



A large, illuminated bear sculpture is the central focus of the image. The bear is depicted in a stylized, blocky manner with a friendly expression. It is surrounded by several smaller bear figures, including a cub and a larger bear. The sculpture is lit up with warm, yellow light, making it stand out against the dark night sky. In the background, the silhouettes of buildings and a church spire are visible, suggesting an urban setting. The overall atmosphere is festive and artistic.

2014

ENVIRONMENTAL ACCOUNTS

Product systems

The products

The resources used

Emissions and waste

Key environmental performance indicators (KPI)

Explanatory notes

"I find your project truly innovative and interesting! What you write is true, the education of new generations is the only key to eradicate prejudice and hatred toward everything that seems different. The school has a fundamental role that I hope will be again recognized".

Facebook User

"Luce. Diversità è Energia" (Light. Diversity is energy), on the facades of the schools of Tor Sapienza, Torpignattara and Pigneto.
Final Event at the Piazza del Popolo
December 2014 - January 2015

ENVIRONMENTAL ACCOUNTS

BOUNDARIES

The 2014 boundaries include Acea SpA, Acea Distribuzione, Acea Reti e Servizi Energetici, Acea Produzione, Acea Energia, Local Unit 3 of San Vittore del Lazio and Local Unit 1 of Terni, both of A.R.I.A, the company SAO, controlled by A.R.I.A, Acquaser, LaboratoRI, Acea Ato 2, Acea Ato 5.


The water companies Acque, Gori, Acquedotto del Fiora, Publiacqua and Umbra Acque, participated by Acea, this year consolidated in the financial statements under the equity method – are included marginally in the environmental accounts and only for items that are precisely reported. Water balances of these companies can be found in chapter *Water company data sheets*.

The Environmental Accounts, an integral part of the Sustainability Report, bring together and systematically present the information and data on Acea Group’s environmental performance in an in-depth manner. Figures are separated into “product systems”

for the energy, environment and water sectors according to the Life Cycle Assessment approach (ISO standard 14040 series), which assesses the entire life cycle of the systems. Additional information is provided in the *Explanatory Notes* concerning the quality of the

figures presented herein, especially when such are measured, estimated or calculated, and the items of the Environmental Accounts (indicated in the tables and in the text by a number in brackets) are accompanied by a brief illustrative description.

PRODUCT SYSTEMS



ENERGY

- ENERGY GENERATION (THERMOELECTRIC + HYDROELECTRIC + PHOTOVOLTAIC + WASTE TO ENERGY)
- ELECTRICITY DISTRIBUTION
- HEAT PRODUCTION AND DISTRIBUTION
- PUBLIC LIGHTING
- TESTS AND INSPECTIONS



ENVIRONMENT

- DISPOSED MSW (MUNICIPAL SOLID WASTE)
- COMPOST PRODUCTION
- ANALYSIS AND MEASUREMENTS



WATER

- DRINKING WATER SUPPLY
- NON-DRINKING WATER SUPPLY
- WATER DISTRIBUTION
- WASTE WATER TRANSPORTATION/TREATMENT
- ANALYSIS AND MEASUREMENTS

The figures are provided for the three-year period 2012-2014 and are grouped together in three similar categories:

- **the product supplied;**
- **the resources used;**
- **the waste produced.**

The performance indicators and the key environmental performance indicators are illustrated for each sector below.

THE PRODUCTS - ENERGY

Electricity generation figures refer to Acea Produzione (AP) (100% Acea SpA), A.R.I.A (100% Acea SpA) and Acea Reti e Servizi Energetici (100% Acea SpA).

ELECTRICITY - GENERATION	unit of measurement	2012	2013	2014	Δ% 2014/2013
Summarized figures					
Total gross electricity produced (1) = (3+11+16)	GWh	651.77	785.69	807.93	2.8
Total net electricity produced (2) = (10+15+18)	GWh	604.60	735.50	756.13	2.8
<i>From fossil sources (thermoelectric)</i> <i>(5 + 0.50x12_{San Vittore} + 0.59x13_{Terni})</i>	<i>GWh</i>	<i>119.23</i> <i>18.3% of (1)</i>	<i>152.00</i> <i>19.3% of (1)</i>	<i>161.14</i> <i>19.9% of (1)</i>	<i>6.0</i>
<i>From renewable sources</i> <i>(hydroelectric, solar, biodegradable fraction of waste)</i> <i>(4+0.50x12_{San Vittore} + 0.41x13_{Terni} + 16)</i>	<i>GWh</i>	<i>532.54</i> <i>81.7% of (1)</i>	<i>633.69</i> <i>80.7% of (1)</i>	<i>646.79</i> <i>80.1% of (1)</i>	<i>2.1</i>
Acea Produzione					
Total gross electricity produced (3) = (4+5)	GWh	373.10	508.28	505.43	-0.6
Total gross hydroelectric energy (4)	GWh	360.80	496.73	495.18	-0.3
<i>A. Volta Castel Madama</i>	<i>GWh</i>	<i>15.55</i>	<i>30.38</i>	<i>27.37</i>	<i>-9.9</i>
<i>G. Ferraris Mandela</i>	<i>GWh</i>	<i>10.26</i>	<i>23.05</i>	<i>19.75</i>	<i>-14.3</i>
<i>G. Marconi Orte</i>	<i>GWh</i>	<i>48.07</i>	<i>80.91</i>	<i>75.25</i>	<i>-7.0</i>
<i>Sant'Angelo</i>	<i>GWh</i>	<i>108.77</i>	<i>179.15</i>	<i>188.30</i>	<i>5.1</i>
<i>Salisano</i>	<i>GWh</i>	<i>175.94</i>	<i>180.95</i>	<i>182.41</i>	<i>0.8</i>
<i>Other minor plants</i>	<i>GWh</i>	<i>2.21</i>	<i>2.29</i>	<i>2.11</i>	<i>-7.9</i>
Total gross thermoelectric energy (5)	GWh	12.30	11.55	10.25	-11.3
<i>From gas oil</i> <i>Montemartini Plant (*)</i>	<i>GWh</i>	<i>1.94</i>	<i>1.28</i>	<i>0.051</i>	<i>-96.1</i>
<i>From natural gas</i>	<i>GWh</i>	<i>10.35</i>	<i>10.27</i>	<i>10.20</i>	<i>-0.7</i>
<i>Tor di Valle combined cycle</i>	<i>GWh</i>	<i>1.09</i>	<i>0.00</i>	<i>0.00</i>	<i>-</i>
<i>Tor di Valle co-generation plant</i>	<i>GWh</i>	<i>9.26</i>	<i>10.27</i>	<i>10.20</i>	<i>-0.7</i>
Total electricity losses (6) = (7+8+9)	GWh	13.29	14.22	12.98	-7.2
<i>Internal consumption - hydroelectric plants (7)</i>	<i>GWh</i>	<i>2.49</i>	<i>2.54</i>	<i>2.43</i>	<i>-4.3</i>
<i>Internal consumption - heat plants (Tor di Valle, Montemartini) (8)</i>	<i>GWh</i>	<i>6.04</i>	<i>5.45</i>	<i>3.89</i>	<i>-28.6</i>
<i>Initial transformation losses (9)</i>	<i>GWh</i>	<i>4.76</i>	<i>6.22</i>	<i>6.66</i>	<i>7.1</i>
Total net electricity produced by Acea Produzione (10) = (3-6)	GWh	359.80	494.06	492.45	-0.3
A.R.I.A. (waste-to-energy)					
Total gross energy produced (11) = (12)+(13)	GWh	21.24	260.09	287.04	10.4
<i>San Vittore del Lazio plant (12)</i>	<i>GWh</i>	<i>218.24</i>	<i>202.23</i>	<i>205.09</i>	<i>1.4</i>
<i>Terni plant (13)</i>	<i>GWh</i>	<i>n.a.</i>	<i>57.86</i>	<i>81.95</i>	<i>41.6</i>
Total electricity losses (14)	GWh	29.59	35.46	38.51	21.6
<i>San Vittore del Lazio internal consumption</i>	<i>GWh</i>	<i>29.59</i>	<i>28.42</i>	<i>29.64</i>	<i>4.3</i>
<i>Terni internal consumption</i>	<i>GWh</i>	<i>n.a.</i>	<i>7.04</i>	<i>8.87</i>	<i>26.0</i>
Total net electricity produced (15) = (11-14)	GWh	188.65	224.63	248.53	10.6
Acea Reti e Servizi Energetici					
Gross photovoltaic energy (16)	GWh	60.43	17.33	15.46	-10.8
Total electricity losses (17)	GWh	4.29	0.52	0.31	-40.4
Net photovoltaic energy (18) = (16-17)	GWh	56.14	16.81	15.15	-9.9

(*) The Montemartini plant remains operational but only as a standby.

< THERMAL ENERGY – GENERATION	unit of measurement	2012	2013	2014	Δ% 2014/2013
Acea Produzione					
Gross thermal energy produced Tor di Valle plant (19)	GWh_t	87.96	99.33	92.03	-7.3
Total thermal electricity losses (20)	GWh _t	11.62	22.76	18.89	-17.0
Distribution losses	GWh _t	9.35	19.69	16.65	-15.4
Production losses	GWh _t	2.27	3.07	2.24	-27.0
Net thermal energy sold (21) = (19-20)	GWh_t	76.34	76.57	73.13	-4.5

ELECTRICITY – TRANSPORT AND SALE	unit of measurement	2012	2013	2014	Δ% 2014/2013
to Rome and Formello - Summarized figures					
Supply from Acea Group (22)	GWh	2.18	1.96	2.12	8.2
Electricity from the market (23)	GWh	11,861.09	11,383.35	10,951.49	-3.8
From sole buyer	GWh	3,327.25	3,107.76	2,852.89	-8.2
From imports	GWh	433.56	431.50	432.05	0.1
From wholesalers + other producers	GWh	8,100.28	7,844.09	7,666.55	-2.3
Electricity demand on the network (24) = (22+23) = (25+26+27+28+29)	GWh	11,863.27	11,385.31	10,953.61	-3.8
Distribution, transport and commercial losses (25)	GWh	757.12	701.72	673.59	-4.0
		6.38 % of (24)	6.16% of (24)	6.15% of (24)	
Internal transmission and distribution (26)	GWh	30.61	30.43	29.80	-2.1
Net electricity sold to third parties (27)	GWh	2.54	2.15	2.90	34.9
Net electricity conveyed by Acea to free market customers (28)	GWh	7,636.13	7,416.84	7,247.27	-2.3
Net electricity sold by Acea Elettricità to free market customers on Acea Distribuzione network	GWh	4,627.90	4,982.27	5,115.86	2.7
Net electricity sold by Other Sellers to free market customers on Acea Distribuzione network	GWh	3,008.23	2,434.57	2,131.42	-12.5
Electricity sold to protected customers (29)	GWh	3,436.87	3,234.19	3,000.05	-7.2
Sale in Italy - Summarized figures					
Net electricity sold by Acea on the free market - including sale on Rome (30)	GWh	9,960	9,381.9	7,887.0	-15.9
Acea Elettricità	GWh	9,050	8,600.6	7,343.6	-14.6
Other investee companies	GWh	910	781.3	543.4	-30.4
Net electricity sold by Acea in Italy (free market + protected customers) (29+30)	GWh	13,396.9	12,616.1	10,887.0	-13.7

PUBLIC LIGHTING	unit of measurement	2012	2013	2014	Δ% 2014/2013
Lighting flux in Rome (31)	Mlumen	3,148	3,275	3,377	3.1

MONITORING AND GAUGING	unit of measurement	2012	2013	2014	Δ% 2014/2013
Monitoring and gauging activities (32)	No.	488	392	393	0.3
Electromagnetic field measures	No.	42	40	30	-25.0
Noise monitoring	No.	39	12	5	-58.3
Chemical analysis of PCB	No.	151	55	102	85.5
Waste classification	No.	16	45	36	-20.0
Transformer diagnostics	No.	213	190	208	9.5
Other	No.	27	50	12	-76.0

THE PRODUCTS - ENVIRONMENT

Data refer to the companies Kyklos, Solemme, and Samace (plant assimilated at the end of 2013) all in Aquaser Srl (100% Acea SpA) and to the company SAO srl, controlled by A.R.I.A. (100% Acea SpA).

