.9
<i>drinking water collected from other aqueduct systems</i>	<i>Mm³</i>	131.5	139.5	126.8	-9.1
total drinking water leaving the aqueduct system (79) = (80+81)	Mm³	89.9	90.4	89.6	-0.9
total drinking water dispensed and billed in the network (80)	Mm³	89.5	89.9	89.1	-0.9
<i>measured volume of water delivered to users</i>	<i>Mm³</i>	84.52	84.94	84.19	-0.9
<i>volume consumed by users and not measured</i>	<i>Mm³</i>	4.97	4.99	4.95	-0.8
total drinking water authorized and not billed in the network (81)	Mm³	0.42	0.42	0.42	-
<i>measured unbilled authorized consumption</i>	<i>Mm³</i>	0	0	0	-
<i>unmeasured unbilled authorized consumption</i>	<i>Mm³</i>	0.42	0.42	0.42	-
loss assessment according to ARERA Resolution 917/17 R/IDR					
water losses (82)	Mm³	112.60	105.03	99.26	-5.5
water loss percentages (83)	%	55.6	53.8	52.6	-

(*) Some figures for 2018 have been updated following consolidation. The 2019 data are estimated and will be consolidated with the subsequent reporting.

TOTAL WASTE WATER TREATED BY THE COMPANIES OF THE GROUP IN ITALY – SUMMARY DATA	m.u.	2017	2018	2019	Δ% 2019/2018
waste water treated in the principal treatment plants of the companies of the Group in Italy (84) ^(*)	Mm ³	810.2	858.6	855.4	-0.4

(*) Some Group company data for 2018 have been adjusted/consolidated.

TOTAL WASTE WATER TREATED BY THE COMPANIES OPERATING IN THE NFS SCOPE (ACEA ATO 2, ACEA ATO 5, GORI AND GESESA – SUMMARY DATA)	m.u.	2017	2018	2019	Δ% 2019/2018
waste water treated in the principal treatment plants of Acea Ato 2, Acea Ato 5, Gori (85) ^(*)	Mm ³	583.7	611.6	666.3	4.8

(*) The Company Gesesa does not currently have flow meters at the entrance of the purification plants.

WASTE WATER TREATED BY ACEA ATO 2	m.u.	2017	2018	2019	Δ% 2019/2018
waste water treated in the principal treatment plants (86)	Mm ³	467.1	490.1	514.1	4.8
<i>Rome South</i>	Mm ³	276.9	279.1	286.4	2.6
<i>Rome North</i>	Mm ³	75.2	85.9	91.5	6.5
<i>Rome East</i>	Mm ³	83.0	83.5	90.9	8.9
<i>Rome Ostia</i>	Mm ³	20.9	25.7	29.8	16.1
<i>CoBIS</i>	Mm ³	7.0	7.1	6.6	-6.4
<i>Fregene</i>	Mm ³	4.1	8.8	8.8	-
other – Municipality of Rome	Mm ³	14.0	11.6	9.7	-16.5
other – outside the Municipality of Rome	Mm ³	72.5	81.0	76.0	-6.2
total waste water treated by Acea Ato 2 (87)	Mm ³	553.6	582.7	599.8	2.9

WASTE WATER TREATED BY ACEA ATO 5	m.u.	2017	2018	2019	Δ% 2019/2018
waste water treated in the principal treatment plants (88)	Mm ³	21.1	21.2	21.3	0.4

WASTEWATER TREATED BY GORI	m.u.	2017	2018	2019	Δ% 2019/2018
waste water treated in the principal treatment plants (89)	Mm ³	9.0	7.7	45.2	-

ANALYTICAL DETERMINATIONS ON DRINKING WATER AND WASTE WATER IN THE GROUP IN ITALY – SUMMARY DATA	m.u.	2017	2018	2019	Δ% 2019/2018
analytical determinations on Group total drinking water (90)	no.	1,170,136	1,328,928	1,416,870	6.6
analytical determinations on Group total waste water (91)	no.	468,538	428,417	495,921	15.8

ANALYTICAL DETERMINATIONS ON DRINKING WATER AND ON WASTE WATER OF THE OPERATING COMPANIES IN THE NFS SCOPE: ACEA ATO 2, ACEA ATO 5, GORI AND GESESA – SUMMARY DATA	m.u.	2018	2019	Δ% 2019/2018
analytical determinations on drinking water of Acea Ato 2, Acea Ato 5, Gori and Gesesa (92)	no.	576,399	607,309	5.4
analytical determinations on waste water of Acea Ato 2, Acea Ato 5, Gori and Gesesa (93)	no.	186,998	238,798	27.7

ANALYTICAL DETERMINATIONS ACEA ATO 2	m.u.	2018	2019	Δ% 2019/2018
analytical determinations on Acea Ato 2 drinking water (94)	no.	359,491	365,728	1.7
analytical determinations on Acea Ato 2 wastewater (95)	no.	127,378	170,641	34.0

ANALYTICAL DETERMINATIONS ACEA ATO 5	m.u.	2017	2018	2019	Δ% 2019/2018
analytical determinations on Acea Ato 5 drinking water (96)	no.	101,460	115,345	123,790	7.3
analytical determinations on Acea Ato 5 wastewater (97)	no.	19,180	35,064	41,616	18.7
GESESA ANALYTICAL DETERMINATIONS	m.u.	2017	2018	2019	Δ% 2019/2018
analytical determinations on Gesesa drinking water (98)	no.	6,289	6,101	8,428	38.1
analytical determinations on Gesesa wastewater (99)	no.	4,268	4,702	5,514	17.3
GORI ANALYTICAL DETERMINATIONS	m.u.	2017	2018	2019	Δ% 2019/2018
analytical determinations on Gori drinking water (100)	no.	101,460	95,462	109,363	14.6
analytical determinations on Gori wastewater (101)	no.	19,180	19,854	21,027	5.9

RESOURCES USED – ENERGY AREA

The data on the resources used refer to Acea Produzione, to the waste-to-energy plants of Acea Ambiente and Areti.

GENERATION, TRANSPORT AND SALE OF ELECTRICITY AND HEAT, PUBLIC LIGHTING	m.u.	2017	2018	2019	Δ% 2019/2018
natural gas					
electricity and heat generation (102) = (103+104)	Nm ³ x 1,000	18,351	23,760	25,846	8.8
thermoelectric and heat production (103)	Nm ³ x 1,000	15,134	20,305	22,468	10.7
<i>Tor di Valle auxiliary boilers – for district heating</i>	Nm ³ x 1,000	4,334	0	0	-
<i>Tor di Valle cogeneration</i>	Nm ³ x 1,000	2,942	0	0	-
<i>Tor di Valle CAR module</i>	Nm ³ x 1,000	7,857	20,305	22,468	10.7
waste-to-energy (104)	Nm ³ x 1,000	3,217	3,455	3,378	-2.2
<i>San Vittore del Lazio waste-to-energy plant</i>	Nm ³ x 1,000	2,719	3,126	3,029	-3.1
<i>Terni waste-to-energy plant</i>	Nm ³ x 1,000	498	329	349	5.9
diesel for thermoelectric generation					
thermoelectric production	l x 1,000	929	291	630	116.6
<i>Montemartini power plant</i>	l x 1,000	865	230	574	149.4
<i>Terni and San Vittore del Lazio plants</i>	l x 1,000	64	61	56	-8.0
RDF (Refuse-Derived Fuel) processed					
San Vittore del Lazio waste-to-energy plant (106)	t x 1,000	345.639	357.174	340.531	-4.7
waste-to-energy paper mill pulper					
Terni waste-to-energy plant (107)	t x 1,000	99.970	99.971	94.092	-5.9
biogas for the production of electricity					
Orvieto plant (108)	Nm ³ x 1,000	12,695	10,766	11,491	6.7
water					
derivation from hydroelectric production (109)	Mm ³	3,234.29	4,221.71	3,458.09	-18.1
process water (110)	Mm ³	0.1607	0.2696	0.2521	-6.5
water for civilian/sanitary uses (111)	Mm ³	0.2687	0.2697	0.2693	-0.1
miscellaneous materials					
dielectric mineral oil in operation (112)	t	9,979	9,957	1,004	-89.9
dielectric mineral oil – reintegrations	t	1.56	1.89	0.76	-59.9
SF ₆ in operation (113)	t	29.80	21.70	21.94	1.1
SF ₆ – reintegrations	t	0.6	0.5	0.4	-20.0
cooling fluids (HCFC type) in operation (114)	t	1.33	1.56	1.49	-4.3
cooling fluids (HCFC type) – reintegrations	t	0.000	0.015	0.000	-
miscellaneous chemicals (115)	kg	10,359,390	10,232,429	9,582,988	-6.3
<i>sodium chloride</i>	kg	79,500	8,000	13,000	62.5

sodium hydroxide (caustic soda)	kg	190,330	164,520	256,470	55.9
sodium bicarbonate	kg	8,035,000	7,795,510	7,181,660	-7.9
hydrochloric acid	kg	198,770	165,260	253,200	53.2
ammonia solution	kg	793,090	636,630	560,340	-12.0
activated carbon	kg	398,000	404,400	511,520	26.5
carbamine	kg	664,700	866,810	631,040	-27.2
other (for TLR)	kg	n.a.	191,299	175,758	-8.1
miscellaneous oils and greases/lubricants (116)	kg	3,851	46,887	34,387	-26.7
electricity					
consumption for electrical distribution (117) = (28)	GWh	747.40	763.74	741.14	-3.0
consumption for electricity production (118) = (1)-(2)	GWh	64.58	68.20	64.76	-5.0
consumption for offices (50% of the electricity consumed by the Parent Company) (119)	GWh	5.01	4.83	4.50	-7.0
other consumption (120)	GWh	1.16	1.20	1.22	1.1
other personal uses (121)	GWh	40.39	39.63	39.47	-0.4
total (122) = (117)+118+119+120+121)	GWh	858.54	877.61	851.08	-3.0
public lighting					
consumption for Public Lighting (123)	GWh	115.64	83.98	70.08	-16.6

RESOURCES USED – ENVIRONMENT AREA

The data on the resources refers to the three composting plants of Acea Ambiente located in Aprilia, Monterotondo Marittimo and Sabaudia, and the waste management plant of Orvieto.

