RELATIONS WITH THE ENVIRONMENT

ENVIRONMENTAL SUSTAINABILITY AND THE PRIMARY CHALLENGES

The principal challenges for environmental sustainability, in the context in which Acea operates, are focused on a few issues, including **climate, water resources, technological innovation applied to infrastructure management and the circular economy**.
As far as climate change is concerned, the Group has been taking action for several years to progressively reduce climate-changing emissions. In 2018 it also embarked on a path towards the implementation of a system that reflects the **UNI EN ISO 14064 standard** (on the inventory of greenhouse gases), which will allow **more accurate analysis and knowledge** of emissions generated by plants.
With regard to water, after the extraordinary drought that hit Italy in 2017, in 2018 the interventions aimed at **reducing water losses continued**. In agreement with the institutions of reference, Acea has laid the foundations for the **construction of an infrastructure of particular value**, the design of a second aqueduct – the so-called "doubling of the Peschiera" – which will **secure the water supply and drinking water** for the city of Rome, from the Peschiera and Le Capore springs. On **technological innovation** (see also *Corporate Identity*, *Context Analysis*) particular attention is paid to applications that concern the **management of networks** and their evolution. Acea has been investing in the **circular economy** for some years now, pursuing the triple objective of reducing community waste, increasing the reuse of process waste – for example by transforming waste into a second raw material – and achieving energy recovery.

At an international level, climate change remains one of the most important environmental and social challenges. In particular, the European Commission has implemented the new long-term strategy "for a prosperous, modern and climate-neutral economy by 2050 - A clean planet for all"[99].
According to this Strategy, the **European Union will seek to lead the transition to a clean, zero-emission planet** (see the box). This is thanks to the commitment of all countries to the development of innovative technological and product solutions, carried out by involving all the players in the supply chain, from the public to politics, from finance to universities and research, with the aim of improving the quality of life. The strategy also aims to comply with the climate agreements defined by COP21 in Paris, which aim to keep the temperature increase well below 2° C, even 1.5° C if possible.
In particular, Europe's strategic vision[100] calls for actions in seven different areas: energy efficiency; deployment of renewable energies; clean, safe and connected mobility; industrial competitiveness and circular economy; infrastructure and interconnections; bio-economy and natural carbon sinks; and carbon capture and storage to reduce remaining emissions.
By the end of 2018, Member States were to submit their **national climate and energy plans**[101] to the European Commission, which are essential to ensure that the 2030 targets are met.

99 The European Commission requests that the European Council, the European Parliament, the Committee of the Regions and the Economic and Social Committee analyse the Union's vision for a zero climate impact Europe by 2050, so that ministers from different countries can present a joint draft at the European Council of 9 May 2019 in Sibiu. http://europa.eu/rapid/press-release_IP-18-6543_en.htm.

100 See https://ec.europa.eu/clima/policies/strategies/2050_en.

101 On 8.01.2019 the Ministry of Economic Development sent the European Commission the ***Proposal for an Integrated National Plan for Energy and Climate*** (PNIEC), as provided for in the Regulation of the European Parliament and of the Council 2016/0375 on the Governance of the Energy Union. The Plan is structured in 5 dimensions: decarbonisation, energy efficiency, energy security, internal energy market, research, innovation and competitiveness.

EU ZERO CLIMATE IMPACT STRATEGY BY 2050

On 28 November 2018, the European Commission presented its **long-term climate strategy**, setting the objective of *"a prosperous, modern, competitive and climate-neutral economy by 2050"*, indicating how *"Europe can take the lead in achieving zero climate impact, investing in realistic technological solutions, involving the public and harmonising actions in key areas, like industrial policy, finance or research while ensuring social equity for a just transition"* (source: European Commission Press Release, 28.11.2018).

The presentation of a long-term EU strategy to reduce greenhouse gas emissions was requested by the European Parliament and the Council. It is not a legislative proposal, but a **strategic vision**, proposing not to change the 2030 climate and energy targets but rather to build on them to enable the EU to develop policies that look to 2050.

The EU Commission underlines that its vision for a zero climate impact future covers almost all EU policies and is in line with the Paris Agreement objective of keeping the temperature increase well below 2° C. The idea is that for the EU to maintain a leading role in zero climate impact, this objective must be achieved by 2050.

The EU Commission invited all European institutions, national governments and parliaments, **companies** and other stakeholders **to examine and discuss the long-term climate strategy** so that it can be examined by the Heads of State and Government at the European Council of 9 May 2019.

(Source: L'Astrolabio 6.12.2018).

Following the Paris Climate Agreement, the **24th UN Climate Conference**, COP24 (see also the box), was held **in Katowice**, Poland in **December 2018**, to implement technical aspects of the Paris Agreement. Among others, the Italian Minister of the Environment spoke and reiterated the importance and urgency for the international community of "accelerating the pace of the fight against climate change, which must include the adoption of an effective package of ambitious rules applicable to all, in full agreement with the spirit of Paris".

THE DECEMBER 2018 CLIMATE CONFERENCE IN KATOWICE - COP24

COP24 closed on 15 December 2018 with the adoption of the **"Katowice Climate Package"**, the "rulebook" for implementing the Paris Climate Agreement. *"The multilateral system has produced a solid result"*, said Patricia Espinosa Cantellano, Secretary-General of the United Nations Framework Convention on Climate Change. *"Now there is a roadmap the international community can follow to decisively tackle climate change"*.