It should be noted that, following a serious incident at the plant of Kyklos, from July 30th 2014 the latter was placed under sequestration, preventing further contributions (see chapter *Suppliers*).

NON-HAZARDOUS WASTE, DISPOSED OF AND RECOVERED - SAO	unit of measurement	2012	2013	2014	Δ% 2014/2013
Incoming waste to plant (33)	t	143,384	120,059	97,927	-18.4
Landfilled waste (34)	t	122,770	99,953	89,338	-10.6
Recovered waste (35)	t	488	260	6,313	-
Compost (36)	t	658	439	658	49.9
Reduction for stabilisation (37) = (33-34-35-36)	t	19,468	19,407	1,618	-

PRODUCTION OF COMPOST	unit of measurement	2012	2013	2014	Δ% 2014/2013
Total incoming organic waste = (38+39+40)	t	59,510,75	63,271,43	55,769,37	-11,9
Incoming sludges (38)	t	16,249.88	15,491.54	15,924.25	2.8
Kyklos	t	12,151.68	10,322.30	2,330.09	-77.4
Solemme	t	4,098.20	5,169.24	5,420.78	4.9
Samace	t	-	-	8,173.38	-
Incoming Green (39)	t	6,236.96	6,923.14	15,806.38	128.3
Kyklos	t	4,522.86	3,416.40	4,898.20	43.4
Solemme	t	1,714.10	3,506.74	2,660.88	-24.1
Samace	t	-	-	8,247.30	-
Incoming organic fraction from waste collection system (40)	t	37,023.91	40,856.75	24,038.74	-41.2
Kyklos	t	37,023,91	40,856,75	24,038,74	-41.2
High Quality compost produced (41)	t	11,652.66	18,389.10	15,026.10	-18.3
Kyklos	t	9,295.66	14,370.00	6,026.10	-58.1
Solemme	t	2,357.00	4,019.10	4,000.00	-0.5
Samace	t	-	-	5,000.00	-
Non-compostable material to disposal (42)	t	3,784.88	4,671.95	4,361.16	-6.7
Kyklos	t	3,784.88	4,671.95	4,361.16	-6.7
Solemme	t	0.00	0.00	0.00	-
Reduction for stabilisation = (38+39+40-41-42)	t	44,073.21	40,210.38	36,382.11	-17.7

ANALYTICAL CONTROLS ON WASTE AND ON HIGH QUALITY COMPOST	unit of measurement	2012	2013	2014	Δ% 2014/2013
Total analytical controls (43)	No.	100	110	90	-18.2
Analytical controls on compost - SAO	No.	8	10	5	-50.0
Analytical controls on compost - Solemme and Kyklos	No.	42	50	25	-50.0
Analytical controls on waste - SAO	No.	50	50	60	20.0

THE PRODUCTS - WATER

Summarized water figures include the main water companies in the Acea Group - Acea Ato 2 and Acea Ato 5 (Lazio Region), Gori (Campania Region), Umbra Acque (Umbria Region) Acque, Publiacqua and Acquedotto del Fiore (Tuscany).

Details of water balances are presented only for the operating companies in Lazio, the only companies that have been consolidated proportionally for 2014. You can read the data of the water balance of the Group companies consolidated differently in chapter Water Companies.

The items of water balance were calculated, for 2014, according to the criteria provided by the AEEGSI (Resolution n. 5/2014). Such items are not comparable with the ones of previous years. Some data 2012 and 2013 have been adjusted to account for slight settling accounting closure occurring after 2013.

GROUP WATER BALANCE IN ITALY	unit of measurement	2012	2013	2014	Δ% 2014/2013
Summarized figures					
Total drinking water withdrawn from the environment or from other systems (44)	Mm ³	1,392.8	1,416.2	1,398.8	-1.2
Total drinking water introduced onto the network (45)	Mm ³	1,263.0	1,271.3	1,308.4	2.8
Total drinking water supplied (46)	Mm ³	653.7	642.7	656.8	2.2
WATER BALANCE OF THE COMPANIES OPERATING IN THE REGION OF LAZIO					
Acea Ato 2 for Rome historic network (*)					
Drinking water withdrawn from the environment (47)	Mm ³	609.8	618.5	611.5	-1.1
<i>from Lake Bracciano, treated</i>	Mm ³	21.9	7.3	19.8	171.2
<i>from wells</i>	Mm ³	27.2	16.9	18.8	11.2
<i>from springs</i>	Mm ³	560.7	594.3	572.9	-3.6
Drinking water sold to municipal retailers situated on the path of aqueducts (48)	Mm ³	92.4	96.1	80.0	-16.8
Drinking water introduced onto non-drinking water network (49)	Mm ³	16.1	15.9	14.6	-8.2
Drinking water returned to the environment /technical operating volumes (50)	Mm ³	28.5	33.4	34.2	2.4
Drinking water introduced onto the Rome historic network (51) = (47) - (48+49+50)	Mm ³	472.7	473.1	482.9	2.1
Drinking water supplied via the Rome historic network (52)	Mm ³	298.0	295.0	266.3	-9.7
Assessment of losses according to Italian Ministerial Decree No. 99/97 and, from 2014, also to the Resolution no 5/2014 of the Italian Authority AEEGSI					
Overall losses (parameter A17 MD 99/97) (53)	Mm ³	159.3	162.8	203.7	-
Effective losses (from 2014: item A13+A15 as per Resolution no 5/2014 of the AEEGSI) (54)	Mm ³		125.9 26.6% of (51)	192.5 39.9 % of (51)	-
Water balance - Rome non-drinking water network					
Non-drinking water withdrawn from the environment (55)	Mm ³	29.7	25.6	25.2	-1.6
<i>from the River Tiber, treated (Grottarossa plant)</i>	Mm ³	4.7	2.2	0.7	-68.2
<i>from springs</i>	Mm ³	8.9	7.5	9.9	32.0
<i>drinking water introduced onto non-drinking network</i>	Mm ³	16.1	15.9	14.6	-8.2
Non-drinking water supplied to the Municipality of Rome (56)	Mm ³	14.1	14.3	14.0	-2.1
Non-drinking water supplied to other Municipalities (57)	Mm ³	0.03	0.03	0.03	0.0
Acea Ato 2 for ATO 2 - Central Lazio (Rome + municipalities acquired as of 31 Dec. 2014)					
Drinking water withdrawn from the environment (58)	Mm ³	715.4	728.5	722.2	-0.9
<i>from Lake Bracciano, treated</i>	Mm ³	21.9	7.3	19.8	171.2
<i>from wells</i>	Mm ³	89.6	76.2	84.4	10.8
<i>from springs</i>	Mm ³	602.3	642.4	612.1	-4.7
<i>from other aqueduct systems</i>	Mm ³	1.6	2.6	5.9	126.9
Drinking water sold to other aqueduct systems (59)	Mm ³	68.2	74.5	41.3	-44.6
Drinking water introduced onto non-drinking water network (60)	Mm ³	16.1	15.9	14.6	-8.2
Drinking water returned to the environment /technical operating volumes (61)	Mm ³	28.50	33.4	57.2	71.3
Drinking water introduced onto the ATO 2 network (62) = (58) - (59+60+61)	Mm ³	602.5	604.6	609.1	0.7
(62 A) Drinking water introduced onto the network: introduced onto the ATO 2 network + delivered to other aqueduct systems, as per Resolution no 5/2014 of the AEEGSI	Mm ³	-	-	650.6	-
Total drinking water supplied to the ATO 2 network (63)	Mm ³	349.7	346.4	357.2	-

< WATER BALANCE OF THE COMPANIES OPERATING IN THE REGION OF LAZIO	unit of measurement	2012	2013	2014	Δ% 2013/2012
Assessment of losses according to Italian Ministerial Decree No. 99/97 and, from 2014, also to the Resolution n.5/2014 of the Italian Authority AEEGSI					
Overall losses (parameter A17 MD 99/97) (64)	Mm ³	230.5	235.9	279.2	-
Effective losses (from 2014: item A13+A15 as per Resolution no 5/2014 of the AEEGSI) (65)	Mm ³	177.6 (29.5% of 62)	183.4 (30.3% of 62)	264.2 (40.6% of 62A)	-
Acea Ato 5 for ATO 5 –Southern Lazio - Frosinone (85 municipalities)					
Drinking water withdrawn from the environment (66)	Mm³	98.8	110.6	109.9	-0.6
<i>from lakes/rivers</i>	Mm ³	0.0	0.0	0.0	-
<i>from wells</i>	Mm ³	68.6	80.5	60.2	-25.2
<i>from springs</i>	Mm ³	30.2	30.1	49.7	65.1
Drinking water introduced onto network (67)	Mm³	93.7	105.3	105.4	0.1
Drinking water supplied (68)	Mm³	20.7	21.0	22.0	4.8
Assessment of losses according to Italian Ministerial Decree No. 99/97 and, from 2014, also to the Resolution n.5/2014 of the Italian Authority AEEGSI					
Overall losses (parameter A17 MD 99/97) (68)	Mm ³	70.4	81.6	80.6	-1.2
Effective losses (from 2014: item A13+A15 as per Resolution no 5/2014 of the AEEGSI) (70)	Mm ³	56.6 (60.4% of 67)	66.3 (63.0% of 67)	65.2 (61.9% of 67)	-1.7

TOTAL WASTE WATER TREATED BY THE GROUP COMPANIES, IN ITALY	unit of measurement	2012	2013	2014	Δ% 2014/2013
Summarized figures					
Waste water treated in main purification plants of the Group companies in Italy (71) (*)	Mm ³	851.1	917.1	940.7	2.6

(*) 2013 figure was corrected.

WASTE WATER TREATED BY ACEA ATO 2	unit of measurement	2012	2013	2014	Δ% 2014/2013
Waste water treated in main purification plants (72)	Mm³	522.1	560.2	563.8	0.6
<i>Rome South</i>	Mm ³	300.2	331.8	329.6	-0.7
<i>Rome North</i>	Mm ³	96.7	96.2	95.6	-0.6
<i>Rome East</i>	Mm ³	87.8	94.0	98.4	4.7
<i>Rome Ostia</i>	Mm ³	24.5	26.8	27.0	0.7
<i>CoBIS</i>	Mm ³	7.4	7.3	8.8	20.5
<i>Fregene</i>	Mm ³	5.5	4.1	4.4	7.3
Other – municipality of Rome	Mm³	14.4	14.1	13.5	-4.3
Other – outside Municipality of Rome	Mm³	63.0	65.3	74.3	13.8
Total waste water treated by Acea Ato 2 (73)	Mm³	599.5	639.6	651.6	1.8

WASTE WATER TREATED BY ACEA ATO 5	unit of measurement	2012	2013	2014	Δ% 2014/2013
Waste water treated in main purification plants (74)	Mm ³	26.7	26.5	26.6	0.4

ANALYTICAL CHECKS ON DRINKING WATER AND WASTE WATER FOR ACEA GROUP IN ITALY (*)	unit of measurement	2012	2013	2014	Δ% 2014/2013
Summarized figures					
Group total analytical checks on drinking water (75)	No.	1,169,201	1,208,178	1,187,937	-1.7
Group total analytical checks on waste water (76)	No.	409,202	467,077	467,248	0.04
Acea Ato 2 Analytical checks					
Analytical checks on drinking water - Acea Ato 2	No.	328,202	339,229	328,202	-3.3
Analytical checks on waste water- Acea Ato 2	No.	122,231	178,262	181,940	2.1
Acea Ato 5 Analytical checks					
Analytical checks on drinking water – Acea Ato 5	No.	79,953	78,830	71,842	-8.9
Analytical checks on waste water- Acea Ato 5	No.	23,816	24,820	24,611	-0.8

(*) The number includes the controls carried out independently by each Company, and those carried out by Laboratorio in-house. Some data of the previous biennium have been adjusted.