WASTE MANAGEMENT – ORVIETO PLANT	m.u.	2017	2018	2019	Δ% 2019/2018
miscellaneous chemicals (124)	t	0.2	20.0	15.2	-24.1
electricity (125)	GWh	3.959	4.513	4.722	4.6
diesel (126)	l	257,953	240,022	245,735	2.4
process water (127)	m ³	6,251	9,663	5,574	-42.3
water for civil/sanitary uses (128)	m ³	1,330	1,261	1,180	-6.4
PRODUCTION OF COMPOST					
miscellaneous chemicals (posting plants of Aprilia, Monterotondo Marittimo and Sabaudia) (129)	t	101.50	31.48	41.48	31.8
electricity (composting plants of Aprilia, Monterotondo Marittimo and Sabaudia) (130)	GWh	3.691	3.392	3.942	16.2
diesel (composting plants of Aprilia, Monterotondo Marittimo and Sabaudia) (131)	l x 1,000	138.02	95.28	170.47	78.9
locally produced biogas (composting plants of Aprilia and Monterotondo Marittimo) (132)	Nm ³	n.a.	n.a.	176,614	-
process water (composting plants of Aprilia, Monterotondo Marittimo and Sabaudia) (133) ^(*)	m ³	13,193.0	11,882.0	19,322.0	62.6
water for civil use (composting plants of Aprilia, Monterotondo Marittimo and Sabaudia) (134) ^(*)	m ³	705.00	1,929.00	1,480.00	-23.3

(*) The figures for 2018 have been restated after checking the calculations.

RESOURCES USED – WATER SEGMENT

The data refers to the Water Companies of the Group included in the reporting scope of the *Consolidated Non-Financial Statement* (NFS, pursuant to Legislative Decree no. 254/2016): Acea Ato 2, Acea Ato 5, Gori and Gesesa.

COLLECTION, SUPPLY AND DISTRIBUTION DRINKING AND NON-DRINKING WATER	m.u.	2017	2018	2019	Δ% 2019/2018
miscellaneous materials and natural resources					
reagents for purification and disinfection (135)	t	3,193.25	2,821.34	3,207.06	13.7
reagents for chemical analyses (136)	t	1.50	1.50	1.50	-
gas for chemical analyses (137)	MNm ³	5.52	5.82	6.06	4.1
cooling fluids (HCFC type) in operation (138) = (114)	t	1.33	1.56	1.49	-4.3
cooling fluids (HCFC type) – reintegrations	t	0.000	0.015	0.000	-
electricity					
total electricity consumed (139)	GWh	352.84	327.54	381.19	16.4
<i>water pumping plants (140)</i>	GWh	346.76	321.51	375.40	16.8
<i>offices/personal uses (50% energy consumed by the Parent Company) (141)</i>	GWh	5.01	4.83	4.50	-7.0
<i>chemical laboratory (142)</i>	GWh	1.12	1.19	1.29	8.3
drinking water					
total drinking water consumed (143)	Mm ³	2.00	1.45	1.79	23.3
civilian/sanitary uses	Mm ³	1.00	1.29	1.62	25.8
process uses	Mm ³	0.83	n.a.	n.a.	-
offices (50% of the drinking water consumed by the Parent Company)	Mm ³	0.16	0.16	0.17	3.5
WASTEWATER PURIFICATION					
miscellaneous materials and natural resources					
reagents for purification waste water (144)	t	7,754	8,121	11,566	42.4
<i>polyelectrolyte for sludge dehydration</i>	t	1,932	1,393	2,193	57.5
<i>sodium hypochlorite for final disinfection</i>	t	2,845	2,448	2,482	1.4
<i>ferric chloride for sludge dehydration</i>	t	130	165	497	201.2
<i>peracetic acid</i>	t	2,413	2,955	3,598	21.8
<i>other (anti-foaming, etc.)</i>	t	431	1,153	2,263	96.4
reagent kit for on-site controls (144 B)	no.	49,497	57,271	53,856	-6.0
oil and fat (145)	t	11.7	15.5	13.4	-13.6
electricity					
sewerage and purification (146)	GWh	197.9	208.6	227.1	8.8
fuels					
methane for dryers (147) ⁽¹⁾	Nm ³ x1,000	982.5	1,902.4	2,699.7	41.9
biogas produced and consumed on site (148)	Nm ³ x1,000	1,006.0	1,354.2	2,382.5	75.9

FUELS USED BY THE COMPANIES OF THE GROUP FOR TRANSPORT AND HEATING

The figures refer to all the Companies in the NFS reporting scope.

TYPE OF FUEL	m.u.	2017	2018	2019	Δ% 2019/2018
transport (Group car fleet)					
petrol (149)	l x 1,000	95.4	110.3	122.4	11.0
diesel (150)	l x 1,000	3,602.1	3,458.3	3,032.2	-12.3
heating					
diesel (151)	l x 1,000	2.7	0.0	0.0	-
methane (152)	Nm ³ x 1,000	464.9	364.5	388.6	6.6
LPG (153)	l x 1,000	32.5	10.2	28.1	175.2

EMISSIONS AND WASTE – ENERGY SEGMENT

The data on the emissions and waste refer to Acea Produzione, to the waste-to-energy plants of Acea Ambiente and Areti.

ATMOSPHERIC EMISSIONS	m.u.	2017	2018	2019	Δ% 2019/2018
CO₂ (154) = (155+156+157)⁽¹⁾	t	369,546	361,539	348,404	-3.6
<i>Acea Produzione (155)</i>	<i>t</i>	<i>33,507</i>	<i>42,888</i>	<i>48,131</i>	<i>12.2</i>
<i>Areas – SF₆ reintegrations (156)</i>	<i>t</i>	<i>14,100</i>	<i>11,233</i>	<i>9,682</i>	<i>-13.8</i>
<i>HCFC reintegrations (156B)</i>	<i>t</i>	<i>-</i>	<i>23</i>	<i>0</i>	<i>-</i>
<i>waste-to-energy (157)</i>	<i>t</i>	<i>375,159</i>	<i>307,395</i>	<i>290,591</i>	<i>-5.5</i>
NO_x (158) = (159+160)	t	198.20	189.40	188.19	-0.6
<i>Acea Produzione (159)</i>	<i>t</i>	<i>53.53</i>	<i>13.69</i>	<i>17.44</i>	<i>27.4</i>
<i>waste-to-energy (160)</i>	<i>t</i>	<i>144.67</i>	<i>175.71</i>	<i>170.75</i>	<i>-2.8</i>
CO (161) = (162+163)	t	6.82	6.38	7.02	9.9
<i>Acea Produzione (162)</i>	<i>t</i>	<i>2.19</i>	<i>2.02</i>	<i>4.19</i>	<i>107.4</i>
<i>waste-to-energy (163)</i>	<i>t</i>	<i>4.63</i>	<i>4.36</i>	<i>2.83</i>	<i>-35.2</i>
SO₂ (164) = (165+166)	t	0.42	0.16	0.33	106.7
<i>Acea Produzione (165)</i>	<i>t</i>	<i>0.03</i>	<i>0.01</i>	<i>0.02</i>	<i>100.0</i>
<i>waste-to-energy (166)</i>	<i>t</i>	<i>0.39</i>	<i>0.15</i>	<i>0.31</i>	<i>107.2</i>
powders (167) = (168+169)	t	0.55	0.50	0.60	19.4
<i>Acea Produzione (168)</i>	<i>t</i>	<i>0.05</i>	<i>0.01</i>	<i>0.03</i>	<i>200.0</i>
<i>waste-to-energy (169)</i>	<i>t</i>	<i>0.50</i>	<i>0.49</i>	<i>0.57</i>	<i>15.7</i>
HCl (170)	t	2.98	3.56	2.92	-18.0
HF (171)	t	0.12	0.12	0.12	-
Organic Carbon (172)	t	1.88	1.75	1.99	14.0

OTHER EMISSIONS AND WASTE	m.u.	2017	2018	2019	Δ% 2019/2018
wastewater treated (173)	Mm ³	0.0010	0.0166	0.0300	81.0
electrical fields at 50 Hz	kV	monitored commitment to maintain the value below the legal limit			
magnetic fields at 50 Hz	μT	monitored commitment to maintain the value below the legal limit			
noise	dB	monitored commitment to maintain the value below the legal limit			
luminous flux dissipated	MIumen	commitment to design the plants in order to limit to the utmost the emission value dissipated upwards			

WASTE (LEGISLATIVE DECREE NO. 152/06)	m.u.	2017	2018	2019	Δ% 2019/2018
hazardous waste – excluding waste-to-energy area (174)	t	409.26	673.07	1,268.89	88.5
<i>production energy own area</i>	t	406.42	671.61	1,268.11	88.8
<i>proportion for the activities performed by the Parent Company^(*)</i>	t	2.84	1.46	0.78	-46.7
hazardous waste from waste-to-energy (175)	t	80,031.71	85,757.73	73,202.02	-14.6
non-hazardous waste – excluding waste-to-energy area (176)	t	1,497.71	800.55	1,166.99	45.8
<i>production energy own area</i>	t	1,354.56	739.89	1,118.89	51.2
<i>proportion for the activities performed by the Parent Company^(*)</i>	t	143.15	60.66	48.10	-20.7
non-hazardous waste from waste-to-energy (177)	t	16,640.18	14,577.97	24,239.27	66.3

(*) Terni's figures for 2018 have been restated after the final calculations and ETS certificate. The data of the San Vittore del Lazio plant has been measured at the chimney since 2018.

(**) The portion is equal to 50% of the waste produced by the Parent Company.

EMISSIONS AND WASTE – ENVIRONMENT SEGMENT

The data refer to the three composting plants of Acea Ambiente located in Aprilia, Monterotondo Marittimo and Sabaudia, and the waste management plant of Orvieto.