The Katowice Climate Package first sets out **how countries will provide information on their national contributions to reduce emissions** – the Nationally Determined Contribution (NDC) – including mitigation and adaptation measures and details of climate financing for developing economies. The package also includes guidelines for setting **new financing targets from 2025 onwards** and for assessing progress in technology development and transfer.

On the contrary, one of the problematic topics at COP24 on climate change was **the way in which countries will increase their emission reduction targets**. The NDCs as defined after Katowice would ensure an increase in world temperatures of as much as 3° C compared to pre-industrial levels. That is 1.5 degrees more than recommended by the latest report of the IPCC (Intergovernmental Panel on Climate Change).

Among the issues referred to the next Conference of the Parties is the use of cooperative approaches and the sustainable development mechanism, contained in Article 6 of the Paris Agreement. This should allow nations to achieve part of their national mitigation goals through the use of **"market mechanisms"**, like the carbon market or the counting of CO_2 credits linked to forests. However, the divergent positions at the Polish Summit prevented these instruments from being defined in the package.

The next UN conference to finalise the last elements of the Paris Regulation and to start work on future emission targets is scheduled for 2019 in Chile (COP25). However, the crucial moment is in 2020, when countries will have to show that they have met the deadline for their current emissions commitments and produce new targets for 2030. Both Italy and the United Kingdom have applied to host COP26 (source: www.rinnovabili.it).

In this context, recognising the centrality of environmental protection and the fight against climate change and in line with the Paris Agreement, on the one hand **Acea included in its strategy** some **adaptation and mitigation actions with respect to climate change** (see the *2018-2022 Sustainability Plan and the operational objectives* in the *Corporate identity*), on the other hand, as already mentioned, in 2018 it began to verify its own carbon dioxide emissions, setting the inventory of these emissions according to UNI EN ISO 14064-1. It is hoped that this effort, which includes precise reporting of GHG (Green House Gases) emissions by Group companies along with monitoring and calculation procedures will make it possible to improve knowledge of its impact in terms of GHG and, consequently, the effectiveness of mitigation efforts.

CLIMATE RISKS: IN-DEPTH ANALYSIS AND DISCLOSURE

Climate risks, classified by the Task Force on Climate-Related Financial Disclosures (TCFD) as physical and transition risks, fall within the scope of the risks assessed by Acea (see also the chapter on *Corporate Governance and Management Systems* for further information) and reported in the CDP international questionnaire. **As every year – and for more than ten years now – the company participated in the international CDP project (formerly Carbon Disclosure Project)**, considered from the outset to be an important driver at an international level on the subject of emission reduction/mitigation actions.

Acea not only continues to **implement a policy to limit greenhouse gas emissions** and participates in the CDP, but in 2018 it organised some internal initiatives to raise awareness on Climate Change and Carbon Disclosure. In particular, three meetings were held in September 2018:

- a session on **"Climate Change: risks and tools"**, conducted with the help of external professionals including a group of 12 people, managers and company representatives, on the topics of Energy/Environment and Risks. Among the aspects discussed: the international and national debate on climate change; the interest shown by investors in companies' abilities to manage the issue; the potential and related impacts, risks and opportunities for a company like Acea;
- a presentation of the **"CDP Questionnaire: activities and areas for improvement"** with the support of specialised consultants, addressed to the Energy Managers (EM) and other company CDP specialists;
- a meeting led by specialists on the subject of "carbon pricing" and the possibility of using this variable among the elements used to assess the feasibility/convenience of a project: **"Carbon Pricing: a strategic tool for enterprises"**. The meeting was attended by the Energy Managers (EM) of the Group Companies and other persons responsible for relevant issues, for a total of 15 people.

As mentioned above, this year's CDP score for the company – a B, "Management" level – is slightly lower than in 2017, although higher than the industry average (C). This slight regression, which also occurred for the majority of the Italian Utilities participating in the initiative, is partly due to the evolution of the assessment method, which is becoming more challenging year after year, with the aim of encouraging companies to continuously improve. In fact, the Organisation is pushing towards the implementation of increasingly effective measures to reduce emissions of climate-changing gases (GHG), first and foremost CO_2, so as to increase the effectiveness of the fight against climate change and its global consequences (see also the website https://www.cdp.net). Acea took the opportunity to **share the CDP results internally** in January 2019[102], with colleagues who worked on the questionnaire.

Acea has been conducting **a survey on emissions along the supply chain** for some years now, with the aim of raising suppliers' awareness of the issue. In 2018 **a questionnaire was administered to a panel of 114 suppliers**[103] of "goods and services" and "works", asking them, among other things, quantitative environmental information: fuels consumed for any ordinary processes and uses, energy consumed in offices, fuels consumed for transport (see the sections on *Energy consumption outside the Group* and *Greenhouse gas emissions* and also the chapter on *Suppliers*).
Over the last ten years, thanks to the commitment already described and to targeted initiatives like the increase in **production from renewable energy sources**, the increase in **efficiency in the final internal use of energy and in process uses**, the Group **has achieved carbon intensity values** (gCO_2/kWh produced) that are **among the lowest in Italy in the Utilities sector** (see Table no. 60 on energy intensity indices).