THE RESOURCES USED - ENERGY

The figures of the resources used refer to Acea Produzione (AP) (100% Acea SpA), A.R.I.A. (100% Acea SpA) and Acea Distribuzione (100% Acea SpA)

GENERATION, TRANSPORT AND SALE OF ELECTRICITY, HEAT AND PUBLIC LIGHTING	unit of measurement	2012	2013	2014	Δ% 2014/2013
Natural gas					
Electricity and heat generation (77) = (78+79)	Nm³ x 1,000	14,249	19,155	15,093	-21.2
Thermoelectric and heat production AP (78)	Nm³ x 1,000	11,352	14,113	11,063	-21.6
<i>Tor di Valle reserve boilers - for district heating</i>	<i>Nm³ x 1,000</i>	<i>7,615</i>	<i>10,071</i>	<i>7,306</i>	<i>-27.5</i>
<i>Tor di Valle co-generation plant</i>	<i>Nm³ x 1,000</i>	<i>3,328</i>	<i>4,042</i>	<i>3,757</i>	<i>-7.1</i>
<i>Tor di Valle combined cycle</i>	<i>Nm³ x 1,000</i>	<i>408</i>	<i>0</i>	<i>0</i>	<i>-</i>
Waste to energy (79)	Nm³ x 1,000	2,897	5,042	4,030	-20.1
<i>San Vittore del Lazio waste to energy plant</i>	<i>Nm³ x 1,000</i>	<i>2,897</i>	<i>3,460</i>	<i>2,711</i>	<i>-21.6</i>
<i>Terni waste to energy plant (*)</i>	<i>Nm³ x 1,000</i>	<i>n.a.</i>	<i>1,582</i>	<i>1,319</i>	<i>-16.6</i>
Gas oil for thermoelectric generation					
Montemartini plant (80)	l x 1,000	758	512	46	-91.0
Refuse derived fuel (RDF) burnt					
San Vittore del Lazio waste to energy plant (81)	t x 1,000	218.256	224.220	224.336	0.1
Pulper from paper industry waste burnt					
Terni waste to energy plant (82) (*)	t x 1,000	n.a.	69.417	99.397	43.2
Water					
Cooling of thermoelectric plants AP (83) = (141)	Mm³	0.80	0.00	0.00	-
Offtake for hydroelectric production (84)	Mm³	2,740.50	4,436.62	4,222.16	-4.8
Process water (85)	Mm³	0.1380	0.1604	0.1350	-15.8
Domestic/sanitary uses (86)	Mm³	0.3776	0.2796	0.2535	-9.4
Sundry materials					
Dielectric mineral oil in operation (87)	t	4,587	9,462	9,706	(**)
Dielectric mineral oil - oil loss make-up		24.2	74.8	18.8	(**)
SF₆ in operation (88)	t	29.15	29.68	29.53	-0.5
SF ₆ - gas loss make-up	t	0.44	0.73	0.71	-2.7
Coolants (HCFC type) loss replacement/make-up (89)	t	0.017	0.040	0.005	-87.5
Sundry chemicals (90)	kg	4,765,055	6,807,934	4,658,590	-31.6
<i>Acidity corrector</i>	<i>kg</i>	<i>2,340</i>	<i>780</i>	<i>n.d.</i>	<i>-</i>
<i>Deoxygenating substances</i>	<i>kg</i>	<i>n.d.</i>	<i>n.d.</i>	<i>n.d.</i>	<i>-</i>
<i>Stabilizers and bio-dispersing agents</i>	<i>kg</i>	<i>1,300</i>	<i>n.d.</i>	<i>n.d.</i>	<i>-</i>
<i>Sodium chloride</i>	<i>kg</i>	<i>78,000</i>	<i>72,000</i>	<i>n.d.</i>	<i>-</i>
<i>Caustic soda</i>	<i>kg</i>	<i>71,990</i>	<i>98,630</i>	<i>75,510</i>	<i>-23.4</i>
<i>Sodium hypochlorite</i>	<i>kg</i>	<i>3,390</i>	<i>620</i>	<i>n.d.</i>	<i>-</i>
<i>Sodium bicarbonate</i>	<i>kg</i>	<i>3,982,720</i>	<i>5,983,440</i>	<i>3,665,910</i>	<i>-38.7</i>
<i>Hydrochloric acid</i>	<i>kg</i>	<i>68,675</i>	<i>101,759</i>	<i>89,120</i>	<i>-12.4</i>
<i>Ammoniacal solution</i>	<i>kg</i>	<i>556,640</i>	<i>550,705</i>	<i>567,730</i>	<i>3.1</i>
<i>Activated carbon</i>	<i>kg</i>	<i>-</i>	<i>-</i>	<i>190,000</i>	<i>-</i>
Oil and greases / lubricants (91)	kg	4,986	5,125	1,537	-70.0
Electricity					
<i>Consumed for electricity distribution (92) = (25)</i>	<i>GWh</i>	<i>757.12</i>	<i>701.72</i>	<i>673.59</i>	<i>-4.0</i>
<i>Consumed for electricity production (93) = (1)-(2)</i>	<i>GWh</i>	<i>47.17</i>	<i>50.71</i>	<i>51.80</i>	<i>3.2</i>
<i>Consumed for offices (50% of the electricity consumed by the Parent Company) (94)</i>	<i>GWh</i>	<i>5.20</i>	<i>5.77</i>	<i>4.61</i>	<i>-20.0</i>
<i>Other internal uses (95)</i>	<i>GWh</i>	<i>30.61</i>	<i>30.43</i>	<i>29.80</i>	<i>-2.1</i>
Total (96) = (92+93+94+95)	GWh	840.10	788.41	759.80	-3.6
Public lighting					
Consumption for public lighting (97) (***)	GWh	n.d.	185.93	185.93	0,0

(*) Terni plant was shutdown for revamping work from 2010 to the end of 2012.

(**) In 2014 the reporting boundary has changed. Please refer to the Explanatory notes.

(***) 2012 and 2013 data have been adjusted compared to previous ones published as a result of a recalculation. The 2012, in particular, is not doable because overly approximated

THE RESOURCES USED – ENVIRONMENT

The figures of the resources used refer to Kyklos and Solemme both of Aquaser Srl (100% Acea SpA) and to SAO, controlled by A.R.I.A. The figures of Samace will be integrated as of 2015. It should be noted that, following a serious incident at the plant of Kyklos, from July 30th 2014 the latter was placed under sequestration, preventing further contributions (see chapter *Suppliers*).

LANDFILL WASTE DISPOSAL - SAO	unit of measurement	2012	2013	2014	Δ% 2014/2013
Process water (98)	m ³	1,532	1,208	1,241	2.7
Sundry chemicals (99)	l	7,000	7,000	7,000	-
Electricity (100)	GWh	1.574	1.605	0.800	-50.2
Gas oil (101)	l	352,189	295,753	254,744	-13.9
Domestic/sanitary water uses (101 A)	m ³	1,098	1,476	1,292	-12.5

PRODUCTION OF COMPOST	unit of measurement	2012	2013	2014	Δ% 2014/2013
Process water (Kyklos, Solemme) (102)	m ³	0	0	0	-
Sundry materials (Kylos, Solemme) (103)	t	139.39	265.32	109.31	-58.8
<i>Sodium hydroxide</i>	t	12.89	14.83	4.82	-67.5
<i>Hypochlorite</i>	t			8.40	-
<i>Sulphuric acid</i>	t	126.50	250.49	96.09	-61.6
Electricity (104) (Kylos, Solemme)	GWh	2.971	3.492	2.693	-22.9
Fuels (105) (Kylos, Solemme)	t	136.90	128.30	85.90	-33.0
<i>Gas oil</i>	t	136.90	128.30	85.90	-33.0

THE RESOURCES USED - WATER

The figures of the resources used refer to the water Group companies: Acea Ato 2, Acea Ato 5.

CATCHMENT, TRANSPORTATION AND DISTRIBUTION OF DRINKING AND NON-DRINKING WATER	unit of measurement	2012	2013	2014	Δ% 2014/2013
Sundry materials and natural resources					
Reagents for purification and disinfection (106)	t	1,932.68	2,033.14	1,819.00	-10.5
Reagents used in chemical analyses (107)	t	1.30	1.40	1.50	7.1
Gas used in chemical analyses (108)	MNm³	3.13	4.06	5.01	23.4
Coolants (HCFC type) replacement/make-up (109)	t	0.017	0.040	0.005	-10.7
Electricity					
<i>Water pumping plants (110)</i>	<i>GWh</i>	<i>216.57</i>	<i>196.42</i>	<i>193.15</i>	<i>-1.7</i>
<i>Offices /internal use (50% of energy consumed by the Parent Company (111) = (94))</i>	<i>GWh</i>	<i>5.20</i>	<i>5.77</i>	<i>4.61</i>	<i>-20.0</i>
<i>Chemical laboratory (112)</i>	<i>GWh</i>	<i>1.25</i>	<i>1.22</i>	<i>1.09</i>	<i>-10.7</i>
Total electricity consumed (113) = (110+111+112)	GWh	223.02	203.41	198.85	-2.2
Drinking water					
<i>Domestic/sanitary uses (114)</i>	<i>Mm³</i>	<i>1.36</i>	<i>0.99</i>	<i>1.32</i>	<i>33.0</i>
<i>Offices (50% of drinking water consumed by Parent Company) (115)</i>	<i>Mm³</i>	<i>0.21</i>	<i>0.15</i>	<i>0.13</i>	<i>-4.0</i>
Total drinking water consumed (116) = (114+115)	Mm³	1.57	1.15	1.45	26.1

WASTE WATER TREATMENT	unit of measurement	2012	2013	2014	Δ% 2014/2013
Sundry materials and natural resources used					
Reagents used in waste water treatment (117)	t	6,551	6,620	6,534	-1.3
<i>Polyelectrolytes used to dehydrate sludge</i>	<i>t</i>	<i>1,132</i>	<i>1,234</i>	<i>1,222</i>	<i>-1.0</i>
<i>Sodium hypochlorite for final disinfection</i>	<i>t</i>	<i>2,928</i>	<i>3,047</i>	<i>3,042</i>	<i>-0.2</i>
<i>Ferric chloride used to dehydrate sludge</i>	<i>t</i>	<i>619</i>	<i>617</i>	<i>568</i>	<i>-7.9</i>
<i>Lime, Formic acid, aluminium polychloride</i>	<i>t</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>-</i>
<i>Peracetic acid</i>	<i>t</i>	<i>1,739</i>	<i>1,604</i>	<i>1,667</i>	<i>3.9</i>
<i>Others (anti-foaming agents, etc.)</i>	<i>t</i>	<i>133</i>	<i>118</i>	<i>35</i>	<i>-70.3</i>
Mineral oil and grease (118)	t	0	0	0	-
Electricity					
Sewage and purification systems (119)	GWh	179.2	179.7	191.6	6.6

FUELS USED BY THE GROUP COMPANIES FOR AUTOMOTIVE AND HEATING PURPOSES

The figures concerning the Vehicle Pool refer to the main Group companies: Acea Ato 2, Acea Ato 5, Acea Distribuzione, Acea SpA, Laboratorio, Acea Reti e Servizi Energetici.

The figures concerning heating purposes refer to Acea SpA, Acea Ato 2, Acea Distribuzione and Acea Produzione.

FUEL TYPE	unit of measurement	2012	2013	2014	Δ% 2014/2013
Automotive (Group Vehicle Pool)					
Gasoline (120)	l x 1,000	831.6	643.9	406.0	-37.0
Diesel (121)	l x 1,000	848.3	697.7	984.5	41.1
Heating					
Gas oil (122)	l x 1,000	8.7	4.4	10.8	145.5
Natural gas (123)	Nm³ x 1,000	690.3	386.0	488.5	26.6
LPG (124)	l x 1,000	24.5	24.9	23.9	-4.2

EMISSIONS AND WASTE - ENERGY

The figures concerning emissions and waste refer to Acea Produzione (AP), waste to energy plants of A.R.I.A. and Acea Distribuzione.