WASTE (LEGISLATIVE DECREE NO. 152/06)	m.u.	2017	2018	2019	Δ% 2019/2018
hazardous waste – composting plants of Aprilia, Monterotondo Marittimo and Sabaudia including leachate (178)	t	33.95	4.73	1.19	-74.9
non-hazardous waste – composting plants of Aprilia, Monterotondo Marittimo and Sabaudia including leachate (179)	t	18,070.23	13,418.72	14,821.18	10.5
hazardous waste Orvieto plant (180)	t	14.9	16.2	12.7	-21.4
non-hazardous waste Orvieto plant including leachate (181)	t	16,500.2	24,355.0	21,635.0	-11.2

ATMOSPHERIC EMISSIONS	m.u.	2017	2018	2019	Δ% 2019/2018
CO ₂ – Orvieto plant and composting plants (182) ^(*)	t	932	1,076	1,282	19.2
particles (183)	t	<0.012	<0.02	0.001	-
total organic compounds (COT) (184)	t	<0.30	<1.04	0.011	-
ammonia (185)	t	<0.10	<0.13	0.001	-
volatile inorganic compounds (SIV) (186)	t	<1.64	<1.98	0.062	-

(*) 2018 figure adjusted.

EMISSIONS AND WASTE – WATER SEGMENT

The data refers to the Acea Ato 2, Acea Ato 5, Gori and Gesesa water Companies.

WASTE PRODUCED	m.u.	2017	2018	2019	Δ% 2019/2018
specific waste from treatment of wastewater					
total purification sludge (187)	t	125,233	157,735	127,750	-19.0
<i>Acea Ato 2 purification sludge (188)</i>	<i>t</i>	<i>107,205</i>	<i>64,716</i>	<i>70,432</i>	<i>8.8</i>
<i>Liquid sludge disposed of by third parties (188 B)^(*)</i>	<i>t</i>	<i>-</i>	<i>71,666</i>	<i>34,540</i>	<i>-51.8</i>
<i>Acea Ato 5 purification sludge (189)</i>	<i>t</i>	<i>10,580</i>	<i>15,987</i>	<i>11,352</i>	<i>-29.0</i>
<i>Gori purification sludge (189 B)</i>	<i>t</i>	<i>6,318</i>	<i>4,743</i>	<i>10,437</i>	<i>120.0</i>
<i>Gesesa purification sludge (190)</i>	<i>t</i>	<i>1,130</i>	<i>623</i>	<i>979</i>	<i>57.1</i>
total sand and slabs from purification (191)	t	16,826	7,430	9,980	34.3
<i>Acea Ato 2 sand and slabs (192)</i>	<i>t</i>	<i>16,733</i>	<i>6,340</i>	<i>7,788</i>	<i>22.8</i>
<i>Acea Ato 5 sand and slabs (193)</i>	<i>t</i>	<i>81</i>	<i>80</i>	<i>87</i>	<i>9.3</i>
<i>Gori sand and slabs (193 B)</i>	<i>t</i>	<i>2,187</i>	<i>944</i>	<i>2,066</i>	<i>118.8</i>
<i>Gesesa sand and slabs (194)</i>	<i>t</i>	<i>12</i>	<i>66</i>	<i>39</i>	<i>-40.5</i>
waste (pursuant to Italian Legislative Decree no. 152/06)					
total hazardous waste (195) = (196+197+198)	t	86.5	53.8	106.2	97.4
<i>Acea Ato 2 and Acea Elabari production (196)</i>	<i>t</i>	<i>75.7</i>	<i>52.0</i>	<i>54.0</i>	<i>3.8</i>
<i>Acea Ato 5 production (197)</i>	<i>t</i>	<i>8.0</i>	<i>0.3</i>	<i>2.0</i>	<i>-</i>
<i>Gori production (197 B)</i>	<i>t</i>	<i>0.06</i>	<i>0.1</i>	<i>49.5</i>	<i>-</i>
<i>Proportion for the activities performed by the Parent Company (198)^(*)</i>	<i>t</i>	<i>2.8</i>	<i>1.5</i>	<i>0.8</i>	<i>-46.7</i>
total non-hazardous waste (199) = (200+201+202+203)	t	8,284	8,069	8,302	2.9
<i>Acea Ato 2 and Acea Elabari production (200)</i>	<i>t</i>	<i>525</i>	<i>1,272</i>	<i>1,088</i>	<i>-14.5</i>
<i>Acea Ato 5 production (201)</i>	<i>t</i>	<i>7,571</i>	<i>6,635</i>	<i>5,989</i>	<i>-9.7</i>
<i>Gori production (201 B)</i>	<i>t</i>	<i>10</i>	<i>93</i>	<i>1,137</i>	<i>-</i>
<i>Gesesa production (202)</i>	<i>t</i>	<i>35</i>	<i>8</i>	<i>41</i>	<i>-</i>
<i>Proportion for the activities performed by the Parent Company (203)^(*)</i>	<i>t</i>	<i>143</i>	<i>61</i>	<i>48</i>	<i>-20.7</i>
other emissions and waste					
CO₂ from dryers (204)	t	2,901	3,960	5,620	41.9
CO₂ HCFC reintegrations (204 B)	t	-	23	0	-
noise	dB		monitored		
			commitment to maintain the value below the legal limit		
odours			monitored		
			commitment to maintain the value below the limit of perception and in the areas adjacent to the treatment plants		

(*) The portion is equal to 50% of the waste produced by the Parent Company.

THE EMISSIONS OF CARBON DIOXIDE FROM TRANSPORT AND PACKAGING

COMPANIES OF THE GROUP	m.u.	2017	2018	2019	Δ% 2019/2018
transport					
CO₂ (205)	t	9,753.0	9,406.6	8,314.4	-11.6
heating					
CO₂ (206)	t	1,008	764	840	9.9

KEY ENVIRONMENTAL PERFORMANCE INDICATORS (KPI) – ENERGY SEGMENT

Environmental Key Performance Indicators.

INDICATOR	m.u.	2017	2018	2019
energy used for the processes				
A consumption in the distribution of electricity		1,244.9 (345.8)	1,204.6 (334.6)	1,188.4 (330.1)
B consumption in the production of electricity (118)		232.5 (64.6)	245.5 (68.2)	233.1 (64.8)
C heat lost in the district heating network (23)		72.5 (20.1)	104.1 (28.9)	109.7 (30.5)
D consumption for Public Lighting (123)		416.3 (115.6)	302.3 (84.0)	252.3 (70.1)
E environment Segment consumption (125+130)		27.5 (7.7)	28.5 (7.9)	31.2 (8.7)
F water distribution (139-141)		1,252.2 (347.8)	1,161.7 (322.7)	1,356.1 (376.7)
G water purification (146)	TJoules (GWh)	712.5 (197.9)	751.0 (208.6)	817.4 (227.1)
H electricity for offices (Item 119+141)		36.1 (10.0)	34.8 (9.7)	32.4 (9.0)
I consumption for heating offices		17.9 (5.0)	13.5 (3.8)	14.9 (4.1)
II water area dryer consumption		52.0 (14.4)	70.7 (19.7)	100.4 (27.9)
L mobility		132.6 (36.8)	127.9 (35.5)	112.9 (31.4)
indirect consumption + consumption through mobility + heating		4,197.0 (1,165.8)	4,044.7 (1,123.5)	4,248.8 (1,180.2)
M loss of energy in the conversion from primary source to electricity		6,358.5 (1,766.3)	7,116.0 (1,976.7)	6,223.8 (1,728.8)
total energy consumption (sum A: M)		10,555.5 (2,932.1)	11,160.7 (3,100.2)	10,472.6 (2,909.0)
EMISSIONS, EFFLUENTS AND WASTE				
greenhouse gas (CO₂) emissions (154+182+204+204B+205+206)	t	436,485	376,768	364,461
emissions of SO₂, NO_x and other significant gases by type				
NO _x (158)	t	198.20	189.40	188.19
CO (161)	t	6.82	6.38	7.02
SO ₂ (164)	t	0.42	0.16	0.33
emission indicators/Acea Produzione (Acea Produzione and Acea Ambiente – Waste-to-energy)				
NO _x /thermoelectric production	g/kWh	0.47	0.41	0.42
CO ₂ /thermoelectric production	g/kWh	964	757	757
CO ₂ /gross total production	g/kWh	487.7	361.7	374.6
SO ₂ /thermoelectric production	g/kWh	0.0	0.0	0.0

PRODUCTS AND SERVICES: ELECTRICITY	m.u.	2017	2018	2019
performance of the electrical production process of Acea Produzione^(*)				
gross average performance thermoelectric production (calculation 1)		37.3	41.1	40.7
Tor di Valle power plant (electrical performance cogeneration only)		38.3	41.3	41.2
Montemartini power plant		25.7	24.9	24.3
gross average thermoelectric production out included thermal energy recovered (calculation 2)	%	86.6	71.9	69.6
gross average performance hydroelectric production (calculation 3)		82.4	78.7	79.2
gross average performance overall production (calculation 4)		78.1	73.6	72.5
gross average total production performance including thermal energy recovered (calculation 5)		83.2	77.5	77.5
performance of the electrical production process – waste-to-energy plants				
San Vittore del Lazio				
RDF produced/gross energy produced	kt/GWh	1.148	1.164	1.233
gross performance RDF conversion into electricity (calculation 6)	kWh/kg RDF	0.87	0.86	0.81
electrical performance (calculation 7)	%	19.4	19.5	18.7
total waste produced/hours worked	t/h	3.32	3.47	3.36
Terni				
gross performance Pulper conversion into electricity (calculation 8)	kWh/kg pulp	0.83	0.82	0.86
electrical output (calculation 9)	%	17.1	14.7	21.3
total waste produced/hours worked	t/h	2.0	1.8	1.7
performance of the electrical production process – photovoltaic				
average efficiency photovoltaic modules	%	14.0	14.0	14.0
other indicators (territory, Public Lighting, controls, losses)				
protection of the land (Total length HV lines in cable / length HV overhead + cable lines) x 100	%	43.9	46.3	46.3
public Lighting illumination efficiency (Item 36 / Item 123)	Lumen/ kWh	17.2	23.9	28.6
average performance lamps installed (Item 36 / electrical power)	Lumen/W	101.8 (19,556 kW)	112.7 (17,830 kW)	127.9 (15.653 kW)
specific consumption per lamp (item 123/no. lamps)	kWh/ no. lamps	515.15 (224,480)	372.22 (225.619)	310.46 (225.730)
percentage of roads illuminated^(**)	% (km of roads illuminated/ total km of roads)	88.3 (6,281/7,110)	88.6 (6.297/7.110)	88.8 (6.316/7.110)
no. operating and laboratory checks /GWh net electricity sold (35) / (32)	no./GWh	0.14	0.22	0.17
reintegrations of SF6/km electricity distribution network	kg/km	0.0194	0.0161	0.0128
total losses of electricity (28) / (27) ^(***)	% energy requested	6.9	7.2	7.0

(*) The 2018 and 2019 global yields are not comparable to 2017 because before the new CAR plant came on stream (September 2017) thermal energy was produced almost exclusively by boilers and not in cogeneration mode.