PROTECTION OF THE LOCAL REGION

Acea pays attention to the **protection of the local region and the safeguarding of biodiversity**. The main activities include, by way of example, the **protection of the areas around the water sources and the modernisation of the electricity distribution networks**, described in the following paragraphs.
Moreover, the protection of biodiversity is contemplated in the procedures of the **Environmental Management Systems**, in the context of the design and construction of plants, as well as in the management of the relevant areas. For example, in the design, construction and maintenance of overhead HV/MV and LV lines by Areti and in the protection of the basins of the hydroelectric power plants by Acea Produzione, particular attention is paid to the habitat of the birdlife and the ecosystem of the fish species living in surface watercourses. Finally, as required by the Authorisations of existing plants and every time an Integrated Environmental Authorisation is renewed for a plant, this is managed by protecting the flora and fauna and protecting the environment and the landscape in which it is situated.
With reference to a **specific indicator on biodiversity**, required by the GRI Standards and aimed at verifying the presence of species listed in the red list (IUCN) and in the national lists of protected species in the areas of operation, **in 2018** Acea **launched a specific analysis**. In particular, a first part of the investigation concerned an assessment of the possible location of the main treatment plants of the Water companies included in the *consolidated non-financial declaration* – for a total of about 50 plants – within the following types of protected areas: Sites of Community Interest (SCIs), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). A second phase will cover the identification of protected species, if present in the areas of activity, and possible interference. The work begun is expected to be completed in the next two years.

Acea has been monitoring a great deal of information about a particular species for years. In fact, the Peregrine Falcon nests in the area of the Acqua Vergine springs. It is a protected species that, despite preferring open and wild areas to live and nest in, can choose to do so even in artificial constructions, like towers and bell towers, in heavily built-up territories. Every year a large community including scholars, ornithologists and simple enthusiasts follows the lives of the Peregrine Falcons who live among the Acqua Vergine springs, thanks to a webcam managed by Ornis italica, an association of researchers promoting the Birdcam.it project, which broadcasts images of a nest situated on Acea infrastructure (www.birdcam.it).

[102] The results of the CDP 2018 scoring were made public on the web on 22 January 2019.

[103] The suppliers to whom the form was sent requesting data concerning the consumption of electricity and CO_2 emissions (in order to quantify the Group's Scope 3 type emissions) were identified, as was already done for 2016, among the most relevant in terms of turnover.

SPRINGS AND PROTECTED AREAS

Through the companies **Acea Ato 2, Acea Ato 5 and Gesesa**, the Group mainly uses springs located in uncontaminated areas for water supply. For example, Rome is one of the few metropolises in the world to be able to boast a water resource of such excellent quality at the origin that it hardly requires pre-treatment for purification.

The supply system of the entire area covered by Ato 2 - central Lazio is composed of **seven large aqueduct systems** that transport water derived from 14 main sources to the distribution networks and from numerous smaller local sources (mainly wells), for a **total flow that exceeds 21,000 litres/second**. The drinking water distribution network extends for **9,486 km**. In addition to this priceless natural heritage, Lake Bracciano is a reserve to be used only in cases of emergency, after treatment. In 2018, Acea Ato 2 **completed the preparation of a water purification plant** for the Tiber that, once having obtained the necessary authorisations, will be ready to be used for emergencies and after purification with an advanced treatment and disinfection process.

The drinking water system of the land of Ato 5 Southern Lazio - **Frosinone** is constituted by installations and networks, of conveyance and distribution, which are in charge of **7 principal sources** from which **likewise water pipeline systems** have their origin, for a total of **5,200 km**; the drinking water system of the province of **Benevento** also boasts a plurality of sources from which originates the water network of about 170 km of pipelines and conveyance and about 1,540 km of network of distribution.

Protection and safeguarding of water resources are also facilitated by compliance with the provisions of Legislative Decree no. 152/2006, which, in Article 94, regulates the methods for protecting areas where there is surface water and groundwater intended for human consumption.

Tables nos. 44, 45 and 46 describe the location and surface areas in square metres of the areas **subject to absolute protection**[104] respectively in the province of Rome, in the province of Frosinone and in that of Benevento.

TABLE NO. 44 - THE PRINCIPAL SOURCES UNDER PROTECTION IN ATO 2 - CENTRAL LAZIO

sensitive area	location	surface (m^2)
Peschiera springs	municipality of Cittaducale (Rieti, Lazio)	375,322
Le Capore springs	municipality of Frasso and Casaprota (Rieti, Lazio)	997,848
Acqua Marcia spring	municipalities of Agosta-Arsoli-Marano Equo (Rome)	1,181,979
Acquoria spring	municipality of Tivoli (Rome)	17,724
Acqua Felice - Pantano spring	municipality of Zagarolo (Rome)	779,143
Pertuso springs	municipality of Trevi - Filettino (Lazio)	133,711
Doganella sources	municipality of Rocca Priora (Rome)	350,000
Acqua Vergine springs	municipality of Rome	500,000
Torre Angela wells	municipality of Rome	70,829
Finocchio wells	municipality of Rome	64,166
Lake of Bracciano	municipality of Rome	169,200

TABLE NO. 45 - THE PRINCIPAL SOURCES UNDER PROTECTION IN ATO 5 - SOUTHERN LAZIO

sensitive area	location	surface (m^2) (*)
Posta Fibreno wells	municipality of Posta Fibreno (Frosinone)	20,000
Tufano wells	municipality of Anagni (Frosinone)	18,000
Capofiume spring	municipality of Collepardo (Frosinone)	10,000
Madonna di Canneto spring	municipality of Settefrati (Frosinone)	10,000
Forma d'Aquino wells	municipality of Castrocielo (Frosinone)	20,000
Carpello wells	municipality of Campoli Appennino (Frosinone)	15,000
Mola dei Frati wells	municipality of Frosinone	5,000

(*) The surface area data is estimated.