AIR EMISSIONS	Unit of measurement	2012	2013	2014	Δ% 2014/2013
CO₂ (125) = (126+126B+127)	t	136,396	242,048	265,056	9.5
<i>Acea Produzione (126)</i>	<i>t</i>	<i>25,364</i>	<i>30,404</i>	<i>21,140</i>	<i>-30.5</i>
<i>Acea Distribuzione - from SF₆ (126 B)</i>	<i>t</i>	<i>10,032</i>	<i>16,644</i>	<i>16,188</i>	<i>-2.7</i>
<i>A.R.I.A. (127)</i>	<i>t</i>	<i>101,000</i>	<i>195,000</i>	<i>227,728</i>	<i>16.8</i>
NO_x (128) = (129 + 130)	t	96.76	155.03	177.12	14.2
<i>Acea Produzione (129)</i>	<i>t</i>	<i>51.34</i>	<i>48.04</i>	<i>40.05</i>	<i>-16.6</i>
<i>A.R.I.A. (130)</i>	<i>t</i>	<i>45.42</i>	<i>106.99</i>	<i>137.07</i>	<i>28.1</i>
CO (131) = (132 + 133)	t	10.12	9.94	6.81	-31.5
<i>Acea Produzione (132)</i>	<i>t</i>	<i>4.16</i>	<i>2.76</i>	<i>2.15</i>	<i>-22.1</i>
<i>A.R.I.A. (133)</i>	<i>t</i>	<i>5.96</i>	<i>7.18</i>	<i>4.66</i>	<i>-35.1</i>
SO₂ (134) = (135 + 136)	t	0.04	0.23	0.20	-13.0
<i>Acea Produzione (135)</i>	<i>t</i>	<i>0.03</i>	<i>0.02</i>	<i>0.00</i>	<i>-100.0</i>
<i>A.R.I.A. (136)</i>	<i>t</i>	<i>0.01</i>	<i>0.21</i>	<i>0.20</i>	<i>-4.8</i>
Dust (137) = (138 + 139)	t	0.05	0.46	0.50	9.5
<i>Acea Produzione (138)</i>	<i>t</i>	<i>0.04</i>	<i>0.03</i>	<i>0.01</i>	<i>-66.7</i>
<i>A.R.I.A. (139)</i>	<i>t</i>	<i>0.01</i>	<i>0.43</i>	<i>0.49</i>	<i>14.9</i>
HCL	t	n.d.	2.29	2.45	6.9
<i>A.R.I.A. San Vittore</i>	<i>t</i>	<i>n.d.</i>	<i>2.29</i>	<i>2.45</i>	<i>6.9</i>
HF	t	n.d.	0.10	0.18	83.0
<i>A.R.I.A. San Vittore</i>	<i>t</i>	<i>n.d.</i>	<i>0.10</i>	<i>0.18</i>	<i>83.0</i>

OTHER EMISSIONS AND WASTE	Unit of measurement	2012	2013	2014	Δ% 2014/2013
Waste water treated (140)	Mm³	0,0001	0,0007	0,0008	27,5
Cooling water returned (141) = (83)	Mm³	0,803	0,000	0,000	-
50 Hz electric fields	kV	Monitored Commitment to keep within the legal limits			
50 Hz magnetic fields	μT	Monitored Commitment to keep within the legal limits			
Noise	dB	Monitored Commitment to keep within the legal limits			
Dispersed luminous flux	Mlumen	Commitment to design the plants in order to limit to the maximum the percentage of emissions dispersed towards the sky			

WASTE (LEG. DEC. NO 152/06)	Unit of measurement	2012	2013	2014	Δ% 2014/2013
Hazardous waste excluding - waste to energy area (142)	t	665.60	849.98	1.594.57	87.7
<i>Energy sector production</i>	<i>t</i>	<i>663.50</i>	<i>847.97</i>	<i>1,593.40</i>	<i>27.8</i>
<i>Portion deriving from activities carried out by Parent Company (*)</i>	<i>t</i>	<i>2.10</i>	<i>2.01</i>	<i>1.17</i>	<i>-41.8</i>
Hazardous waste of waste to energy area (143)	t	39,354.0	44,561.7	47,158.90	5.8
Non-hazardous waste excluding waste to energy area (144)	t	1,316.5	993.1	870.46	-12.3
<i>Energy sector production</i>	<i>t</i>	<i>1,303.3</i>	<i>966.4</i>	<i>844.40</i>	<i>-12.6</i>
<i>Portion deriving from activities carried out by Parent Company (*)</i>	<i>t</i>	<i>13.2</i>	<i>26.7</i>	<i>26.06</i>	<i>-2.5</i>
Non-hazardous waste of waste to energy area (145)	t	1,684.9	10,408.7	13,720.30	31.8

(*) 50% of waste produced by Parent Company.

EMISSIONS AND WASTE – ENVIRONMENT

The figures refer to Kyklos, Solemme and Samace, of Aquaser Srl (100% Acea SpA) and to SAO, controlled by Aquaser. It should be noted that, following a serious incident at the plant of Kyklos, from July 30th 2014 the latter was placed under sequestration, preventing further contributions. The plant of Samace has been assimilated at the end of 2013 – for year 2014 not all data are available. In particular emission data refer to Kyklos and Solemme and Sao when specified.

WASTE (LEG. DEC. NO 152/06)	unit of measurement	2012	2013	2014	Δ% 2014/2013
Hazardous waste of Kyklos + Solemme (146)	t	1.6	1.79	48.90	-
Non-hazardous waste of Kyklos + Solemme (147) excluding the leachate	t	3,832.37	4,790.98	4,644.14	-3.0
Hazardous waste of SAO (148)	t	1.2	0.7	1.4	100.0
Leachate (149)	t	29,564.19	31,290.70	32,250.04	3.1
<i>Kyklos</i>	t	11,316.5	10,289.1	9,773.84	-5.0
<i>Solemme</i>	t	55.72	351.56	842.20	139.6
<i>SAO</i>	t	18,192	20,650	21,634	4.8

AIR EMISSIONS	unit of measurement	2012	2013	2014	Δ% 2014/2013
Dust(150)	t	8.56	6.30	10.48	66.3
Total Organic Compound (151)	t	4.51	6.15	5.49	-10.8
Ammonia (152)	t	1.57	1.74	5.84 (*)	-
Volatile inorganic acids (153)	t	1.5	1.91	1.24	-35.1

(*) For 2014 the amount emitted in the year at Solemme is also included.

EMISSIONS AND WASTE - WATER

The figures refer to the water companies Acea Ato 2 and Acea Ato 5.

WASTE	Unit of measurement	2012	2013	2014	Δ% 2014/2013
Specific waste from waste water treatment					
Total treatment sludge (154) = (155+156)	t	152,289	151,673	158,921	4.8
<i>Treatment sludge - Acea Ato 2 (155)</i>	<i>t</i>	<i>136,831</i>	<i>136,305</i>	<i>150,533</i>	<i>10.4</i>
<i>Treatment sludge - Acea Ato 5 (156)</i>	<i>t</i>	<i>15,458</i>	<i>15,368</i>	<i>8,388</i>	<i>-45.4</i>
Total sand and sediment from treatment (157)	t	9,621	10,736	11,375	6.0
<i>sand and sediment - Acea Ato 2 (158)</i>	<i>t</i>	<i>9,332</i>	<i>10,442</i>	<i>11,282</i>	<i>8.0</i>
<i>sand and sediment - Acea Ato 5 (159)</i>		<i>289</i>	<i>294</i>	<i>93</i>	<i>-68.4</i>
Waste (ex Leg. Dec. No 152/06)					
Total hazardous waste (160) = (161+162+163)	t	60.1	201.0	119.0	-40.8
<i>Production from Acea Ato 2 and LaboratoRI (161)</i>	<i>t</i>	<i>53.5</i>	<i>194.3</i>	<i>117.1</i>	<i>-39.7</i>
<i>Production from Acea Ato 5 (162)</i>		<i>4.6</i>	<i>4.7</i>	<i>0.8</i>	<i>-80.0</i>
<i>Portion deriving from activities carried out by Parent Company (163) (*)</i>	<i>t</i>	<i>2.1</i>	<i>2.0</i>	<i>1.2</i>	<i>-41.8</i>
Total non-hazardous waste (164) = (165+166+167+168)	t	5,246.0	4,875.2	7,466.9	-53.2
<i>Production from Acea Ato 2 and LaboratoRI (165)</i>	<i>t</i>	<i>325.1</i>	<i>251.4</i>	<i>372.8</i>	<i>48.3</i>
<i>Production from Acea Ato 5 (166)</i>		<i>4,200.0</i>	<i>4,386.0</i>	<i>7,027.0</i>	<i>60.2</i>
<i>Portion deriving from activities carried out by Parent Company (167) (*)</i>	<i>t</i>	<i>13.2</i>	<i>26.7</i>	<i>26.1</i>	<i>-2.5</i>
<i>Inert material (168)</i>	<i>t</i>	<i>707.7</i>	<i>211.0</i>	<i>41.04</i>	<i>-80.5</i>
Other emissions and waste					
Noise	dB	Monitored Commitment to keep within the legal limits			
Smells		Monitored Commitment to keep within the limit of perception in areas nearby treatment plants			

(*) 50% of waste produced by Parent Company.

EMISSIONS FROM VEHICLES AND AIR-CONDITIONING

The figures concerning the Car Pool refer to the main companies of the Group: Acea Ato 2, Acea Ato 5, Acea Distribuzione, Acea Spa, LaboratoRI, Acea Reti e Servizi Energetici.

The figures concerning heating purposes refer to Acea SpA, Acea Ato 2, Acea Distribuzione and Acea Produzione.

GROUP COMPANIES	Unit of measurement	2012	2013	2014	Δ% 2014/2013
Vehicles					
CO ₂ (169)	t	3,993	3,166.6	3,051.4	-3.6
NO _x (170)	t	7.9	6.4	8.2	28.1
CO (171)	t	39.5	30.7	20.5	-33.2
SO ₂ (172)	t	n.d.	n.d.	n.d.	-
Heating					
CO ₂ (173)	t	1,766	1,003	1,368	36.4

ENVIRONMENTAL SUSTAINABILITY PERFORMANCE – ENERGY

Key environmental performance indicators (Key Performance Indicators)

INDICATOR	unit of measurement	2012	2013	2014
Energy used in processes				
A Consumption for electricity distribution	TJoules (GWh)	1,377.2 (382.6)	1,512.7 (420.2)	1,332.4 (370.1)
B for electricity production (item 93)	TJoules (GWh)	169.8 (47.17)	182.6 (50.71)	186.5 (51.80)
C Heat loss on district heating network. (item 20)	TJoules (GWh)	41.8 (11.6)	82.1 (22.8)	68.0 (18.9)
D Consumption for public lighting (*) (item 97)	TJoules (GWh)	n.d.	669.3 (185.93)	669.3 (185.93)
E Consumption for Environment (100+104)	TJoules (GWh)	16.2 (4.5)	18.4 (5.1)	12.6 (3.5)
F Water distribution (dato 113 – 111)	TJoules (GWh)	784.2 (217.8)	711.6 (197.7)	699.5 (194.3)
G Waste water treatment (item 119)	TJoules (GWh)	645.1 (179.2)	646.9 (179.7)	689.8 (191.6)
H Electricity for offices (item 94 + 11)	TJoules (GWh)	37.4 (10.4)	41.4 (11.5)	33.12 (9.2)
I Consumption for office heating	TJoules (GWh)	24.6 (6.8)	14.0 (3.9)	19.1 (5.3)
L Vehicles (item 120 + 121)	TJoules (GWh)	56.5 (15.,7)	45.2 (12.6)	48.4 (13.4)
Indirect consumption + consumption from vehicles + heating	TJoules (GWh)	3,822.1 (1,061.7)	3,924.2 (1,090.1)	3,758.7 (1,044.1)
M - Energy losses when converting from primary sources to electricity	TJoules (GWh)	2,884.6 (801.3)	3,976.6 (1,104.6)	4,492.4 (1,287.8)
Total energy use (sum A : M)	TJoules (GWh)	6,706.7 (1,863.0)	7,900.8 (2,194.7)	8,251.1 (2,331.8)
EMISSIONS, EFFLUENT, AND WASTE				
Greenhouse gas emissions (CO₂) (dato 125 + 169 + 173)	t	142,155	246,218	269,475
Emissions of SO₂, NO_x and other significant gases by type				
NO_x (item 128 + 170)	t	104.66	161.43	185.32
CO (item 131 + 171)	t	49.62	40.64	27.31
SO₂ (item 134 + 172)	t	0.04	0.23	0.20
Acea (Acea Produzione and A.R.I.A.) emission/production indicators				
NO_x/thermoelectric production	g/kWh	0.80	1.02	1.10
CO₂/thermoelectric production	g/kWh	548	830	837
CO₂/total gross production	g/kWh	193.9	286.9	308.0
SO₂/thermoelectric production	g/kWh	0.0	0.0	0.0

(*) The 2013 figure has been recalculated; the 2012 figure is not available but it is estimated that its contribution to the formation of the indicator can be represented with a value identical to that of biennium 2013-2014 (185.9).