(**) Estimate.

(***) The total losses of electricity include: transformation losses, transport losses and commercial losses, these last due to fraud and incorrect readings.

KEY ENVIRONMENTAL PERFORMANCE INDICATORS (KPI) – WATER SEGMENT

Environmental Key Performance Indicators.

INDICATOR	m.u.	2017	2018	2019
carbon footprint				
WATER SERVICE				
total CO ₂ /m ³ of water supplied (integrated water service) ^(*)	kgCO ₂ /m ³	0.45	0.44	0.49
CO ₂ /m ³ of water supplied (water distribution process)	kgCO ₂ /m ³	0.28	0.27	0.30
CO ₂ /m ³ of water treated (purification process)	kgCO ₂ /m ³	0.12	0.12	0.12
PRODUCT: DRINKING WATER				
Acea Ato 2 network				
specific electricity consumption per input in the water network (energy consumption of Acea Ato 2's network) / (57)	kWh/m ³	0.269	0.249	0.259
intensity of the checks on drinking water distributed (94) / (57)	no./Mm ³	423	516	530
index of drinking water additive (135 – Acea Ato 2 network) / (57)	g/m ³	3.6	3.2	3.9
Acea Ato 5 network				
specific consumption of electricity per input in the water network (Acea Ato 5 network energy consumption) / input (65)	kWh/m ³	0.603	0.476	0.493
intensity of the checks on drinking water distributed (96) / (65)	no./Mm ³	907	925	1,016
index of drinking water additive (133 – Acea Ato 5 network) / (65)	g/m ³	2.3	2.5	2.3
Gori network				
specific electricity consumption per input in the water network (energy consumption of Gori's network) / input (78)	kWh/m ³	0.353	0.397	0.667
intensity of the checks on drinking water distributed (100) / (78)	no./Mm ³	501	489	579
index of drinking water additive (133 – Gori network) / (78)	g/m ³	1.0	0.8	1.1
Gesesa network				
specific electricity consumption per input in the water network (energy consumption) / (72)	kWh/m ³	0.614	0.639	0.559
intensity of the checks on drinking water distributed (100) / (72)	no./Mm ³	407	377	478
drinking water additive index (133 Gesesa network) / (72)	g/m ³	3.9	6.0	3.6
SERVICE: WASTEWATER PURIFICATION				
Acea Ato 2				
sludge disposed of (188)	t	107,205	64,716	70,432
liquid sludge disposed of to third parties	t	-	71,666	34,550
sand and slabs removed (192)	t	16,733	6,340	7,788
COD input	t	203,889	221,357	207,914
COD removed	t	181,639	205,125	188,327
efficiency of COD removal	%	89	93	91
SST input	t	137,117	135,698	134,685
SST removed	t	127,695	126,330	124,417
efficiency of SST removal	%	93	93	92
efficiency of BOD removal	%	89	89	88
total N input (such as NH ₄ +NO ₂ +NO ₃ + organic matter)	t	18,871	20,276	18,433

INDICATOR (cont.)	m.u.	2017	2018	2019
total N removed	t	13,076	14,133	14,333
efficiency of N removal	%	70	70	78
Acea Ato 2 wastewater additivation index	g/m ³	12.2	12.0	13.8
Acea Ato 2 specific consumption of electricity by purification process	kWh/m ³	0.300	0.299	0.298
Acea Ato 5				
disposed of sludge (189)	t	10,580	15,987	11,352
sand and slabs removed (193)	t	81	80	87
COD input	t	9,772	8,884	13,506
COD removed	t	7,842	7,709	12,407
efficiency of COD removal	%	84	87	92
total N input	t	1,167	779	
total N removed	t	1,003	600	757
efficiency of N removal (NH ₄ ⁺)	%	91	89	89
SST input	t	7,876	8,365	8,364
SST removed	t	7,096	7,872	7,940
efficiency of SST removal	%	95	96	96
Acea Ato 5 additivation index	g/m ³	27.8	31.4	33.1
Acea Ato 5 specific consumption of electricity by purification process	kWh/m ³	0.787	0.811	0.830
Gori				
sludge disposed of (189 B)	t	6,318	4,743	10,437
sand and slabs removed (193 B)	t	2,187	944	2,066
COD input	t	3,239	1,882	7,579
COD removed	t	3,026	1,730	6,376
efficiency of COD removal	%	93	92	84
total N input	t	n.a.	n.a.	944
total N removed	t	n.a.	n.a.	714
efficiency of N removal (NH ₄ ⁺)	%	97	96	76
SST input	t	n.a.	n.a.	3,438
SST removed	t	n.a.	n.a.	2,777
efficiency of SST removal	%	84	86	81
Gori additivation index	g/m ³	46.6	58.2	54.6
Gori specific consumption of electricity by purification process	kWh/m ³	1.548	1.871	0.634
Gesesa^(**)				
disposed of sludge (190)	t	1,130	623	979
sand and slabs removed (194)	t	12	66	39

(*) Emissions defined as "Scope 2", in other words resulting from the consumption of electricity by the water Companies in question.

(**) Gesesa has not currently installed input flow meters at the purification plants and therefore cannot measure the purification efficiency parameters.

KEY ENVIRONMENTAL PERFORMANCE INDICATORS (KPI) – ENVIRONMENT SEGMENT

Environmental Key Performance Indicators.

INDICATOR	m.u.	2017	2018	2019
non-hazardous waste disposed in landfill/total incoming waste (40+41) / (38)	t/t	0.49	0.56	0.57
waste disposed in landfill/energy consumer net of photovoltaic energy (40+41) / (126)	t/MWh	11.01	11.36	12.00
compost produced/incoming waste (43+ 49) / (38 + 45)	t/t	0.12	0.10	0.11
compost produced/electricity consumed (43+49) / (126+130)	kg/kWh	2.24	1.49	1.91

ENVIRONMENTAL COMPLIANCE

INDICATOR	m.u.	2017	2018	2019
GROUP COMPLIANCE				
penalties paid for non-conformities related to rules/agreements of an environmental nature ^(*)	Euros	326,166	139,938	64,500

(*) Penalties paid in 2019 by Acea Ato 2 and Acea Ato 5.

DESCRIPTION OF THE CALCULATIONS USED TO DETERMINE THE ELECTRICAL GENERATION EFFICIENCY

calculation 1

$$\text{Efficiency}_{(thermoelectric)} = \frac{\text{Energy}_{thermoelectric} \text{ (kWh)}}{\text{Energy}_{diesel} \text{ (kWh)} + \text{Energy}_{methane} \text{ (kWh)}}$$

Where:

$\text{Energy}_{thermoelectric}$ = gross electrical energy produced by the thermoelectric cycle

$$\text{Energy}_{diesel} \text{ (kWh)} = \frac{\text{diesel (l)} \times 0.835 \times \text{PCI}_g \text{ (kcal/kg)}}{860 \text{ (kcal/kWh)}}$$

Energy equivalent to diesel consumed (105)

$$\text{Energy}_{methane} \text{ (kWh)} = \frac{\text{methane (Nm}^3\text{)} \times \text{PCI}_m \text{ (kcal/Nm}^3\text{)}}{860 \text{ (kcal/kWh)}}$$

Energy equivalent to methane consumed (103)

PCI_g = about 10,000 kcal/kg (lower heating value of diesel fuel)

PCI_m = about 8,500 kcal/Nm³ (lower heating value of methane)

860 = energy conversion factor from kcal to kWh

0.835 = specific gravity of diesel fuel (kg/l)

NOTE The calorific values used for Acea Production are the real values derived from measurements made by gas and diesel suppliers.

calculation 2

$$\text{Efficiency}_{(thermoelectric)} = \frac{\text{Energy}_{thermoelectric} \text{ (kWh)} + \text{Energy}_{thermal} \text{ (kWh)}}{\text{Energy}_{diesel} \text{ (kWh)} + \text{Energy}_{methane} \text{ (kWh)}}$$

$\text{Energy}_{thermal}$ = Gross thermal energy produced

$\text{Energy}_{thermoelectric}$ = Gross thermoelectric energy produced

$$\text{Energy}_{diesel} \text{ (kWh)} = \frac{\text{diesel (l)} \times 0.835 \times \text{PCI}_g \text{ (kcal/kg)}}{860 \text{ (kcal/kWh)}} \quad \text{Energy equivalent to diesel consumed (105)}$$

$$\text{Energy}_{methane} \text{ (kWh)} = \frac{\text{methane (Nm}^3\text{)} \times \text{PCI}_m \text{ (kcal/Nm}^3\text{)}}{860 \text{ (kcal/kWh)}} \quad \text{Energy equivalent to methane consumed (103)}$$

PCI_g = lower heating value of diesel fuel

PCI_m = lower heating value of methane

860 = energy conversion factor from kcal to kWh

0.835 = specific gravity of diesel fuel (kg/l)

NOTE *The calorific values used for Acea Production are the real values derived from measurements made by gas and diesel suppliers.*

calculation 3

$$\text{efficiency (hydroelectric)} = \frac{\text{Hydroelectric energy (MWh)} \times 3.6 \times 10^9}{[\text{m(kg)} \times 9.8 \text{ (m/s}^2\text{)} \times \text{h(m)}] \text{ (Joule)}}$$

Where:

3.6×10^9 = conversion factor of hydropower from joules to MWh

m = derived water for hydroelectric production

9.8 = acceleration of gravity at sea level

h = height of water fall (exposed surface - turbine)