TABLE NO. 46 - THE PRINCIPAL SOURCES UNDER PROTECTION IN THE PROVINCE OF BENEVENTO - ATO - CALORE IRPINO

sensitive area	location	surface (m^2)
12 wells	municipalities of Benevento, Telese Terme, Castelpagano, Vitulano, Melizzano, Sant'Agata de' Goti, Cautano and Forchia	9,110
Ciesco spring	Castelpoto	307

[104] The areas of absolute protection are the areas immediately surrounding the catchments or off-springs, as defined in Legislative Decree no. 152/2006.

TABLE NO. 46 - THE PRINCIPAL SOURCES UNDER PROTECTION IN THE PROVINCE OF BENEVENTO - ATO - CALORE IRPINO (follow)

sensitive area	location	surface (m^2)
Faitillo and Orto dei Ciuffi spring	San Giorgio La Molara	2,412
Gradola spring	Tocco Caudio	707
Monticelli spring	Castelpagano	358
Pietrafitta and Ruggiero spring	Torrecuso	2,242
San Vito spring	Frasso Telesino	249
Voneventa spring	Molinara	516

For the monitoring of the territory where the springs are located, Acea has also been using **"satellite observation"** for some time. Surveillance has been concentrated in the places in which there has been noted – on the basis of the comparison between two images taken from space at a distance of several months – an unjustified or in any event suspect morphological variation, such as new, unsurveyed constructions, earth movements, small landfills. The staff of Acea Ato 2 have been invited to the identified site in order to ascertain the existence of real threats to the water resource, allowing a **precise and effective defence action**. Indeed, **246 suspect changes**[105] were found in 2018.
Satellite monitoring has been used mainly for the areas of East Rome and Southeast Rome, within which there are areas of protection for important water resources and related water systems. A new development in 2018 was the **internalisation of the change detection process**, which allowed **areas of interest to be more precisely defined**, making **control faster and more efficient**. The company's objective for 2019 is to extend satellite monitoring to all the plants managed for about 1,600 km of aqueducts and an area of 3,000 km^2.

Overhead infrastructure for the **distribution of electricity** (high and medium voltage) have **potential impacts on birds**. For this reason **Areti takes risk mitigation initiatives** in collaboration with the competent authorities, making use of the best technological solutions to the problems that might be encountered in sensitive areas or areas of particular naturalistic value (see the *Memorandum of Understanding for the rearrangement of the electricity network* in the paragraph *Energy distribution*).

SUSTAINABILITY INNOVATORS. THE CHALLENGE!

"Sustainability Innovators" is an internal company contest launched in 2018 to collect and select innovative ideas (product or process) in the businesses of the Acea Group that involved a large number of employees.
The competing projects had to have innovative content: new solutions to specific problems or products, processes, services, more effective and efficient ways than those already existing and demonstrate how to produce tangible benefits in one or more of the three meanings of **sustainability: economic, social, environmental.**
Participation in the contest was not allowed on an individual basis but rather as a **group**, which encouraged the exchange of ideas and engagement among colleagues from different professional backgrounds. 14 teams consisting of a total of 56 people participated, and in the end 18 projects were presented.
The Assessment Committee, composed of the Managing Director, the Directors of the Business Areas and a member representing the Acea Board of Directors **selected three projects** and rewarded the teams that proposed them during a specially organised event. The **winning projects** concerned innovation **applied to** both **production processes** and customer relations. Each team won € 2,000 offered by the Acea Ethics and Sustainability Committee. The **Social Prize** was also awarded to the **project receiving the most votes on the company's Intranet**.

ENVIRONMENTAL MANAGEMENT

The **Management Systems** integrated and certified according to the UNI EN ISO standards are implemented, or in the process of implementation in the majority by the company (see the chapter *Corporate governance and management systems* in *Corporate Identity*). The parent company itself has **an Integrated Management System with Quality, Environment, Safety and Energy components** that facilitates environmental compliance, and a **Sustainability Policy and QASE System** that guides the Group's approach to respecting and protecting the environment, also in line with the principles set out in the *Code of Ethics*, renewed in 2018.

Each year the commitment of the operational companies to keep the system of management of environmental issues efficient is very high. Nonetheless, situations can occur – usually provoked by contingent circumstances – that generate **non-conformities** that may be questioned by the competent control bodies.
During the year, about **180 environmental disputes** involving the main operating companies were recorded. In 2018 the amount paid for fines resulting from the outcome of this type of dispute was **approximately € 140,000**.
It should be noted that the Aprilia plant – placed under preventive seizure in 2017 by the Public Prosecutor's Office of Latina for aspects related to odorous emissions – despite the validity of the provisions of the Public Prosecutor's Office was able to restart practically full operations in April, Acea having responded to the notices of compliance prescribed by the relevant authorities (Arpa, Lazio Region, NOE).