INDICATOR	unit of measurement	2012	2013	2014
PRODUCTS AND SERVICES: ELECTRICITY				
Electricity production process efficiency - Acea Produzione figures (*)				
Gross average efficiency of thermoelectric production (calculation 1)	%	26.3	24.1	25.7
Tor di Valle plant (combined cycle)	%	25.2	0.0	0.0
Tor di Valle plant (co-generation - solely electricity efficiency)	%	26.5	24.0	25.8
Montemartini plant	%	26.0	25.4	11.3
Gross average efficiency of thermoelectric production including recovered thermal energy (calculation 2)	%	55.3	57.4	63.6
Gross average efficiency of hydroelectric production (calculation 3)	%	82.7	83.1	81.2
Gross average efficiency of total production (calculation 4)	%	80.8	81.8	80.1
Gross average efficiency of total production including recovered heat (calculation 5)	%	81.8	82.4	80.7
Electricity generation process efficiency - Waste to energy plants				
San Vittore del Lazio plant				
Refuse derived fuel/gross electricity produced-San Vittore	Kt/GWh	1.00	1.109	1.094
Gross efficiency of RDF conversion in electricity (calculation 6)	kWh /kg RDF	1.00	0.90	0.91
Electric efficiency (calculation 7)	%	23.2	20.9	20.0
Terni				
Gross efficiency of Pulper conversion in electricity (calculation 8)	kWh /kg pulper	n.a.	0.83	0.82
Electric efficiency (calculation 9)	%	n.a.	18.7	18.3
Electricity generation process efficiency - photovoltaic plants				
Average efficiency of photovoltaic units	%	14.0	14.0	14.0
Altri Other indicators (surroundings, public lighting, controls, water leaks)				
Specific production of waste	g/kWh	0.58	0.57	0.82
Protection of the surrounding areas total length of HV lines in cables / (length of HV overhead and in cable lines) x 100	%	39.31	42.93	42.42
Public lighting flux efficiency (dato 31 / dato 97)	Lumen/kWh	n.d.	17.6	18.2
Average efficiency of installed lamps (dato 31 / wattage)	Lumen/W	80.5 (39,020 kW)	82.7 (39,590 kW)	84.3 (40,069 kW)
Specific consumption per lighting unit (dato 97 / n. punti luce)	kWh/lighting unit (No. lighting units x year)	n.d.	981.88 (189,361)	964.92 (192,690)
Percentage of illuminated roads (**)	% (km of lighted roads/km of total roads)	n.d.	84.8 % (6,032/7,110)	85.9 % (6,107/7,110)
No. of operating and laboratory checks /GWh net electricity sold (item 32) / (item 29)	n./GWh	0.14	0.12	0.13
SF₆ gas loss make-up /km of electricity distribution network	kg/km	0.0147	0.0243	0.0234
Total electricity losses (item 25) / (item 24) (***)	% of required energy	6.4	6.2	6.1

(*) The thermoelectricity generation efficiencies, calculated using computation as described before the explanatory notes at the end of the document, are strongly affected by the low level of production recorded also in 2014 at the combined cycle power plant of Tor di Valle. Such calculations therefore have to be evaluated cautiously because not complying with typical values of the plant technologies used.

(**) This is an estimate.

(***) The total electricity losses include: initial transformation loss, transport loss, internal consumptions and technical and commercial losses, these due to incorrect measurements and fraud.

ENVIRONMENTAL SUSTAINABILITY PERFORMANCE – WATER

Key environmental performance indicators (Key Performance Indicators)

Boundary: Acea Ato 2 and Acea Ato 5.

INDICATOR	Unit of measurement	2012	2013	2014
Carbon footprint				
WATER SERVICE IN ITALY				
Total CO₂/m³ of water supplied (integrated water service) (*)	kgCO ₂ /m ³	0.43	0.42	0.41
CO₂/m³ of water supplied (distribution process)	kgCO ₂ /m ³	0.24	0.22	0.21
CO₂/m³ of treated water (treatment process)	kgCO ₂ /m ³	0.11	0.11	0.11
DRINKING WATER SERVICE (Assessment parameters as per Italian Ministerial Decree No. 99/97 and from 2014 also according to the Resolution n. 5/2014 of the AEEGSI)				
Acea Ato 2 network				
Primary efficiency (R1): (item 63) / (item 62)	%	58.0	57.3	58.6
REfficiency at consumption level (R2): (item 63 + A 11) / (item 62) A 11 = 12.35 Mm ³ for 2014	%	58.1	58.4	60.7
Net efficiency (R3): (item 63 + A 11 + A 12) / (item 62) A 12 = 0.005% di (item 63)	%	58.2	60.4	61.0
"Historic" network (Rome + Fiumicino)				
Primary efficiency (R1) "historic" network: (item 52) / (item 51)	%	63.0	62.4	55.2
Efficiency at consumption level (R2): (item 52+ A 11) / (item 51) A 11 = 11.55 Mm ³ for 2014	%	64.3	63.6	57.6
Net efficiency (R3): (item 52 + A 11 + A 12) / (item 51) A 12 = 0.005% di (item 52)	%	66.3	65.6	57.9
PRODUCT: DRINKING WATER				
Acea Ato 2 network				
Linear index of overall drinking water losses (as per MD No. 99/97: A17 / km rete) (item 64) / (km of network) (**)	m ³ x1,000/km (10,508.5 km)	21.8	22.3	25.3
Linear index of effective distribution losses (as per MD no 99/97 and the AEEGSI Resolution no 5/2014): (A15+A13) / km of network (item 65) / (km of network) (**)	m ³ x1,000/km (10,508.5 km)	16.9	17.4	24.0
Specific electricity consumption for water network (Ato 2 energy network consumption) / (item 62)	kWh/m ³	0.259	0.226	0.221
No. of checks on drinking water distributed (item 75 - drinking water Acea Ato 2) / (item 62)	n./Mm ³	545	561	562
Additive Index of drinking water (item 132 - network of Acea Ato 2) / (item 62)	g/m ³	2.8	3.0	2.6
"Historic network" (Rome + Fiumicino)				
Linear index of overall drinking water losses (as per MD no 99/97: A17 / km of network) (item 53) / (km of network) (**)	m ³ x1,000/km (7,207.3)	22.1	22.4	27.9
Linear index of effective distribution losses (as per MD No. 99/97 and the AEEGSI Resolution no 5/2014): (A15 + A13) / (km of network) (item 54) / (km of network) (**)	Mm ³ x1,000/km (7,207.3)	16.9	17.3	26.3
SERVICE: WASTE WATER TREATMENT (Acea Ato 2 + Acea Ato 5)				
Total sludge disposed of (item 154)	t	152,289	151,673	158,921
Sand and sediment removed (item 157)	t	9,621	10,736	11,375
COD in	t	168,312	158,354	153,152
COD removed	t	133,210	124,339	122,999
Additive process index - Acea Ato 2	g/m ³	10.44	9.89	9.06
Specific electricity consumption for treatment process - Acea Ato 2	kWh/m ³	0.273	0.257	0.270
Intensity of checks on waste water - Acea Ato 2	n./Mm ³	195.9	256.7	269.7
COMPLIANCE				
Penalty paid for non-compliance with environmental regulations/agreements (***)	euro	470,291	98,770	91,002

(*) "Scope 2" emissions, arising from electricity consumption of the water companies considered.

(**) These are the kilometres of distribution and transportation network. From 2014 the losses are calculated considering the AEEGSI Resolution n.5/2014 and that no comparison can be made with previous years.

(***) Penalties paid by Acea Ato 2, Acea Ato 5, Acea Produzione, ARIA, Acea Distribuzione.

ENVIRONMENTAL SUSTAINABILITY PERFORMANCE – ENVIRONMENT

Key environmental performance indicators (Key Performance Indicators)

INDICATOR	unit of measurement	2012	2013	2014
Non-hazardous waste disposed in landfill / total waste entered at plant (item 34)/(item 33)	t/t	0.86	0.83	0.91
Waste disposed in landfill / energy consumed (item 34)/(item 100)	t/kWh	0.08	0.06	0.11
Waste disposed in landfill / energy consumed net of photovoltaic production	t/kWh	0.10	0.08	0.15
Compost/ incoming waste (item 41)/(item 38 + item 39 + item 40)	t/t	0.20	0.29	0.27
Compost produced/electricity consumed (item 41)/(item 104)	kg/kWh	3.92	5.27	5.58

DESCRIPTION OF THE CALCULATIONS USED TO DETERMINE ELECTRICITY GENERATION EFFICIENCY

CALCULATION 1

$$\text{efficiency (thermoelectric)} = \frac{\text{Energy}_{\text{thermoelectric}} \text{ (kWh)}}{\text{Energy}_{\text{diesel oil}} \text{ (kWh)} + \text{Energy}_{\text{natural gas}} \text{ (kWh)}}$$

where:

$\text{Energy}_{\text{thermoelectric}}$ = gross electricity produced using thermoelectric cycle

$$\text{Energy}_{\text{diesel oil}} \text{ (kWh)} = \frac{\text{diesel oil (l)} \cdot 0.835 \cdot \text{NCV}_d \text{ (kCal/kg)}}{860 \text{ (kCal/kWh)}} \quad \text{Energy equivalent to diesel oil consumed (80)}$$

$$\text{Energy}_{\text{natural gas}} \text{ (kWh)} = \frac{\text{natural gas (Nm}^3\text{)} \cdot \text{NCV}_m \text{ (kCal/Nm}^3\text{)}}{860 \text{ (kCal/kWh)}} \quad \text{Energy equivalent to natural gas consumed (78)}$$

NCV_m = 8,500 kCal/Nm³ (net calorific value of natural gas)

NCV_d = 10,000 kCal/kg (net calorific value of diesel oil)

860 = energy conversion factor from kcal to kWh

0.835 = specific weight of diesel oil (kg/l)

NB: the calorific values used for Acea Produzione are the effective ones taken from the gaugings of the natural gas and diesel oil suppliers

CALCULATION 2

$$\text{efficienc (thermoelectric)} = \frac{\text{Energy}_{\text{thermoelectric}} \text{ (kWh)} + \text{Energy thermal (kWh)}}{\text{Energy}_{\text{diesel oil}} \text{ (kWh)} + \text{Energy}_{\text{natural gas}} \text{ (kWh)}}$$

where:

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

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

$$\text{Energy}_{\text{diesel oil}} \text{ (kWh)} = \frac{\text{diesel oil (l)} \cdot 0.835 \cdot \text{NCV}_d \text{ (kCal/kg)}}{860 \text{ (kCal/kWh)}} \quad \text{Energy equivalent to diesel oil consumed (80)}$$

$$\text{Energy}_{\text{natural gas}} \text{ (kWh)} = \frac{\text{natural gas (Nm}^3\text{)} \cdot \text{NCV}_m \text{ (kCal/Nm}^3\text{)}}{860 \text{ (kCal/kWh)}} \quad \text{Energy equivalent to natural gas consumed (78)}$$

NCV_m = 8,500 kcal/Nm³ (net calorific value of natural gas)

NCV_d = 10,000 kcal/kg (net calorific value of diesel oil)

860 = energy conversion factor from kcal to kWh

0,835 = specific weight of diesel oil (kg/l)

NB: the calorific values used for Acea Produzione are the effective ones taken from the gaugings of the natural gas and diesel oil suppliers