$\text{Energy}_{hydroelectric}$ = energy produced by the hydroelectric cycle

calculation 4

$$\text{efficiency (average)} = \frac{E_i}{(E_i + E_t)} \times \eta_i + \frac{E_t}{(E_i + E_t)} \times \eta_t$$

Where:

E_i = total hydroelectric energy produced

E_t = total thermoelectric energy produced

η_i = hydroelectric efficiency

η_t = thermoelectric efficiency

efficiency (average) = average production efficiency

calculation 5

$$\text{efficiency (average)} = \frac{E_i}{(E_i + E_T)} \times \eta_i + \frac{E_T}{(E_i + E_T)} \times \eta_T$$

Where:

E_i = total hydroelectric energy produced

E_T = sum of the total energy produced (thermoelectric and thermal)

η_i = hydroelectric efficiency

η_T = thermoelectric efficiency (thermoelectric + thermal)

efficiency (average) = average production efficiency

calculation 6

$$\text{recovery efficiency (kWh/kg)} = \frac{\text{Gross electricity produced (kWh)}}{\text{CSS (kg)}}$$

Energy gross electricity produced (kWh) = gross electrical energy produced in San Vittore (15)

calculation 7

$$\text{electricity efficiency} = \frac{\text{Electricity produced (kWh)}}{\text{Internal CSS energy (kWh)} + \text{Internal methane energy (kWh)}}$$

Where:

Electricity produced = electricity produced in San Vittore = (15)

$$\text{Internal methane energy} = \frac{\text{CH}_4 (\text{Sm}^3) \times \text{PCI}_m (\text{kcal/ Sm}^3)}{860 (\text{kcal/kWh})}$$

PCI_m = PCI methane

860 = energy conversion factor from kcal to kWh

$$\text{Internal CSS energy (kWh)} = \frac{\text{CSS (kg)} \times \text{PCI}_{\text{css}} (\text{kcal/kg})}{860 (\text{kcal/kWh})}$$

PCI_{css} = lower average calorific value of the CSS

860 = energy conversion factor from kcal to kWh

calculation 8

$$\text{recovery efficiency (kWh/kg)} = \frac{\text{Gross electricity produced (kWh)}}{\text{pulper (kg)}}$$

Gross electricity produced (kWh) = electricity produced in Terni = (item 16)

calculation 9

$$\text{efficiency} = \frac{\text{Electricity produced (kWh)}}{\text{Internal pulper energy (kWh)} + \text{Internal methane energy (kWh)}}$$

Where:

Electricity produced = Electricity produced in Terni = (16)

$$\text{Internal methane energy (kWh)} = \frac{\text{CH}_4 (\text{Sm}^3) \times \text{PCI}_m (\text{kcal/ Sm}^3)}{860 (\text{kcal/kWh})}$$

PCI_m = PCI methane

860 = energy conversion factor from kcal to kWh

$$\text{Internal pulper energy (kWh)} = \frac{\text{pulper (kg)} \times \text{PCI}_p (\text{kcal/kg})}{860 (\text{kcal/kWh})}$$

PCI_p = PCI pulper = lower average calorific value of the pulper

860 = energy conversion factor from kcal to kWh

EXPLANATORY NOTES TO THE ENVIRONMENTAL ACCOUNTS

The numerical data presented in the *Environmental Accounts* is produced and certified by the competent Functions and has been checked as follows:

- comparison with historical data to highlight and justify possible large deviations;
- at least two repetitions of the acquisition process;
- feedback to the Departments responsible for the final validation of the data.

The numerical data have been divided into the three categories:

- estimated;
- calculated;
- measured.

In the event of data resulting from estimates, the utmost attention was paid to the verification of the reasonableness of the basic criteria used, with the objective of resorting as little as possible, in the future, to this type of measurement of the sizes of environmental significance.

When data was achieved through calculation, the algorithm used was briefly explained to permit full understanding of the mathematical result.

Lastly, when the data was measured, an uncertainty estimate to be associated with the number was provided.

ADDITIONAL INFORMATION ON THE NUMERICAL DATA PROVIDED IN THE ENVIRONMENTAL ACCOUNTS

PRODUCTS – ENERGY SEGMENT

item no.	explanation – comment
1	Gross total energy produced by Acea Ambiente and Acea Produzione. The figure is calculated.
2	Electricity produced net of the losses due to just the production phase. The figure is calculated.
3=4+5	Total electricity produced, inclusive of the losses, by the Acea Produzione power plants. Includes thermoelectric and hydro-electric energy. The figure is measured with an uncertainty of less than $\pm 0.5\%$.
6=7+8+9	Losses of electricity attributable to just the production phase of the Acea Produzione power plants. Includes: the self-consumption (thermal and hydro) and the losses of initial transformation. The figure is measured with an uncertainty of less than $\pm 0.5\%$.
10	Electricity produced by the Acea Produzione power plants net of the losses. The figure is calculated.
11	Gross energy produced by photovoltaic installations. The FV of Parco della Mistica is not reported because it is outside the scope. The figures include the plants at Orvieto (Acea Ambiente) and Acea Ato 2. It does not include the energy produced by the plants acquired in 2019. The figure is measured with an uncertainty of less than $\pm 0.5\%$.
12	Total losses during photovoltaic generating phase, due in particular to joule effect (dissipation during heating) in the equipment. Estimated figure.
13	Net photovoltaic electricity made available by the generating installations. The figure is calculated.
14 = 15+16	Electricity produced by the Waste-to-Energy installations: waste-to-energy of San Vittore del Lazio and waste-to-energy of Terni of Acea Ambiente. We wish to specify that the fuel used in the two installations (RDF – refuse-derived fuel – for San Vittore del Lazio and paper mill pulp for the Terni plant) is composed of both biodegradable organic material, neutral on the balance of the CO ₂ , and by non-biodegradable organic substance (plastic, resins, etc.). In 2019, the renewable share for the San Vittore del Lazio plant was equal to 51%, the Terni incinerator share to 47%. With regard to the energy produced at San Vittore del Lazio, some problems on the turbines of line 1 and line 3 affected the quantities of electricity produced, for this reason it was less than 2018.
17	Self-consumption of the two waste-to-energy plants of San Vittore del Lazio and Terni + initial transformation losses. The figure is measured with an uncertainty of less than $\pm 0.5\%$.
18	Electricity produced by the two waste-to-energy plants of San Vittore del Lazio and Terni, net of the self-consumption and initial transformation losses. The figure is calculated.
19	Electricity produced from biogas by the waste management plant of Orvieto (Acea Ambiente). The figure is calculated.
20	Self-consumption, including small dissipations. The figure is measured with an uncertainty of less than $\pm 5\%$.
21	Net electricity produced from biogas and transferred to the network. The figure is measured with an uncertainty of less than $\pm 5\%$.
22	Thermal energy produced in the cogeneration plant of Tor di Valle including losses. The figure is measured with an uncertainty of $\pm 2\%$ near the delivery piping of the generators.
23	Losses of thermal energy of the district heating systems, due to: thermal dissipation, losses on the network, technical releases for maintenance operations, thermal reintegrations of the heat accumulation systems. The figure is calculated as the difference between the thermal energy produced and that actually supplied to the clients (invoiced).
24	Net thermal energy supplied to final clients. The figure, calculated, is obtained from the consumption invoiced.
25	Electricity supplied to Acea Produzione to Acea Energy with inter-Group exchange. The figure is marginal as a result of the choice made by the Acea Group to sell the electricity produced in Borsa (Stock Exchange) or through bilateral agreements.
26	Electricity supplied by the Single Purchaser and Market, including the amount imported subject to recalculation in relation to the ARERA DCO 492/2019/R/eel. The figure is measured with an uncertainty of $\pm 0.5\%$.
27	Energy requested on the electrical distribution network of Rome and Formello by all the client connected (open market + managed service). The figure is estimated.
28	Losses of electricity that occur during the distribution and transmission phase. They are attributable to: losses of transformation and transport, fraud and incorrect measurements. The figure is estimated.
29	Personal use of electricity for the implementation of the distribution activities. The figure is estimated.
30	Electricity transferred to third parties. This is electricity sold to distribution companies. The increase is a consequence of two new closed distribution systems powered by Areti from July 2019. The figure is measured with an uncertainty of $\pm 0.5\%$.

PRODUCTS – ENERGY SEGMENT (cont.)

item no.	explanation – comment
31	Total net electricity conveyed to final clients of the open market connected to the electrical distribution network of Rome and Formello. Includes both the quota of electricity sold by Acea Energia, and that sold by other operators active on the open market. The figure is measured with an uncertainty of $\pm 5\%$ according to Standard CEI 13-4.
32	Net electricity transferred to managed final clients. The decrease is the result of the progressive passage of managed service clients to the open market. In other words, it is a direct consequence of the deregulation process of the electricity market in effect in Italy since 1999 (Italian Legislative Decree no. 79/99). The figure is estimated based on the consumption invoiced.
33	Net electricity sold by Acea on the open market nationally. The figure is estimated.
34	Net electricity sold by Acea nationally on the open market and the standard service. The figure is calculated.
35	Natural gas sold by Acea on the market nationally. The figure is calculated.
36	Luminous flux supplied by the Public Lighting system in Rome. The figure, calculated, is the product of the number of lamps installed and the relative value of “rated” luminous flux.
37	Total number of measurements/controls performed in favour of the energy area. The figure is calculated as the sum of the individual determinations carried out by the competent laboratories.