Environmental complaints from individual users are not systematically monitored, except indirectly. The majority of the Companies of the Group (such as for example Acea Ato 2, Acea

[105] The 246 anomalies were found up to August, as the last batch of images is currently being processed. For the missing period a further 6 points requiring attention can be estimated.

Ato 5, Gesesa and the companies of the Environment Area), indeed, **receive reports principally from the Control Bodies** or other Relevant Bodies, to which individual citizens address themselves. The Bodies, therefore, act autonomously with checks on site and, at times, they initiate proceedings and impose penalties, as mentioned above. Exceptionally, it may happen that the company receives significant reports from individual persons; in this case they will be checked and, where opportune, it will intervene to resolve them.
Furthermore, in the case of Areti, with respect to energy distribution, observations can be made regarding alleged environmental damage in the case of buildings housing electrical plants. However, this concerns **installations indispensable for the correct exercise of the electricity distribution network**, created by Areti following **authorisations granted by Bodies which are custodians of the land** and therefore fully compliant with the legislation of reference, including both town planning and environmental legislation[106]. The Assets Unit, which defends the company's assets, receives the notes of dispute from the owners of the immoveable properties which host the **power lines/transformer substations**, and, subsequently, the **Safety/Security Unit carries out the instrumental checks** in response to the disputes. During 2018 **4 environmental checks were processed and closed with a positive outcome** (concerning electromagnetic fields and transformer substations).

THE MANAGEMENT AND CONTROL OF ACTIVITY WITH ENVIRONMENTAL IMPACTS

The Group monitors the processes which have the **potential capacity to generate environmental impacts** and in particular the activities which necessitate the use, or envisage the presence in installations, of materials which are intrinsically dangerous, such as for example sulphur hexafluoride, radon and dielectric oil.
With regard to the latter, in particular, Areti continued its **experimentation with vegetable oil** in 2018. If fact, **dielectric oil** is a substance used as an insulating and cooling fluid in power transformers, which has advantageous technological characteristics and also some environmental issues related to its chemical nature as a derivative of petroleum. The experiment, started a few years ago, is based on the use of an **insulating liquid of vegetable origin (natural esters)**, which has electrical and physical characteristics similar to oil of a mineral origin, but the significant advantages of a **higher temperature of flammability** and a **total biodegradability and reusability** at the end of life. The ongoing experiments, having the precautionary aim of maximising confidence with this new product by minimising any risks and/or defects connected with its use, concerns **three MV/LV transformers designed and built for this purpose** (two with 400 kVA power and the third with 630 kVA power put into operation in 2015.

ENERGY SEGMENT

REFERENCE BOUNDARY

The *Energy Segment* chapter includes Areti, Acea Produzione and Acea Ambiente's plants. The Ecogena production data are included, as in 2017, in a table in the chapter Energy and water use and are not included in the general data of this chapter. The waste to energy activities are described in the chapter Environment Segment - Waste Management.

968 GWh TOTAL PRODUCED ENERGY:
72% FROM RENEWABLE SOURCES
(**696** GWh)

130 TOE/1,000 SAVED
FROM CONVENTIONAL SOURCE AND **250,000**
TONS OF CO_2

The Group **oversees the entire electricity supply chain** thanks to the operations of companies that, as required by the regulation of the electricity market, are independent of each other.
In particular, Acea is active in the **production** of electricity and heat; in the **distribution** of electricity in the Rome and Formello areas, including the management of public lighting; and in the **sale** of electricity, heat and gas.

Acea is also committed to innovation applied to the management of networks – remote management and smart grid – having to manage, for example, prosumers connected to its energy distribution network, whose flows of electricity generation and consumption are no longer one-way (see also box *"Prosumers" connected to the Acea network* in the chapter *Customers and the community* and the sub-section *Commitment to research and innovation* in *Institutions and the company*).

ENERGY PRODUCTION: FOSSIL AND RENEWABLE ENERGY SOURCES

GROUP PLANTS

Acea produces electricity mainly through **hydroelectric plants; a significant share** is produced by **waste-to-energy** of **pulpers and Secondary Solid Fuel** - CSS, a primary energy source derived from waste and partly **renewable**.
The generation from hydroelectric sources (renewable) and thermoelectric from fossil sources – this latter principally by means of a **high-efficiency cogeneration plant, renovated in 2017** – is entrusted to **Acea Produzione**; the inventory of generators available to the company is comprised by:

106 In this case, the environmental regulatory reference is D.P.C.M. of 8 July 2003.

- **7 hydroelectric power stations** located in the Lazio and Abruzzo regions (**122 MW**);
- **2 thermoelectric power stations** located in the territory of the Municipality of Rome: Montemartini (78.3 MW) and Tor Di Valle (19.0 MW)[107], for **97.3 MW_e total installed power available**.

The company **Acea Ambiente** ensures the generation of energy from waste-to-energy with **two waste-to-energy plants** located in San Vittore del Lazio and Terni.
The total gross electrical power currently available is equal to about **58 MW_e**.
The installed power generation framework is completed by a small **photovoltaic farm** of about **8.5 MW_e** (see Chart no. 43).