CALCULATION 3

$$\text{efficiency (hydroelectric)} = \frac{\text{Energy}_{\text{hydroelectric}} (\text{MWh}) \cdot 3.6 \cdot 10^9}{[m(\text{kg}) \cdot 9.8(\text{m/s}^2) \cdot h(\text{m})](\text{joule})}$$

Where:

- $3.6 \cdot 10^9$ = water energy conversion factor from MWh to Joules
- m = offtake water for hydroelectric production
- 9.8 = gravitation acceleration at sea level
- h = height of water drop (free surface reservoir- turbine)
- $\text{Energy}_{\text{hydroelectric}}$ = energy produced in the hydroelectric cycle

CALCULATION 4

$$\frac{(E_i)}{(E_i + E_t)} \cdot \epsilon_i + \frac{(E_t)}{(E_i + E_t)} \cdot \epsilon_t = \epsilon_{\text{average}}$$

where:

- E_i = total hydroelectricity produced
- E_t = total thermoelectricity produced
- ϵ_i = hydroelectric efficiency
- ϵ_t = thermoelectric efficiency
- $\epsilon_{\text{average}}$ = average production efficiency

CALCULATION 5

$$\frac{(E_i)}{(E_i + E)} \cdot \epsilon_i + \frac{(E)}{(E_i + E)} \cdot \epsilon = \epsilon_{\text{average}}$$

where:

- E_i = total hydroelectricity produced
- E_t = sum of total energy (thermoelectric and thermal) produced
- E = hydroelectric efficiency
- ϵ_t = efficiency (thermoelectric and thermal)
- $\epsilon_{\text{average}}$ = average production efficiency

CALCULATION 6

$$\text{recovery efficiency} \left(\frac{\text{kWh}}{\text{kg}} \right) = \frac{\text{Gross electricity produced (kWh)}}{\text{RDF (kg)}}$$

Gross electricity produced (kWh) = gross electricity produced at S. Vittore = (item 12)

CALCULATION 7

$$\text{electric efficiency (\%)} = \frac{\text{Net electricity produced (kWh)}}{\text{RDF internal energy (kWh)} + \text{Natural gas internal energy (kWh)}}$$

where:

Net electricity produced at S. Vittore (item 12)

$$\text{Natural gas internal energy (kWh)} = \frac{\text{Natural gas (Sm}^3\text{)} \cdot \text{NCV}_n \text{ (kCal/Sm}^3\text{)}}{860 \text{ (kCal/kWh)}}$$

$\frac{\text{NCV}_n}{860}$ = about 8,500 kCal/Sm³ (net calorific value of natural gas)
= energy conversion factor from kcal to kWh

$$\text{RDF internal energy (kWh)} = \frac{\text{RDF (kg)} \cdot \text{NCV}_w \text{ (kCal/kg)}}{860 \text{ (Kcal/kWh)}}$$

$\frac{\text{NCV}_w}{860}$ = 3,583 kCal/kg (15,000 kJ/kg) – RDF average net calorific value
= energy conversion factor from kCal to kWh

CALCULATION 8

$$\text{recovery efficiency} = \left(\frac{\text{kWh}}{\text{kg}} \right) = \frac{\text{Gross electricity produced (kWh) at Terni}}{\text{pulper (kg)}}$$

Gross_{electricity} produced (kWh) at Terni = Gross electricity produced = (item 13)

CALCULATION 9

$$\text{electric efficiency (\%)} = \frac{\text{Net electricity produced (kWh)}}{\text{RDF internal energy (kWh)} + \text{Natural gas internal energy (kWh)}}$$

where:

Net electricity produced at Terni (item 13)

$$\text{Natural gas internal energy (kWh)} = \frac{\text{Natural gas (Sm}^3\text{)} \cdot \text{NCV (kCal/Sm}^3\text{)}}{860 \text{ (kCal/kWh)}}$$

$\frac{\text{NCV}_n}{860}$ = about 8,500 kCal/Sm³ (net calorific value of natural gas)
= energy conversion factor from kCal to kWh

$$\text{Pulper internal energy (kWh)} = \frac{\text{pulper (kg)} \cdot \text{NCV}_p \text{ (kCal/kg)}}{860 \text{ (kCal/kWh)}}$$

$\frac{\text{NCV}_p}{860}$ = 3,635 kCal/kg (15,216 kJ/kg) - Pulper average net calorific value
= energy conversion factor from kCal to kWh

EXPLANATORY NOTES TO THE *ENVIRONMENTAL ACCOUNTS*

The figures presented in the *Environmental Accounts* have been produced and audited by the pertinent divisions.

Responsibility for the correct formation of the figures has been maintained within the individual production units, pending the implementation of a standardized Environmental Management System, capable of coding the procedures for obtaining a regular flow of numeric information. Before final acceptance, however, the official figures have been subject to a validation process which anticipated four control procedures:

1. comparison with the historical data in order to highlight and justify any significant discrepancies;

2. repetition at least twice of the acquisition process;
3. feedback to the divisions responsible for the final validation of the figures;
4. sample audit carried out by an auditing firm.

The figures have been divided up into three categories:

- estimated;
- calculated;
- measured.

In the event of estimated data, the greatest of attention was paid to checking the reasonableness of the underlying criteria used, with the aim of resorting as little as possible, in the future, to this form of measurement of the

environmental parameters.

When the figures are the result of calculation, the algorithm used has been concisely specified in order to permit the full comprehension of the mathematical result.

When, lastly, the data has been measured, an estimate of the uncertainty to be associated with the number is provided.

ADDITIONAL INFORMATION ON FIGURES PROVIDED IN THE ENVIRONMENTAL ACCOUNTS

ENERGY SECTOR PRODUCTS	
Item No	explanation – comment
1	Total gross energy produced by the Group. This figure is calculated.
2	Electricity produced net of losses due to just the production phase. This figure is calculated.
3=4+5	Total electricity produced by the Acea Produzione plants, gross of losses. It includes thermoelectric and hydroelectric energy. Includes hydroelectric and thermoelectric energy. The figure is measured with uncertainty of less than $\pm 0.5\%$.
6=7+8+9	Electricity losses attributable to just the production phase of the Acea Production plants. Includes: internal consumption (thermo and hydro) and initial transformation losses. The figure is measured with uncertainty of less than $\pm 0.5\%$.
10	Electricity produced by the Acea Produzione plants, net of losses. This figure is calculated.
11 = 12+13	Electricity produced by the waste to energy plants: San Vittore del Lazio plant and Terni plant belonging to A.R.I.A. Note that the fuel used by the two plants (RDF- Refuse derived fuel - for San Vittore and industry pulper for the Terni plant) comprises both biodegradable organic material, therefore neutral with regard to the CO ₂ balance, and non-biodegradable organic substances (plastic, resins. etc.). In 2014 the renewable share for San Vittore was equal to 50%, the Terni share equal to 41%.
14	Internal consumption of the two waste to energy plants at San Vittore and Terni + transformation losses at San Vittore. The figure is measured with uncertainty of less than $\pm 0.5\%$.
15	Electricity produced by the two waste to energy plants at San Vittore del Lazio and Terni, net of internal consumption and transformation losses. This figure is calculated.
16	Gross energy produced by photovoltaic plants. The figure is measured with uncertainty of less than $\pm 0.5\%$.
17	Total losses in photovoltaic generation phase, due above all else to the Joule effect (dissipation with heating) in the equipment. Estimated figure.
18	Net photovoltaic energy made available by the generation plants. The figure is calculated.
19	Thermal energy produced at the Tor di Valle co-generation plant, gross of losses. The item is measured with uncertainty of $\pm 2\%$ in correspondence with the delivery pipes of the boilers. The thermal energy is produced by the co-generation plant, comprising a turbogas unit and superheated water regeneration generator powered by the hot exhaust fumes of the turbogas units, with the possibility of integration via Galleri-type auxiliary boilers.
20	Thermal energy losses of the district heating system, due to: heat dispersion, losses on the network, technical emissions due to maintenance work, thermal recoveries of the heat accumulation systems. The item is calculated as the difference between the thermal energy produced and that effectively supplied to the customers (billed).
21	Net thermal energy supplied to end customers. The item, calculated, was obtained from the reading of the billed consumption.
22	Electricity supplied by Acea Produzione to Acea Energy SpA involving infra-Group exchange. The item is marginal due to the decision made by the Acea Group to sell the electricity produced on the electricity exchange or by means of bilateral agreements.
23	Net electricity acquired on the market by: — Sole Buyer for 2.852,9 GWh — Imports for 432,1 GWh — Market for 7.666,6 GWh. The item is measured with uncertainty of $\pm 0.5\%$.
24	Energy requested on the Rome and Formello distribution network by all the connected customers (free + protected markets). This item is estimated.
25	Electricity losses which take place during the distribution and transmission phase. These are attributable to: transformation and transport losses, fraud and erroneous measurements. This item is estimated.
26	Internal uses of electricity for the performance of distribution activities. The item is estimated.
27	Electricity transferred to third parties. This involves exchanges of energy between distribution companies. The item is measured with uncertainty of $\pm 0.5\%$.
28	Total net electricity conveyed to customers in free market connected to the Rome and Formello electricity distribution network. This includes both the portion of electricity sold by Acea Energia and that sold by other operators active on the free market. The item is measured with uncertainty of $\pm 5\%$ according to the CEI 13-4 standard.
29	Net electricity sold to customers in enhanced protection market. The downwards trend is the consequence of the progressive changeover of protected customers to the deregulated market, in other words it is the direct consequence of the process for de-regulating the electricity market underway in Italy since 1999 (Italian Legislative Decree No. 79/99). The item is estimated on the basis of the readings of billed consumption.
30	Net electricity sold by Acea on the free market at Italian national level. Includes the sold on Rome and Formello (item 28). Total sales on the free and the protected market is obtained by summing the items (29) and (30). The figure is estimated.
31	Lighting flux supplied by the public lighting system in Rome. The item, calculated, represents the product between the number of lamps installed and the related value of "rated" lighting flux. As a result of the overestimation introduced by: 1. abatement of efficiency due to the ageing of the lamps; 2. shutdown due to faults; 3. shutdown due to maintenance; it is believed that a more realistic supplied lighting flux figure equates to the item provided, decreased by 20%.
32	Total number of gaugings/checks carried out benefiting the energy area. The item is calculated as the sum of the individual calculations made by the pertinent laboratories.

ENVIRONMENT SECTOR PRODUCTS

Item No	explanation – comment
33	Incoming total waste. These are the amounts arriving at SAO plant: Municipal solid waste, organic fraction, green, non-hazardous industrial waste. This figure is calculated.
34	Landfilled waste, either directly or after processing. The figure is calculated.
35	Recovered waste - not sent to landfills. This is glass, paper and paperboard, iron and plastic. In 2014 the figure includes 2,983 tons of waste to energy residues, used for covering the landfill at the end of the day. The figure is calculated.
36	Compost produced at the SAO plant. The data is measured with an uncertainty of $\pm 1\%$.
37	Reduction for stabilisation. Represents the mass loss caused by such as natural transformation of matter and evaporation water loss. This figure is calculated.
38	Incoming sludges. This is the amount of incoming sludges at the Acquaser plants: Kyklos, Solemme and Samace. The item is measured with uncertainty of $\pm 1\%$.
39	Incoming green. This is the amount of green from the parks, forests and other areas arriving at Acquaser plants: Kyklos, Solemme and Samace. The data is measured with an uncertainty of $\pm 1\%$.
40	Organic fraction from incoming waste collection. It represents the total quantity of organic fraction resulting from recycling collection. The item is measured with uncertainty of $\pm 1\%$.
41	High Quality Compost. It represents the amount of high quality compost produced at the Acquaser plants, Kyklos, Solemme and Samace. The item is measured with uncertainty of $\pm 1\%$.
42	Non-compostable material to disposal. It is the non-biodegradable matter, as plastic, that is sent to disposal as unfit to be composted. The item is measured with uncertainty of $\pm 1\%$.
43	Total analytical controls. The item represents the total of analytical determinations made at the following plants: SAO, Kyklos and Solemme. The item is calculated.