PRODUCTS – ENVIRONMENT SEGMENT

item no.	explanation – comment
38	Total incoming waste. They are the quantities arriving at the Orvieto plant which include: unsorted urban solid waste, organic fraction, green, non-hazardous industrial waste. The figure is calculated.
39	Waste partly sent for shredding only, partly just for aerobic treatment, partly both to the anaerobic digester and the aerobic treatment. The figure is calculated.
40	Waste disposed directly in landfill. The figure is measured with an uncertainty of $\pm 1\%$.
41	Waste disposed of in landfill after treatment. The figure is measured with an uncertainty of $\pm 1\%$.
42	Waste recovered and not sent to landfill. It is glass, paper and cardboard, iron and plastic. The figure is calculated.
43	Compost produced at the Orvieto plant. Thanks to the combination of the anaerobic and aerobic processes, the product is Quality Compost. The figure is measured with an uncertainty of $\pm 1\%$.
44	Reduction due to stabilization. This represents the loss of mass due to the natural transformations of the material and the loss of water through evaporation. The figure is calculated.
45	Total incoming organic waste. They are the amounts arriving at the plants of Aprilia, Monterotondo Marittimo and Sabaudia, which include: sludge, green and organic fraction. The Monterotondo Marittimo plant, which had suspended deliveries in 2018, was restarted in 2019 after work on the construction of a new anaerobic digestion section, while the Aprilia plant, placed under preventive seizure in 2017 by the Latina Public Prosecutor’s Office for aspects related to odorous emissions, was able to operate in 2019 at almost full capacity. The figure is calculated.
46	Incoming sludge. It is the quantity of sludge entering the composting plants of Aprilia, Monterotondo Marittimo and Sabaudia. The sharp decrease in 2018 quantities is due to the suspension of contributions to the Monterotondo Marittimo plant. The figure is measured with an uncertainty of $\pm 1\%$.
47	Incoming green. It is the quantity of green matter coming from the parks, woods or other areas arriving at the plants of Aprilia, Monterotondo Marittimo and Sabaudia. The figure is measured with an uncertainty of $\pm 1\%$.
48	Organic fraction of sorted collection (FORSU) entering the composting plant of Aprilia and FORSU and other agrifood waste arriving at the Monterotondo Marittimo plant. The figure is calculated.
49	Quality Compost. It is the quantity of quality compost produced at the Aprilia, Monterotondo Marittimo and Sabaudia plants. The production figure for 2019 is estimated. The compost estimate is made based on the quantities transported daily for maturation or to the final storage areas. Due to process losses, at the time of sale the compost may be less than estimated. The compost is zero at Monterotondo Marittimo because at the end of 2019 the incoming material was still being processed.
50	Non-compostable material for disposal. It is the non-biodegradable material (for example plastics), which is separated from the compostable material sent for disposal. The figure is measured with an uncertainty of $\pm 1\%$.
51	Reduction due to stabilization. This represents the loss of mass due to the natural transformations of the material and the loss of water through evaporation. The figure is calculated.
52	Total analytical determinations. They are the total of the analytical determinations performed at the following plants: Orvieto, Aprilia, Monterotondo Marittimo and Sabaudia. The figure is calculated.

PRODUCTS – WATER SEGMENT

item no.	explanation – comment
53	Total drinking water collected from the environment or from other systems. It is the sum of the water collected by the Companies of the Group: Acea Ato 2, Acea Ato 5, Gesesa, Gori, Acque, Publicacqua, AdF, Umbra Acque. The figure is calculated.
54	Total drinking water supplied to the respective clients by the Companies listed in number 52. The figure is estimated.
55	Total drinking water collected from the environment or from other systems. This is the sum of the water taken from the Companies Acea Ato 2, Acea Ato 5, Gori, Gesesa. The figure is calculated.
56	Total drinking water supplied to the respective clients by the Companies listed in number 55. The figure is estimated.
57	Total drinking water collected at the sources, without the high discharges, by the Company Acea Ato 2 and released into the aqueduct system of the Ambito Territoriale Ottimale 2 of Central Lazio. The figure is measured with an uncertainty of $\pm 3\%$, except for the smaller sources, for which it is estimated.
58	Total drinking water leaving the aqueduct system. This is the sum of drinking water supplied and billed, drinking water authorized and not billed, water exported to other systems and measured drinking water losses. The figure is calculated.
59	Total drinking water supplied and billed (in other words measured at the meters, where present) to the customers connected to the Acea Ato 2 network.
60	Total drinking water authorized and not billed in the Acea Ato 2 network. The figure is estimated.
61	Total drinking water exported to other aqueduct systems. The 2019 figure is estimated and may undergo consolidation after publication.
62	Total drinking water losses measured. The figure is measured with an uncertainty of $\pm 3\%$.
63	Water losses – Acea Ato 2 network. This is the amount of water lost in the network distribution, calculated as the water collected from the environment or from other systems and fed into the network, from which the total water leaving the aqueduct system is subtracted.
64	Water losses as a percentage, equal to water losses in absolute value of the total withdrawn. They correspond to item M1b of ARERA Resolution 917/17 R/IDR.
65, 66, 67, 68, 69	Respectively: quantity of water collected from the environment and fed into the aqueduct system, leaving the system, supplied and billed, authorized and not billed, exported to other aqueduct systems, by Acea Ato 5.
70	Overall distribution losses of Acea Ato 5. This is the amount of water lost in the network distribution, calculated as the water collected from the environment or from other systems and fed into the network, from which the total water leaving the aqueduct system is subtracted.
71	Water losses as a percentage, equal to water losses in absolute value of the total withdrawn. They correspond to item M1b of ARERA Resolution 917/17 R/IDR.
72, 73, 74, 75, 75 B	Respectively: quantity of water collected from the environment and fed into the aqueduct system, leaving the system, supplied and billed, authorized and not billed, exported to other aqueduct systems, by Gesesa.
76	Global losses of distribution of Gesesa. This is the amount of water lost in the network distribution, calculated as the water collected from the environment or from other systems and fed into the network, from which the total water leaving the aqueduct system is subtracted.
77	Water losses as a percentage, equal to water losses in absolute value of the total withdrawn. They correspond to item M1b of ARERA Resolution 917/17 R/IDR.
78, 79, 80, 81	Respectively: quantity of water collected from the environment and fed into the aqueduct system, leaving the system, supplied and billed, authorized and not billed, by Gori (Sarnese Vesuviano)
82	Overall distribution losses of Gori (Sarnese Vesuviano). This is the amount of water lost in the network distribution, calculated as the water collected from the environment or from other systems and fed into the network, from which the total water leaving the aqueduct system is subtracted.
83	Water losses as a percentage, equal to water losses in absolute value of the total withdrawn. They correspond to item M1b of ARERA Resolution 917/17 R/IDR.
84	Total waste water treated in the principal treatment plants of the Group's water Companies: Acea Ato 2, Acea Ato 5, Gesesa, Gori, Umbra Acque, Publicacqua, Acque, AdF. The figure is calculated.
85	Total waste water treated in the principal treatment plants of the Group's water Companies: Acea Ato 2, Acea Ato 5 and Gori. At the moment, Gesesa does not have any flow meters at the entrance of the treatment plant.
86	Total waste water sent to the principal treatment plants of Acea Ato 2 and treated. The total figure is calculated.
87	Total waste water sent to the treatment plants and treated by Acea Ato 2, including the quantities treated in the small plants of the municipalities of Rome and in those outside the municipalities of Rome. The total figure is calculated.
88	Total waste water sent to the treatment plants and treated by Acea Ato 5. The figure is calculated.

PRODUCTS – WATER SEGMENT (cont.)

item no.	explanation – comment
89	Total waste water sent to the principal treatment plants of Gori and treated. The substantial increase in the quantities treated in 2019 is linked to the management transfer of several purification plants from the Campania region. The total figure is calculated.
90	Number of analytical determinations conducted overall on the drinking water by the Acea Group. The figure includes the analyses performed by Acea Elabori and the analyses performed independently by the Companies. The figure is calculated.
91	Number of analytical determinations conducted overall on the waste water by the Acea Group. The figure includes the analyses performed by Acea Elabori and the analyses performed independently by the Companies. The figure is calculated.
92	Number of analytical determinations conducted overall on the drinking water by Acea Ato 2, Acea Ato 5, Gori and Gesesa.
93	Number of analytical determinations conducted overall on the waste water by Acea Ato 2, Acea Ato 5, Gori and Gesesa.
94	Number of analytical determinations conducted overall on the drinking water by Acea Ato 2. The figure from 2018 also includes analyses of recently acquired aqueducts (Civitavecchia and others).
95	Number of analytical determinations conducted overall on the waste water by Acea Ato 2.
96	Number of analytical determinations conducted overall on the drinking water by Acea Ato 5.
97	Number of analytical determinations conducted overall on the waste water by Acea Ato 5.
98	Number of analytical determinations conducted overall on the drinking water by Gesesa.
99	Number of analytical determinations conducted overall on the waste water by Gesesa.
100	Number of analytical determinations conducted overall on the drinking water by Gori.
101	Number of analytical determinations conducted overall on the waste water by Gori.

RESOURCES USED – ENERGY SEGMENT

item no.	explanation – comment
102 = 103 + 104	Total quantity of natural gas used to generate the electricity and heat at the Acea Produzione plants and at the waste-to-energy plants of Acea Ambiente. The figures expressed in normal cubic metres (volume at 0°C and 1 Atm), is measured with an uncertainty of $\pm 0.5\%$. Estimated figure.
103	Total quantity of natural gas used in the Tor di Valle power plant.
104	Total quantity of natural gas used by waste-to-energy plants. The figure is measured with an uncertainty of about 2%.
105	Total quantity of diesel used to generate electricity at the Montemartini power plant (turbogas) and for operations at the waste-to-energy plants of Terni and, in small part, of San Vittore del Lazio. The consumption of the Montemartini power plant is significant during those years when the power plant produces more electricity in order to fulfil the normal scheduled periodic tests, and to conduct the extraordinary inspection activities. The figure is measured with an uncertainty of $\pm 2\%$.
106	Quantity of RDF (Refuse-Derived Fuel) sent for waste-to-energy processing in the San Vittore del Lazio plant. Some problems with the turbines of line 1 and line 3 affected the quantities of electricity produced and the quantity of RDF sent for energy recovery. The figure is measured with an uncertainty of $\pm 1\%$.
107	Quantity of pulp sent to waste-to-energy in the Terni plant. The figure is measured with an uncertainty of $\pm 1\%$.
108	Quantity of biogas used to produce electricity. The figure is measured with an uncertainty of $\pm 1\%$.
109	Total water derived from surface resources and aqueducts (as in the case of the hydroelectric power plant of Salisano) for the production of hydroelectric energy. The figure is calculated.
110	Total quantity of water used in the industrial processes. The various contributions are due to: - reintegration of losses in the district heating network. It is aqueduct water; - various uses in the waste-to-energy plants of San Vittore del Lazio and Terni. This is water from the aqueduct, wells and first and second rain recovery. The figure is calculated.
111	Quantity of aqueduct water used by the Companies included in the energy area, for civilian/sanitary uses. It is consumption of Acea Produzione and Areti of the waste-to-energy plants and 50% of the consumption of the Holding Company. The figure, calculated, refers to the consumption invoiced.
112	It represents the total quantity of dielectric mineral oil present in the primary and secondary cabins. The figure also includes the quantity of oil present in the Petersen coils installed in certain primary cabins is also included: approx. 225 tons in 256 Petersen systems. The data related to the reintegrations is estimated. The total quantity of new dielectric mineral oil released into the production circuit (transformers, capacitors, storage deposits etc.) includes both the Areti and the Acea Produzione data. The figure is estimated.