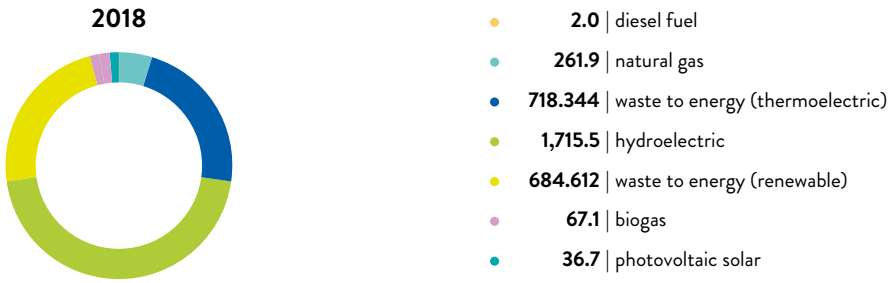
ELECTRICITY PRODUCED

In 2018 total gross electricity production was **about 968 GWh, up** on the previous year (+16% compared to 838 GWh in 2017). The increase in production is due mainly to the full operation of the new CAR module in Tor di Valle and to the hydroelectric contribution (the latter +25%).

The share of electricity generated by **renewable sources**, about **696 GWh**, has proven to be **clearly predominant** and equal to **about 72% of the total**, with the following contributions:
- 477 GWh from hydroelectric power;
- 190 GWh from waste-to-energy;
- 19 GWh from biogas (Orvieto plant);
- 10 GWh from solar panels (see Chart no. 42 and Table no. 49).

With regard to the **share of green energy from waste to energy, about 49%** of the production from this type of plant **is renewable**, being associated to the combustion of the **biodegradable fraction of waste** used as a primary source. In particular, **the renewable share of the fuel** (RDF) entering the **San Vittore del Lazio plant** proves to be equal to **51%** of the total of waste to energy, while **in the Terni plant** this share proves to be around **42%**.

CHART NO. 42 - ELECTRICITY PRODUCED SUBDIVIDED BY PRIMARY ENERGY SOURCE (TJ) (2018)



NB The values reported in the chart are expressed in TJ (1 GWh=3.6TJ).

THERMAL ENERGY PRODUCED

During 2018 Acea Produzione continued the project of **extending the district heating network** of Mezzocammino district in the zone South of Rome was pursued.
After completion of the modernisation project, the Tor di Valle thermoelectric power plant generated about **98 GWh** of **thermal energy**.

The new plant, equipped with two high efficiency internal combustion engines of 9.5 MW each, **earned CAR qualification from the GSE**.
The heat generated was used to serve a basin of about **39,370 inhabitants in the zone South of Rome** (Mostacciano, Torrino, as well as the cited Mezzocammino) by means of a district heating network which sever a volume equal to about 3,590,632 cubic metres.

TABLE NO. 47 - GROSS HEAT PRODUCED BY THE TOR DI VALLE POWER STATION (2016-2018)

gross heat produced (kWh_t)	2016	2017	2018
Tor di Valle thermoelectric power station	90,027,823	96,187,780	98,375,640
CAR module (operational since September 2017)	*n.a.*	*34,917,430*	*98,375,640*
Gas Turbine Group in Cogeneration (January-August 2017)	*13,172,350*	*11,946,893 (*)*	*0*
Auxiliary furnaces (Galleri) (January-August 2017)	*76,855,473*	*49,323,157 (*)*	*0*

(*) The old plant was in production up until August 2017. The data is relative to the period January - August 2017. In 2018 the plant only operated as a CAR plant.

[107] The Tor Di Valle power station, historically constituted by a cogeneration plant (19.3 MW) and a combined cycle plant (126 MW), has taken the combined cycle plant out of action, whilst it has renovated the cogeneration plant. Today Tor di Valle consists of a single High Yield Cogeneration (CAR) plant, which has been in operation progressively since 2017. 2018 is therefore the first year in which it has been operating at full capacity for a full 12 months.

TABLE NO. 48 - THE ELECTRIC POWER STATIONS OF ACEA PRODUZIONE

hydroelectric power stations	thermoelectric power stations
Castel Madama Power Station (Rome) gross power **9.4 MW**	Tor di Valle Power Station: high efficiency cogeneration section (CAR)(*) (Rome) methane fuel - gross power **19.0 MW**
G. Ferraris power plant in Mandela (Rome) gross power **8.5 MW**	Montemartini (Rome) power plant diesel fuel - gross power **78.3 MW**
Salisano (Rieti) power plant gross power **24.6 MW**	
G. Marconi power plant in Orte (Viterbo) gross power **20.0 MW**	
Sant'Angelo (Chieti) power plant gross power **58.4 MW**	
Cecchina (Rome) power plant gross power **0.4 MW**	
Madonna del Rosario (Rome) power plant gross power **0.4 MW**	
GENERAL TOTAL: GROSS CAPACITY 219 MW	

(*) The CAR plant in Tor Di Valle, which has replaced the old cogeneration and combined cycle sections, provides district heating service in the area south of Rome.

The installed capacities, which **overall amount to about 287 MW**[108] are represented in Chart no. 43, distinguished by energy source.

CHART NO. 43 - INSTALLED ELECTRICAL POWER OF THE GROUP SUBDIVIDED BY ENERGY SOURCE (MW) (2018)

(*) Photovoltaic MW under the responsibility of Acea Produzione.

Acea Produzione has continued to **modernise and improve the efficiency of its hydroelectric plants**: after work carried out in previous years at the Guglielmo Marconi, Salisano and Alessandro Volta power plants, in 2018 revamping work continued on the **Galileo Ferraris hydroelectric plant in Mandela**, also in the province of Rome.
The set of works will allow, on the basis of the condition of power installed and authorised in concession, the **use of the available water resource to be optimised**.