WATER SECTOR PRODUCTS

Item No	explanation – comment
44	Total drinking water withdrawn from the environment or from other systems. This is the sum of the water withdrawn by the Group companies: Acea Ato 2 (Rome), Acea Ato 5 (Frosinone); Gori (Sarnese Vesuviano); Acque (Pisa); Publicacqua (Florence); Acquedotto del Fiora (Grosseto); Umbra Acque (Umbria). The item is calculated.
45	Total drinking water delivered to the distribution networks of the companies listed under item 44 net of losses due to the water supply at sources. The figure is estimated.
46	Total drinking water supplied to the respective customers of the companies listed in item 44. The figure is estimated.
47	Total drinking water withdrawn from the sources except the high drains, by the company Acea Ato 2 and introduced into the aqueduct system of the Rome historic network. It includes the water withdrawn from Lake Bracciano, treated. The item is measured with uncertainty of $\pm 3\%$.
48	Total drinking water sold to Municipalities located along the route of the aqueducts. The item is measured and is affected by a systematic error estimated as around - 5%.
49	Drinking water introduced onto non-drinking water network. These are events which take place in the case of maintenance or extraordinary measures which make the dedicated non-drinking water resource insufficient. The item is estimated.
50	Drinking water returned to the environment / technical operating volumes with reference to the Rome “historic” distribution network (Rome + Fiumicino). This figure is calculated.
51	Total drinking water transported to the Rome “historic” distribution network (Rome + Fiumicino), net of the losses due to the water supply at sources. The item is estimated.
52	Total drinking water supplied in the Municipality of Rome on the “historic” network (Rome + Fiumicino). The figure represents estimated consumption due to the entire territory served. It includes the consumption due to users, drinking fountains, pipe washing activities, etc. The figure 2014, according to the AEEGSI Resolution no. 5/2014, includes the “water delivered to other aqueducts (A08)”. The item is estimated.
53	Overall distribution losses – Rome “historic” network (Rome and Fiumicino). This is the parameter A17 of the Italian MD No. 99/97 defined as the quantity of water lost during distribution: $A17 = A9 - (A10 + A11 + A12)$ = overall losses in distribution, where, for 2014 figures: Parameter A9 of MD 99/97 – total volume of water introduced onto the network. According to the AEEGSI Resolution no. 5/2014, includes the “water delivered to other aqueducts (A08)”; Parameter A10 of MD 99/97 – gauged volume of water supplied to the end user, including, as per the above Resolution, the “water delivered to other aqueducts (A08)”; Parameter A11 of MD 99/97 – consumed uses, billed but not measured; Parameter A12 of MD 99/97 – as established by the aforementioned AEEGSI resolution, the parameter is identified as the “not measured and not invoiced volume” of the used water (authorized) , estimated as $0.005 \cdot A10$; Parameter A14 of MD 99/97 – water lost apparently for not authorized/not billed consumption, totaling -as estimated by the AEEGSI- $0.002 \cdot A10$; Parameter A16 of MD 99/97 –water lost apparently for measurement errors due to utility meters installed, totaling -as estimated by the AEEGSI- $0,04 \cdot A10$; The item is estimated.

WATER SECTOR PRODUCTS

Item No	explanation – comment
54	Effective distribution losses – defined by the AEEGSI as A09-A10-A11-A12-A14-A16. The figure is estimated.
55	Total non-drinking water taken from the environment, gross of losses. This item is estimated.
56	Total non-drinking water supplied to Rome and Fiumicino. The item, calculated, corresponds with total water billed.
57	Total non-drinking water supplied to Municipalities other than the Municipality of Rome and Fiumicino. This is a small estimated quantity.
58	Total drinking water withdrawn from the sources except the high drains, by the company Acea Ato 2 and introduced into the Central Lazio Optimum Area of Operations ATO 2 (Rome “historic” network + Municipalities acquired) aqueduct system. The item is measured with uncertainty of $\pm 3\%$.
59	Total drinking water sold to other aqueduct systems. The item is measured and is affected by a systematic error estimated as around - 5%.
60	Drinking water introduced onto non-drinking water network. These are events which take place in the case of maintenance or extraordinary measures which make the dedicated non-drinking water resource insufficient. This item is estimated
61	Drinking water returned to the environment / technical operating volumes with reference to the Ato 2 distribution network (Rome and Fiumicino + municipalities acquired as of 31 December 2014). This figure is calculated.
62	Total drinking water transported to the Ato 2 distribution network (Rome and Fiumicino + municipalities acquired as of 31 December 2014). 2014 figure includes the water given to other aqueduct systems, according to AEEGSI Resolution no 5/2014. The item is gauged with uncertainty of $\pm 3\%$. This item was estimated for 2014.
63	Total drinking water supplied (i.e. gauged at the metres, where present) to the customers connected to the Ato 2 network (Rome and Fiumicino + municipalities acquired as of 31 December 2014). The figure represents estimated consumption due to the entire territory served. It includes, from 2014, “water supplied to other aqueduct systems”, according to AEEGSI Resolution no 5/2014.
64	Overall distribution losses – Ato 2 network (Rome and Fiumicino + municipalities acquired as of 31 December 2014). This is the parameter A17 of the Italian MD No. 99/97 defined as the quantity of water lost during distribution. See item 53 for details.
65	Effective distribution losses - Ato 2 network (Rome and Fiumicino + municipalities acquired as of 31 December 2014). This is the sum (A15+A13) of the Italian MD No. 99/97. See item 54.
66, 67, 68	Respectively: quantity of water withdrawn from the environment, introduced onto the distribution network and supplied to its customers by Acea Ato 5 (Frosinone).
69	Overall distribution losses of Acea Ato 5 (Frosinone). This is the parameter A17 of the Italian MD No. 99/97 defined as the quantity of water lost during distribution. See item 53 for details.
70	Effective distribution losses of Acea Ato 5 (Frosinone). This is (A15+A13) of the Italian MD No. 99/97. See item 54.
71	Total waste water conveyed to main treatment plants and treated, concerning: Acea Ato 2, Acea Ato 5, Gori, Umbra Acque, Publiacqua, Acque, Acquedotto del Fiora. This figure is calculated.
72	Total waste water conveyed to the main treatment plants of Acea Ato 2 and treated. This figure is calculated
73	Total waste water conveyed to the treatment plants of Acea Ato 2 and treated, including the quantities treated in the minor plants of the Municipality of Rome and in those outside the Municipality of Rome. This figure is calculated.
74	Total waste water conveyed to the treatment plants of Acea Ato 5 and treated. The figure is calculated.
75	Overall number of analytical controls carried out on drinking water by the Acea Group. The item includes the analysis carried out by Laboratorio and the analysis carried out independently by the companies. This figure is calculated.
76	Overall number of analytical controls carried out on waste water by the Acea Group. The item includes the analysis carried out by Laboratorio and the analysis carried out independently by the companies. This figure is calculated.

RESOURCES USED – ENERGY SECTOR

Item No	explanation – comment
77 = 78 + 79	Total quantity of natural gas used for the generation of electricity and heat at the Acea Produzione and A.R.I.A. production plants. The item, expressed in normal cubic metres (volume at 0°C and 1 Atm), is measured with uncertainty of $\pm 0.5\%$. The figure is estimated.
80	Total quantity of gas oil used for the generation of electricity at the Acea Produzione Montemartini (turbogas) plant. This item is measured with uncertainty of $\pm 2\%$.
81	Quantity of RDF (Refuse derived fuel) sent to the waste to energy process at the San Vittore plant in Lazio. The item is measured with uncertainty of $\pm 1\%$.
82	Quantity of pulper sent to the waste to energy process at the Terni plant. The item is measured with uncertainty of $\pm 1\%$.
83	Total cooling water in the thermoelectric plants. During 2014, as the combined cycle did not produce energy, it was not necessary to use the cooling water for the Tor di Valle plant. This item is estimated.
84	Total water taken from surface resources and from aqueducts (Salisano hydroelectric plant) for the production of hydroelectricity. This figure is calculated.

RESOURCES USED – ENERGY SECTOR

Item No	explanation – comment
85	Total quantity of water used in the industrial processes. The various contributions were due to: - Replenishment of losses on the district heating network. This is drinking water; - Various uses in the San Vittore and Terni waste to energy plants. This is water from aqueduct and from wells. This figure is calculated.
86	Quantity of drinking water used by the companies included in the energy sector for civil/sanitary use. This is represented by the uses of: Acea Produzione, Acea Distribuzione and 50% of the Parent Company consumptions. The item, calculated, refers to billed consumption.
87	This represents the total quantity of new dielectric mineral oil introduced into the distribution substations (only from 2013 the Acea Distribuzione data include, in addition to the primary substations, even secondary ones). From 2014 the quantity of oil present in Petersen coils installed in some primary substations is included: about 225 tons in 256 Petersen systems. The replenishments are net of any disposals/replacements. This item is estimated. The total amount of new dielectric mineral oil entered into the production circuit (transformers, capacitors, storage depots etc.) includes both the figure for Acea Distribuzione and Acea Produzione. This item is estimated.
88	The item represents the total quantity of gaseous insulator (SF ₆) in the systems of Acea Distribuzione. The item is estimated. The total quantity of new gaseous insulator (SF ₆) added to the production circuit represents the amount of replenishments and substitutions of Acea Distribuzione in primary substations. This item is estimated.
89	Quantity of refrigerating fluids used during maintenance of air-conditioning equipment, when the old gas is recovered and replaced with new gas. Note that the R22 gas, still present as refrigerating fluid, can no longer be purchased (European Regulation No. 2037/2000 concerning hazardous substances for the ozone stratosphere) but is still recycled (until 31 December 2014); the replenishments are made using a different gas, R422 D. The item is calculated allocating the total gases purveyed by the Parent Company in equal parts (50%) to the energy area and the water area. This item coincides with item 109.
90	Total chemicals used in the electricity and heat generation process at the plants of Acea Produzione and A.R.I.A. (waste to energy plants). In 2014 the activated carbon consumed in waste to energy plants has also been considered. This figure is calculated.
91	Amount of oils and lubricating greases used by Acea Produzione. The data is measured with an uncertainty of ± 0.5%.
92	This item coincides with item 25.
93	Coincides with the difference between the items 1 and 2.
94	Electricity consumed by the processes not directly linked with the production phases (offices). The item is calculated to an extent equating to 50% of the overall electricity consumed by the Parent Company. The remaining portion of 50% is assigned to the water sector.
95	Other uses of electricity in the energy sector. This figure is calculated.
96	Total electricity consumed by the product systems included in the energy sector. This figure is calculated.
97	Total electricity consumed for public lighting in the Municipality of Rome. This figure is calculated. The figure is calculated on the basis of the plants in operation in the year. At the time of the last update it was considered appropriate to adjust the consumption for 2013 with respect to what published last year, while the figure for 2012 is not viable because overly approximated. The figure is estimated.

RESOURCES USED – ENVIRONMENT

Item No	explanation – comment
SAO	
98	Quantity of water consumed at the plant SAO. It should be noted that the resource comes in part from the marquises (rain water) and partly from the riverbed (river water). The figure is estimated.
99	Total chemicals used at the plant SAO. The figure is calculated.
100	Electricity consumed in SAO. The 2014 big reduction depends from the revamping processing going on from April 2014. The data is measured with an uncertainty of ± 1%.
101	Total amount of gas oil consumed at the plant of SAO. The data is measured with an uncertainty of ± 2%.
101A	Amount of water used for domestic purposes at the plant of Orvieto (SAO). The figure is estimated.
Production of compost	
102	Quantity of water consumed at the plants Kyklos and Solemme. The figure is close to zero as at the two plants, almost all of the water used comes from recycling, after purification with reverse osmosis technology. Water consumption not from recycling are negligible.
103	Total chemicals used at the plants Kyklos and Solemme. The figure is calculated.
104	Electricity consumed at Kyklos and Solemme. The data is measured with an uncertainty of ± 1%.
105	The total amount of fuels consumed at Kyklos and Solemme. The data is measured with an uncertainty of ± 2%.