RESOURCES USED – ENERGY SEGMENT (cont.)

item no.	explanation – comment
113	It represents the total quantity of gaseous insulation (SF ₆) in the Areti plants. The figure is estimated. The figure referred to the reintegrations, also estimated, represents the total quantity of SF ₆ released ex-novo into the production circuit during the year.
114	It represents the total quantity of cooling fluids in operation. The reintegrations represent the quantity of cooling fluids used for the maintenance of the air-conditioning equipment, during which the gas in operation is recovered and replaced with the new one. The data refer to the previous year compared to the year as they are based on ISPRA annual statements following the publication of the <i>Sustainability Report</i> . Both figures are calculated by attributing all the gas supplied overall by the Parent Company to the energy segment and the water segment in equal parts (50%).
115	Total chemical substances used in the electrical and thermal generating process in the Acea Produzione power plants and the waste-to-energy plants of Acea Ambiente. The figure is calculated.
116	Quantity of lubricating oils and fats used by Acea Produzione. The figure is measured with an uncertainty of $\pm 0.5\%$.
117	The figure matches Item 28.
118	Matches the difference between Items 1 and 2.
119	Electricity consumed by the processes not directly connected to the production phase (offices). The figure is calculated at 50% of the electricity consumed overall by the parent company. The remaining 50% is attributed as consumption to the water area.
120	Consumption of electricity at other sites and plants, including the consumption of the waste-to-energy plants (Terni and San Vittore del Lazio). The figure is estimated.
121	Other uses of the electricity in the energy area. The figure is calculated.
122	Total electricity consumer by the product systems included in the energy area. The figure is calculated.
123	Total electricity consumed for public lighting in the municipality of Rome. The sharp reduction in consumption in 2019 was due to the completion of the planned transformations with the LED plan. The figure is calculated based on the consistencies of the installations in operation during the year.

RESOURCES USED – ENVIRONMENT SEGMENT

item no.	explanation – comment
ORVIETO PLANT	
124	Total chemical substances used at the Orvieto plant. The figure is calculated.
125	Electricity consumed in the Orvieto plant. The figure is measured with an uncertainty of $\pm 1\%$.
126	Total quantity of diesel consumed at the Orvieto plant. The figure is measured with an uncertainty of $\pm 2\%$.
127	Quantity of water consumed at the Orvieto plant. It is specified that this resource comes partly from roofs (rainwater) and partly from the riverbed (river water). The figure is estimated.
128	Quantity of water used for civilian purposes in the plant region of Orvieto. It is supplied by tanker trucks since the plant is not connected to the aqueduct. The figure is estimated.
COMPOST PRODUCTION	
129	Total chemical substances used at the Aprilia, Monterotondo Marittimo and Sabaudia plants. The figure is calculated.
130	Electricity consumed at the Aprilia, Monterotondo Marittimo and Sabaudia plants. The figure is measured with an uncertainty of $\pm 1\%$.
131	Total quantity of diesel fuel consumed at the Aprilia, Monterotondo Marittimo and Sabaudia plants. The figure is measured with an uncertainty of $\pm 2\%$.
132	Quantity of biogas produced at the new Aprilia and Monterotondo plants. The final objective is to produce electricity. In 2019, the launch year, the gas was burned in a torch. The figure is measured with an uncertainty of $\pm 1\%$.
133	Quantity of water consumed at the Aprilia, Monterotondo Marittimo and Sabaudia plants. The quantities of water recycled are included. The figure is estimated.
134	Quantity of water used for civil purposes in the composting plants of Aprilia, Monterotondo Marittimo and Sabaudia. The value is partially estimated.

RESOURCES USED – WATER SEGMENT

item no.	explanation – comment
135	The figure represents the sum of the consumption of reagents for the purification and disinfection of the water for Acea Ato 2, Acea Ato 5, Gori and Gesesa. In particular, they are sodium hypochlorite, used as disinfectant at the request of the Health Authorities, aluminium polychloride, caustic soda and ozone. The figure is calculated.
136	Total quantity of chemical reagents used by the Company Acea Elabori to carry out the official duties, namely the analytical checks for the Companies of the Acea Group. The figure is measured.
137	Total volume of pure gases for analysis, used by Acea Elabori. The figure is measured.
138	It represents the total quantity of cooling fluids in operation. The reintegrations represent the quantity of cooling fluids used for the maintenance of the air-conditioning equipment, during which the gas in operation is recovered and replaced with the new one. The data refer to the previous year compared to the year as they are based on ISPRA annual statements following the publication of the <i>Sustainability Report</i> . Both figures are calculated by attributing all the gas supplied overall by the Parent Company to the energy segment and the water segment in equal parts (50%).
139	Total energy consumed in the water area. The figure of the preceding year was modified for adjustments in measurements of the partial data. The figure is calculated.
140	Electricity used for the drinking water and non-potable water pumping stations. The figure is measured with an uncertainty of $\pm 1\%$.
141	Electricity consumed by the processes not directly connected to the production phase (offices). The figure is calculated at 50% of the electricity consumed overall by the parent company.
142	Electricity used by Acea Elabori. It includes all the energy related to the various fields of activity of the Company, not only the analytical laboratory activities. The figure is estimated.
143	This is the sum of the quantity of drinking water for civil/sanitary and process uses at the offices of Acea S.p.A. (calculated as 50% of the water consumed overall by the Parent Company) and for Acea Ato 2, Acea Ato 5, Gori and Gesesa. The figure is calculated.
144	Total quantity of chemicals used in the purification process of the waste water. It is obtained from the sum of the consumption registered for the following substances: polyelectrolytes, hypochlorite of sodium, iron chloride, lime. The figure is calculated.
144 B	Total number of reagent kits purchased from the Acea Ato 2 wastewater treatment plants for additional controls beyond analytical testing. The use of the kits responds to the need of the laboratories connected to the treatment plants to be able to carry out complex analyses in a simple, fast manner. Acea Ato 2 uses photometers and rapid analysis systems for all the parameters of interest and to perform reliable monitoring of wastewater legal limits.
145	Total quantity of lubricating oil and fat used for the equipment of the water area (pumps, centrifuges, motors, etc.). The figure is calculated.
146	Electricity used to run the waste water purification plants and to operate the sewer network. The figure is measured with an uncertainty of $\pm 1\%$.
147	Quantity of methane used in the dryers. The significant increase in 2019 compared to the previous year is due to the activation of two new anaerobic digesters at the Acea Ato 2 East Rome and South Rome treatment plants. The figure is measured with an uncertainty of $\pm 2\%$.
148	Quantity of biogas produced and consumed on site. The significant increase in 2019 compared to the previous year is due to the activation of two new anaerobic digesters at the Acea Ato 2 East Rome and South Rome treatment plants. The figure is measured with an uncertainty of $\pm 2\%$.

FUELS USED BY THE GROUP (TRANSPORT AND HEATING)

item no.	explanation – comment
149	Total quantity of petrol used for the vehicle fleet of the Acea Group. The data for 2019 come from the calculations of the Group's Energy managers. For the conversions from the unit of volume (litres) to that of mass (kg) a density value of 0.73 kg/l was used (source: Defra, conversion factors 2016).
150	Total quantity of diesel used for the vehicle fleet of the Acea Group. The 2019 data come from the Energy managers of the Group Companies. For the conversions from the unit of volume (litres) to that of mass (kg) a density value of 0.84 kg/l was used (source: Defra, conversion factors 2016). The figure includes the fuel consumed by Aquaser's vehicles.
151	Total quantity of diesel used for heating work areas and for the supply of the generators. The figure is measured with an uncertainty of $\pm 0.5\%$.
152	Total quantity of natural gas used for heating the work spaces. The scope includes: Acea, Areti, Acea Produzione, Acea Ato 2, Acea Ato 5, Acea Ambiente, Acea Elabori, Acea Energia. The figure is measured with an uncertainty of $\pm 0.5\%$.
153	Total quantity of LPG (Liquefied Petroleum Gas) used to heat the work spaces. For the conversions from the unit of volume (litres) to that of mass (kg) a density value of 0.550 kg/l was used. The increase in the 2019 value was due to the consumption recorded for the heating of Acea Ato 2, not measured in 2018. The figure is measured with an uncertainty of $\pm 0.5\%$.