The increase in the energy produced by hydroelectric power plants, equal to about 25% compared to 2017, is mainly due to the higher rainfall recorded during the year and to the fact that most hydroelectric power plants have now been revamped and are working better.
As mentioned earlier, the increase in production of thermoelectric power is due to the commissioning of the Tor di Valle power plant. Moreover, its modernisation has optimised the process and has made it possible to reduce consumption and emissions. In fact, while **the thermoelectric energy produced increased by 94%**, consumption of natural gas increased by only 34% and carbon dioxide emissions by 27%.

[108] The total installed power includes the Acea Produzione plants, the waste-to-energy plants and the Orvieto plant (Acea Ambiente) for the production of biogas.

TABLE NO. 49 - ELECTRICITY PRODUCED (BY PRIMARY ENERGY SOURCE) (2016-2018)

primary energy source	2016	2017	2018
	TJ (GWh) (*)		
ELECTRICITY PRODUCED (BY PRIMARY ENERGY SOURCE)			
diesel fuel	4.3 (1.2)	7.7 (2.2)	2.0 (0.6)
natural gas (cogeneration)	32.0 (8.9)	135.2 (37.6)	261.9 (72.8)
waste to energy (for 2018: about 51% of the total)	562.3 (156.2)	682.9 (189.7)	718.4 (199.5)
total thermoelectric	**601.9 (167.2)**	**825.8 (229.4)**	**982.3 (272.9)**
hydroelectric	1,402.8 (389.7)	1,369.7 (380.5)	1,715.5 (476.5)
waste to energy (for 2018: about 49% of the total)	613.8 (170.5)	700.2 (194.5)	684.6 (190.2)
biogas	59.8 (16.6)	78.7 (21.9)	67.1 (18.6)
photovoltaic solar (**)	39.2 (10.9)	41.7 (11.6)	36.7 (10.2)
total renewables	**2,115.7 (587.7)**	**2,190.4 (608.4)**	**2,503.9 (695.5)**
general total	**2,717.6 (754.9)**	**3,016.4 (837.9)**	**3,486.2 (968.4)**

(*) 1 GWh = 3.6 TJ.

(**) Photovoltaic includes the production at the plants of the water area (Acea Ato 2) and at the waste management plant of Orvieto, for a total of 1.5 GWh produced.

ENERGY DISTRIBUTION

THE DISTRIBUTION NETWORKS

DISTRIBUTION NETWORK - IN ROME AND FORMELLO: ABOUT **31,000 km**

APPROXIMATELY **10,600 GWh** ELECTRICAL POWER DEMAND ON OUR GRID

INCREASE IN TERRITORIAL PROTECTION (UNDERGROUND HV GRID/TOTAL HV GRID): **46%**

EFFICIENCY ENHANCEMENT ACTIONS ENABLED REDUCING CO_2 EMISSION BY **1,600** TONNES

Areti manages the **electricity distribution network** at Rome and Formello, extending over **about 31,000 km** and capable of supplying a basin of about 2.8 million resident inhabitants. In terms of volumes of electricity distributed, about 9,800 GWh/year, Acea is the third largest Italian operator in the sector.
In Table no. 50 the principal plant data is described with reference to the primary and secondary substations and to the overhead and underground distribution lines.

The **environmental indicator** correlated to the **protection of the land** and calculated as a percentage share of the **underground high voltage (HV) network in relation to the total of the high voltage lines in use** (overhead and underground) **has improved even more**. In fact, the data monitored by year in 2018 were again equal to **46%** (44% in 2017); also due to the **transformation and modernisation of the high and very high voltage electricity distribution networks**.

TABLE NO. 50 - ENVIRONMENTAL INDICATORS: NUMBER OF OVERHEAD AND UNDERGROUND DISTRIBUTION LINES AND PLANTS (2016-2018)

Areti

systems and output	u. m.	2016	2017	2018
High Voltage/High Voltage - High Voltage/ Medium Voltage primary sub-stations	no.	71	71	70
High Voltage/High Voltage and High Voltage/Medium Voltage transformers	no.	170	169	166
transformation power	MVA	7,924	7,921	7,631
sub-stations in use	no.	13,152	13,159	13,211
Medium Voltage/Medium Voltage - Medium Voltage/Low Voltage transformers	no.	12,831	12,832	12,838
transformation power	MVA	6,183	6,203	6,236

overhead and underground networks				
high voltage network - overhead lines	km	321	310	282
high voltage network - underground lines	km	243	243	243
medium voltage network - overhead lines	km	429	419	424
medium voltage network - underground lines	km	10,180	10,137	10,166
low voltage network - overhead lines	km	1,646	1,641	1,641
low voltage network - underground lines	km	17,917	18,147	18,306

With reference to the **electric and magnetic fields**, in particular relative to the primary transformer substations, High and Medium Voltage overhead electricity lines and secondary transformer cabins, the **possible risks for the health** of employees and the community of reference are dealt with, respectively, in the **Risks Evaluation Document** and in the **Corporate Environmental Analyses Document**. Areti conducts periodic **sample checks in the company's sites**, carried out also following reports by users/customers or External Bodies. Additional checks are conducted by ARPA Lazio[109] following specific requests by the public and customers.