RESOURCES USED – WATER SECTOR

Item No	explanation – comment
106	The figure represents the sum of the consumption of reagents for drinking water and disinfection of the water in the water companies Acea Ato 2 and Acea Ato 5. In detail this includes: sodium hypochlorite - used as a disinfectant upon the request of the Health Authorities -, aluminium polychloride, caustic soda and ozone. This figure is calculated.
107	Total quantity of chemical reagents used by LaboratoRI for the performance of its duties, in other words the performance of analytical checks benefiting Acea Group companies. The item is measured.
108	Total volume of pure gas for analyses used by LaboratoRI. The item is measured.
109	Quantity of refrigerating fluids used during maintenance of air-conditioning equipment, when the old gas is recovered and replaced with new gas. The item is calculated allocating the total gases purveyed by the Parent Company in equal parts (50%) to the energy area and the water area. This item coincides with item 89.
110	Electricity used for the drinking and non-drinking water pumping plants. The item is measured with uncertainty of $\pm 1\%$.
111	Electricity consumed by the processes not directly linked with the production phases (offices). The figure, equal to item 94, is calculated to an extent equating to 50% of the total electricity consumed by the Parent Company.
112	Electricity used by LaboratoRI. It includes all the energy relating to the various fields of activities of LaboratoRI, not only the laboratory analysis activities. This item is estimated.
113	Total electricity consumed in the water sector. This figure is calculated.
114	Quantity of drinking water used by the companies Acea Ato 2 e Acea Ato 5 for civil/sanitary use. The item, calculated, refers to billed consumption.
115	Quantity of water consumed for civil/sanitary uses within the installations not directly linked with the production phases (offices). The item is calculated to an extent equating to 50% of the overall water consumed by the Parent Company.
116	The figure is calculates as the sum of items 114 and 115.
117	Total quantity of chemicals used in the waste water treatment process. This figure is calculated.
118	Total quantity of lubricant oil and grease used for the apparatus of the water sector (pumps, centrifuges, engines, etc). This figure is calculated.
119	Electricity used for the running of the waste water treatment plants and for the running of the sewage network. The item is measured with uncertainty of $\pm 1\%$.

FUELS USED BY THE GROUP (VEHICLE FLEET AND CONDITIONING)

Item No	explanation – comment
120	Total quantity of petrol used for the Acea Group's vehicle pool. A density value of 0.735 kg/l was used to convert from volume (litres) to mass (kg). This item is measured with uncertainty of $\pm 0.5\%$.
121	Total quantity of diesel used by Acea Group's vehicle fleet. A density value of 0.835 kg/l was used to convert from volume (litres) to mass (kg). This item is measured with uncertainty of $\pm 0.5\%$.
122	Total quantity of gas oil used to heat Acea and Acea Ato 2 workplaces and to power generators. A density value of 0.835 kg/l was used to convert from volume (litres) to mass (kg). This item is measured with uncertainty of $\pm 0.5\%$.
123	Total quantity of natural gas used for heating working environments. In November 2013 (impacting on winter season) the boiler of the piazzale Ostiense has been replaced with a condensing boiler that, thanks to its efficiency, contributed to the reduction of fuel consumption. This item is measured with uncertainty of $\pm 0.5\%$.
124	Total quantity of LPG (liquid petroleum gas) used for heating working environments. A density value of 0.550 kg/l was used to convert from volume (litres) to mass (kg). This item is measured with uncertainty of $\pm 0.5\%$.

SPILLS AND WASTE – ENERGY SECTOR

Item No	explanation – comment
125	Total quantity of carbon dioxide emitted into the atmosphere as a consequence of the generation of thermoelectric energy from fossil fuels and from the waste to energy treatment of RDF and pulper. This is a “physiological” product deriving from combustion. The item is calculated as the sum of the items 126 and 127. The item includes the CO ₂ equivalent estimated on the basis of the SF ₆ replenishments, (item 126B) considering that 1 t of such gas has a warming potential (WP) equal to 22.800 times the CO ₂ WP. The item is estimated.
126	Quantity of carbon dioxide emitted into the atmosphere by the Acea Produzione plants. This item is calculated according to current legislation.
127	Quantity of carbon dioxide emitted into the atmosphere by the A.R.I.A. waste to energy plants. The figure is calculated according to the existing regulations.
128	Total quantity of nitric oxides (NO + NO ₂) emitted into the atmosphere as a consequence of the generation of thermoelectric energy from fossil fuels and from the waste to energy treatment of RDF and pulper. Their presence in trace form in the emissions is due to the secondary undesirable reactions which take place at a high temperature between the nitrogen and the oxygen in the air. This figure is calculated.
129	Quantity of nitric oxides (NO + NO ₂) emitted into the atmosphere as a consequence of the generation of thermoelectric energy from fossil fuels in the Acea Produzione plants. This figure is calculated.
130	Quantity of nitric oxides (NO + NO ₂) emitted into the atmosphere by the A.R.I.A. waste-to-energy plants. This figure is calculated.
131	Total quantity of carbon monoxide (CO) emitted into the atmosphere as a consequence of the generation of thermoelectric energy from fossil fuels and waste to energy process. The presence of this pollutant in the emissions is due to incomplete combustion reactions and represents a symptom of decline in the combustion reaction efficiency. This figure is calculated.
132	Total quantity of carbon monoxide (CO) emitted into the atmosphere as a consequence of the generation of thermoelectric energy from fossil fuels in the Acea Produzione plants. This figure is calculated.
133	Quantity of carbon monoxide (CO) emitted into the atmosphere by the A.R.I.A. waste-to-energy plants. This figure is calculated.
134	Total quantity of sulphur dioxide (SO ₂) emitted into the atmosphere as a consequence of the generation of thermoelectric energy from fossil fuels and from the waste to energy treatment of RDF and pulper. The use of natural gas and gas oil with a low sulphur content in the plants made it possible to sharply contain this type of emission. This figure is calculated.
135	Quantity of sulphur dioxide (SO ₂) emitted into the atmosphere as a consequence of the generation of thermoelectric energy from fossil fuels in the Acea Produzione plants. This figure is calculated.
136	Quantity of sulphur dioxide (SO ₂) emitted into the atmosphere by the A.R.I.A. waste to energy plants. This figure is calculated.
137	Total quantity of dust (microscopic particles with an average aerodynamic diameter equal to or less than 10 thousandths of a millimetre) emitted into the air as a consequence of the generation of thermoelectric energy using fossil fuels and from the waste to energy treatment of RDF and pulper. This mainly involves unburnt amorphous carbon, with traces of other compounds of a mixed composition obtained as a by-product of the combustion when this does not take place completely. This figure is calculated.
138	Quantity of dust emitted into the atmosphere as a consequence of the generation of thermoelectric energy from fossil fuels in the Acea Produzione plants. This figure is calculated.
139	Quantity of dust emitted into the atmosphere by the A.R.I.A. waste-to-energy plants. This figure is calculated.
140	Total quantity of waste water treated, deriving from thermoelectric production activities. This item is gauged with uncertainty of ± 2%.
141	This item coincides with item 83.
142	Total quantity of hazardous waste (pursuant to Italian Legislative Decree No. 152/06) disposed of by Acea Group companies with the exclusion of the waste to energy sector. The item is measured with uncertainty of ± 2%.
143	Hazardous waste (pursuant to Italian Legislative Decree No. 152/06) disposed of from the waste to energy sector. This basically involves light ash and slag deriving from incineration. The item is measured with uncertainty of ± 2%.
144	Total quantity of non-hazardous waste (pursuant to Italian Legislative Decree 152/06) disposed of by the Acea Group companies with the exclusion of the waste to energy sector. The item is measured with uncertainty of ± 2%.
145	Non-hazardous waste (pursuant to Italian Legislative Decree No. 152/06) disposed of from the waste to energy sector. This is essentially heavy ash and slag, deriving from incineration. The item is measured with uncertainty of ± 2%.

SPILLS AND WASTE – ENVIRONMENT

Item No	explanation – comment
146	Hazardous waste (Italian Legislative Decree No. 152/06) disposed from the Kyklos and Solemme plants. The figure is calculated.
147	Non-hazardous waste (Italian Legislative Decree No. 152/06) disposed from the Kyklos and Solemme plants. The figure is calculated.
148	Hazardous waste (Italian Legislative Decree No. 152/06) disposed of by the plant of SAO. The data is measured with an uncertainty of ± 2%.
149	Leachate derived from activities at the composting plants and at SAO. The data is measured with an uncertainty of ± 2%.
150, 151, 152, 153	Among the emissions in Environment, the following are described: dust, Volatile Organic Compounds, ammonia, volatile inorganic acids. The data refer only to the plant of Kyklos. The item 152 (ammonia) includes Solemme. The item is calculated.

SPILLS AND WASTE – WATER SECTOR

Item No	explanation – comment
154	Total quantity of sludge disposed of by Acea Ato 2 and Acea Ato 5. This sludge is non-hazardous waste. The item is measured with uncertainty of $\pm 2\%$.
155	Total quantity of sludge disposed of by Acea Ato 2. The item is measured with uncertainty of $\pm 2\%$.
156	Total quantity of sludge disposed of by Acea Ato 5. The item is measured with uncertainty of $\pm 2\%$.
157	Total quantity of sand and sediment disposed of by Acea Ato 2 and Acea Ato 5. The item is measured with uncertainty of $\pm 2\%$.
158	Total quantity of sand and sediment disposed of by Acea Ato 2. The item is measured with uncertainty of $\pm 2\%$.
159	Total quantity of sand and sediment disposed of by Acea Ato 5. The item is measured with uncertainty of $\pm 2\%$.
160	Total quantity of hazardous waste (pursuant to Italian Legislative Decree No. 152/06) disposed of by Acea Ato 2, Laboratori and Acea Ato 5 plus a portion produced by the Parent Company ascribed in equal parts to the two areas of activities, energy and water. The figure is calculated.
161	Quantity of hazardous waste (pursuant to Italian Legislative Decree No. 152/06) disposed of by Acea Ato 2 and Laboratori. The item is measured with uncertainty of $\pm 2\%$.
162	Quantity of hazardous waste (pursuant to Italian Legislative Decree No. 152/06) disposed of by Acea Ato 5. The item is measured with uncertainty of $\pm 2\%$.
163	Quantity of hazardous waste (pursuant to Italian Legislative Decree No. 152/06) disposed of by the Parent Company. The same amount has been attributed to the Energy Area.
164	Total quantity of non-hazardous waste (pursuant to Italian Legislative Decree 152/06) disposed of by Acea Ato 2, Laboratori and Acea Ato 5 plus a portion produced by the Parent Company ascribed in equal parts to the two areas of activities, energy and water. The item is calculated.
165	Total quantity of non-hazardous waste (pursuant to Italian Legislative Decree 152/06) disposed of by Acea Ato 2 and Laboratori. The item is calculated.
166	Total quantity of non-hazardous waste (pursuant to Italian Legislative Decree 152/06) disposed of by Acea Ato 5. The data is estimated.
167	Quantity of non-hazardous waste (pursuant to Italian Legislative Decree 152/06) disposed of by the Parent Company and ascribed to the water area. The same amount has been attributed to the Energy Area.
168	Total quantity of aggregates (non-hazardous waste - pursuant to Italian Legislative Decree 152/06) disposed of by the water companies Acea Ato 2 and Acea Ato 5. The item is calculated.

ACEA GROUP SPILLS AND WASTE - EMISSIONS FROM VEHICLES

Item No	explanation – comment
169	Total quantity of carbon dioxide emitted by the Acea Group vehicle fleet. The item was calculated using Sinanet emission factors (www.sinanet.isprambiente.it).
170	Total quantity of nitric oxides emitted by the Acea Group vehicle fleet. The item was calculated using Sinanet emission factors (www.sinanet.isprambiente.it).
171	Total quantity of carbon monoxide emitted by the Acea Group vehicle fleet. The item was calculated using Sinanet emission factors (www.sinanet.isprambiente.it).
172	Sulphur dioxide emissions by vehicles were not calculated, as they were extremely small amounts deriving from combustion of modest quantities of sulphur found in latest-generation fuels.
173	Total quantity of carbon dioxide emitted by the air-conditioning systems in the work environments. This item is calculated under the assumption that each toe of fuel used creates 3 tons of CO ₂ .