EMISSIONS AND WASTE – ENERGY SEGMENT

item no.	explanation – comment
154	Total quantity of carbon dioxide released into the atmosphere as a result of generating thermoelectric energy from fossil fuels and from the waste-to-energy process of RDF and pulper. Includes the equivalent CO ₂ estimated on the basis of the reintegrations of SF ₆ and HCFC refrigerants. Estimated figure.
155	Quantity of carbon dioxide released into the atmosphere by the Acea Produzione power plants. The figure is calculated in accordance with current legislation.
156	Quantity of equivalent CO ₂ estimated based on the reintegrations of SF ₆ , considering that the 1 t of this gas has a heating power 23,500 times the CO ₂ .
156 B	Quantity of equivalent CO ₂ estimated on the basis of refrigerant fluid replenishments (HCFCs), considering that 1 t of gas has a heating capacity of about 1,300-2,500 times CO ₂ . The value depends on the specific type of gas (source: GHG protocol – 5 Assessment Report; for gas mixtures the factor is calculated on the primary source). Half of the emissions are allocated to the energy segment and half to the water segment, as is the case for the quantities of refrigerant fluids (HCFCs). This figure corresponds to item 204 B. For 2019, the figure is close to zero since the refills were not significant.
157	Quantity of carbon dioxide released into the atmosphere by the Acea Ambiente waste-to-energy plants. The decrease since 2018 is due to the use of the new method of determining CO ₂ emissions at the San Vittore plant in Lazio, which has changed from performing a calculation to continuous measurement of the chimney. The figure for the Terni plant is measured.
158	Total quantity of nitrogen oxides (NO + NO ₂) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels and from the RDF and pulper waste-to-energy processes. Their presence in traces of the emissions is due to undesired secondary reactions which occur at high temperature between the nitrogen and the oxygen of the air. The figure is calculated.
159	Total quantity of nitrogen oxides (NO + NO ₂) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels in the Acea Produzione power plants. The figure is calculated.
160	Quantity of nitrogen oxides (NO + NO ₂) released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
161	Total quantity of carbon oxide (CO) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels and the waste-to-energy process. The existence of the pollutant in the emissions is due to incomplete fuel reaction and represents a symptom of deterioration in the performance of the combustion reaction. The figure is calculated.
162	Total quantity of carbon oxide (CO) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels in the Acea Produzione power plants. The figure is calculated.
163	Quantity of carbon oxide (CO) released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
164	Total quantity of sulphur dioxide (SO ₂) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels and from the RDF and pulper waste-to-energy processes. The use of methane and diesel with low sulphur content in the power plants enables this type of emission to be contained. The figure is calculated.
165	Quantity of sulphur oxide (SO ₂) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels in the Acea Produzione power plants. The figure is calculated.
166	Quantity of sulphur dioxide (SO ₂) released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
167	Total quantity of powders (microscopic particles with average aerodynamic diameter equal or less than 10 thousand of a millimetre) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels and from the RDF and pulper waste-to-energy processes. Basically, it is amorphous unburned carbon, with traces of other compounds of various composition, obtained as sub-product of the combustion when it achieved completely. The figure is calculated.
168	Quantity of powders released into the atmosphere as a result of generating thermoelectric energy from fossil fuels in the Acea Produzione power plants. The figure is calculated.
169	Quantity of powders released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
170	Quantity of hydrochloric acid (HCl) released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
171	Quantity of hydrofluoric acid (HF) released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
172	Quantity of organic carbon released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
173	Total quantity of waste water, treated, resulting from the thermoelectric energy production activities. The figure is measured with an uncertainty of ± 2%.
174	Total quantity of hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by the Companies of the Group excluding the waste-to-energy area. The 2019 figure increased considerably due to works to upgrade plants to HV and also due to the reclassification of a type of waste now identified with a hazardous EWC code. The figure is measured with an uncertainty of ± 2%.

EMISSIONS AND WASTE – ENERGY SEGMENT (cont.)

item no.	explanation – comment
175	Hazardous waste (Italian Legislative Decree no. 152/06) disposed of by the waste-to-energy area. It is essentially light ashes and slag resulting from the incineration processes. The figure is measured with an uncertainty of $\pm 2\%$.
176	Total quantity of non-hazardous waste (Italian Legislative Decree no. 152/06) disposed of by the Companies of the Group excluding the waste-to-energy area. The 45% increase in 2019 is partly due to the performance of extraordinary and/or periodic maintenance interventions at thermal power plants, absent in 2018, and partly due to reduced rainfall, which caused an increase in certain types of waste, such as waste from screening. The figure is measured with an uncertainty of $\pm 2\%$.
177	Non-hazardous waste (Italian Legislative Decree no. 152/06) disposed of by the waste-to-energy area. It is essentially heavy ashes and slag resulting from the incineration processes. In 2019, the increase was mainly due to increased production of industrial water related to some forced emptying of boilers followed by maintenance at the San Vittore del Lazio plant. The figure is measured with an uncertainty of $\pm 2\%$.

EMISSIONS AND WASTE – ENVIRONMENT SEGMENT

item no.	explanation – comment
178	Hazardous waste (Italian Legislative Decree no. 152/06) disposed of by the Aprilia, Monterotondo Marittimo and Sabaudia plants. The figure is calculated.
179	Non-hazardous waste (Italian Legislative Decree no. 152/06) disposed of by the Aprilia, Monterotondo Marittimo and Sabaudia plants. The figure is calculated.
180	Hazardous waste (Italian Legislative Decree no. 152/06) disposed of by the Orvieto plant. The figure is measured with an uncertainty of $\pm 2\%$.
181	Non-hazardous waste (Italian Legislative Decree no. 152/06) disposed of by the Orvieto plant. The figure is measured with an uncertainty of $\pm 2\%$.
182	CO ₂ emissions from the composting plants and Orvieto and related to the ancillary services of the waste-to-energy plants, not strictly related to the production of electricity. They also include non-biogenic emissions from the combustion of locally produced biogas since 2018. The figure is measured with an uncertainty of $\pm 2\%$.
183, 184, 185, 186	They are powders, Total Organic Compounds (COT), ammonia and volatile inorganic substances (SIV) issued at the Monterotondo plant. The other plants provide only concentration values, with no regulatory obligation to calculate absolute values. The values in mg/l of all plants are well below official limits. The data is calculated starting from the measurement of the concentrations.

EMISSIONS AND WASTE – WATER SEGMENT

item no.	explanation – comment
187	Total quantity of sewerage sludge disposed of by Acea Ato 2, Acea Ato 5, Gori and Gesesa. Non-hazardous waste. The figure is measured with an uncertainty of $\pm 2\%$.
188	Total quantity of purification sludge disposed of by Acea Ato 2. The figure is measured with an uncertainty of $\pm 2\%$.
189	Total quantity of purification sludge disposed of by Acea Ato 5. The figure is measured with an uncertainty of $\pm 2\%$.
189 B	Total quantity of purification sludge disposed of by Gori. The increase in quantities produced in 2019 depends on the transfer to Gori of the management of purification plants previously managed by the Campania Region. The figure is measured with an uncertainty of $\pm 2\%$.
190	Total quantity of purification sludge disposed of by Gesesa. The figure is measured with an uncertainty of $\pm 2\%$.
191	Total quantity of sand and slabs disposed of by Acea Ato 2, Acea Ato 5, Gori and Gesesa. The figure is measured with an uncertainty of $\pm 2\%$.
192	Total quantity of sand and slabs disposed of by Acea Ato 2. The figure is measured with an uncertainty of $\pm 2\%$.
193	Total quantity of sand and slabs disposed of by Acea Ato 5. The figure is measured with an uncertainty of $\pm 2\%$.
193 B	Total quantity of sand and slabs disposed of by Gori. The increase in quantities produced in 2019 depends on the transfer to Gori of the management of purification plants previously managed by the Campania Region. The figure is measured with an uncertainty of $\pm 2\%$.
194	Total quantity of sand and slabs disposed of by Gesesa. The figure is measured with an uncertainty of $\pm 2\%$.
195	Total quantity of hazardous waste (Legislative Decree no. 152/06) disposed of by Acea Ato 2, Acea Elabiori, Gori, Gesesa (equal to zero) and Acea Ato 5, and a portion of waste produced by the Parent Company (attributed in equal parts to the energy and water segments). The figure is calculated.
196	Total quantity of hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by Acea Ato 2 and Acea Elabiori. The figure is measured with an uncertainty of $\pm 2\%$.

EMISSIONS AND WASTE – WATER SEGMENT (cont.)

item no.	explanation – comment
197	Total quantity of hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by Acea Ato 5. The figure is measured with an uncertainty of $\pm 2\%$.
197 B	Total quantity of hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by Gori. The increase in quantities produced in 2019 depends on the transfer to Gori of the management of purification plants previously managed by the Campania Region. The figure is measured with an uncertainty of $\pm 2\%$.
198	Proportion of hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by the Parent Company and attributed to the water segment. The same proportion was attributed to the energy segment. The 2017-2019 three-year trend is affected by the closure of the Valleranello logistics site in 2017, which resulted in the disposal of materials that were on site (including hazardous waste).
199	Total quantity of non-hazardous waste (Legislative Decree no. 152/06) disposed of by Acea Ato 2, Acea Elabori, Acea Ato 5, Gori and Gesesa, and a portion of waste produced by the Parent Company (attributed in equal parts to the energy and water segments). The figure is calculated.
200	Total quantity of non-hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by Acea Ato 2 and Acea Elabori. The increase in quantities in 2018 depends on sewerage cleaning. The figure is calculated.
201	Total quantity of non-hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by Acea Ato 5. The figure is estimated.
201 B	Total quantity of non-hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by Gori. The increase in quantities produced in 2019 depends on the transfer to Gori of the management of purification plants previously managed by the Campania Region. The figure is estimated.
202	Total quantity of non-hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by Gesesa. The figure is estimated.
203	Proportion of non-hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by the Parent Company and attributed to the water segment. The same proportion was attributed to the energy segment. The 2017-2019 three-year trend is affected by the closure of the Valleranello logistics site in 2017, which resulted in the disposal of materials that were on site (including non-hazardous waste).
204	Total amount of carbon dioxide emitted by Acea Ato 2 and Gori dryers, using methane as fuel. The significant increase in 2019 compared to the previous year is due to the activation of two new anaerobic digesters at the Acea Ato 2 East Rome and South Rome treatment plants. The data for the last two years were calculated using the consumption of fuel and the emission coefficients (MATTM 2018).
204 B	Quantity of CO ₂ equivalent estimated on the basis of refrigerant fluid replenishments (HCFCs), considering that 1 t of gas has a heating capacity of about 1,300-2,500 times CO ₂ . The value depends on the specific type of gas (source: GHG protocol – 5 Assessment Report; for gas mixtures the factor is calculated on the primary source). Half of the emissions are allocated to the energy segment and half to the water segment, as is the case for the quantities of refrigerant fluids (HCFCs). This figure corresponds to item 204 B. For 2019, the figure is close to zero since the refills were not significant.

CO₂ EMISSIONS FROM TRANSPORT AND HEATING

item no.	explanation – comment
205	Total quantity of carbon dioxide issued by the motor pool of the Acea Group. The three-year figure is calculated using the consumption of fuel and the emission coefficients (ISPRA 2018). The figure is calculated.
206	Total quantity of carbon dioxide emitted by the systems used to air-condition the work spaces. The figure is calculated.