MEMORANDUM OF UNDERSTANDING FOR THE REARRANGEMENT OF THE ELECTRICITY NETWORK

2018 saw the continuation of the **plan to modernise the high voltage electricity distribution network (150 kV)**, defined in the **Memorandum of Understanding** signed in 2010 among Areti SpA (formerly Acea Distribuzione), the Municipality of Rome and Terna SpA, which concerned, in particular:

- the completion of the demolition of the 150 kV Rome North-Cassia overhead line, for a total of 9.8 km and 39 supports, consequent upon the activation of the Flaminia-Cassia high voltage line;
- the completion of construction works for the 150 kV "Rome North-San Basilio" line, relative to the stretch to be adjusted for a length of 5.5 km with green coloured pylons and tubular supports, consistently with the requirements of the Rome Nature Body;
- the commencement of construction works for the 150 kV "Rome North-San Basilio" line, relative to the new section from the Rome North Electrical Station for a length of 4 km with green coloured pylons and tubular supports, consistently with the requirements of the Rome Nature Body;
- the start of the demolition of the 150 kV Flaminia 2 - East Sorting 2 line, for a length of 22.6 km and 74 supports.

Upon completion of the Plan, thanks to the lower energy losses, in addition to improving the service and the related social benefits, **there will also be a significant environmental benefit** thanks to the **significant energy savings expected, amounting to about 58 million kilowatt hours**, equivalent to the annual consumption of about 20,000 households.

The management of the electricity distribution network of Rome and Formello is characterised by the **continuous improvement of the performances**, with particular attention to energy efficiency. Therefore, **initiatives to reduce grid losses** continued also in 2018, ranging from the progressive and ongoing replacement of medium voltage levels from 8.4 kV to 20 kV, to the installation of MV/LV transformers with very low losses (see also the chapter on *Customers*, paragraph *Quality delivered*).

The activities performed for the smart city that continue to improve the performance of the networks thanks to the evolution and integration of management systems and, in general, the applications of technological innovation in the management of the network, are illustrated in the chapters *Customers* and *Institutions and the company*.

Also as a result of the activities mentioned above, **energy losses on the grid** during the year amounted to approximately **7.2% of the total transported**, a slight increase compared to the previous two years.

ENVIRONMENT SEGMENT - WASTE MANAGEMENT

REFERENCE BOUNDARY

The chapter includes the activities of the waste treatment hub, the waste-to-energy plants and the compost production plants, all in Acea Ambiente.

ABOUT **14,300 t** OF HIGH QUALITY COMPOST PRODUCED

ABOUT **10,800 kNm³** OF BIOGAS PRODUCED AND, FROM THIS, **19 GWh** OF ENERGY

389,7 GWh OF ENERGY PRODUCED BY WASTE-TO-ENERGY: **+1.4 %** COMPARED WITH 2017

WASTE-TO-ENERGY: ABOUT **457,150 t** OF WASTE INPUT AND ABOUT **100,300 t** OF WASTE OUTPUT: **22%** (OUTPUT/INPUT)

[109] According to the following legislative references: Legislative Decree no. 81/08; Italian Electro-technical Committee Guide 211-6 first ed. of 01/2001; Prime Ministerial Decree 8/7/2003 "Fixing of the limits of exposure, the values of attention and the quality objectives for the protection of the population from electric and magnetic fields at the network frequency (50Hz) generated by the power lines".

Once again this year Acea contributed to the pursuit of some of the objectives set by the four Directives of the "Circular Economy Package" of the European Union, in force since 04.07.2018. In particular, at Ecomondo Acea Ambiente presented some projects aimed at enhancing the value of the waste produced, transforming it into a "secondary raw material" to be reused in the industrial production cycle (see the boxes).

ACEA AT ECOMONDO

The 22nd edition of **Ecomondo** at the Rimini Trade Show took place from 6 to 9 November 2018. The Group participated again this year, taking the event as an **opportunity to spread the culture of social and environmental respect** and to **present some projects of Acea Ambiente** and the industrial initiatives related thereto.

In the **Acea exhibition space four seminars were held on innovative technologies connected with the recovery of matter and energy from scrap and waste**. In particular, the general outline of an industrial project for an innovative plant for the hydrothermal carbonisation of biological sewage sludge was presented, as well as an idea for the **treatment of fly ash** and, finally, a process aimed at transforming Residual Sodium Products (RSPs), waste with hazardous characteristics, into Secondary Raw Materials (SRMs).
For more information: https://www.gruppo.acea.it/it/gruppo/media-eventi/workshop-acea-ecomondo

Acea Ambiente closely follows the issue of **hazardous waste** treatment. Such waste is a by-product that presents the greatest problems for disposal, not only in environmental and social terms, but also in economic terms, given the high cost.
At a national level, in fact, there are few treatment facilities and there is a limited availability of space for the final destination in landfills.

Acea Ambiente is exploring the development of processes for the transformation of waste into second raw materials. For example, sodium bicarbonate and calcium chloride dihydrate can be produced from Residual Sodium Products (R.S.P.) remaining after the waste-to-energy process at the San Vittore del Lazio plant.

WASTE THAT TURNS INTO A SECOND RAW MATERIAL

The project developed by Acea Ambiente allows transforming waste into a second raw material, **reusable within the same production process**.
Thanks to the technology developed and tested experimentally, it will be possible to convert the salts contained in the Residual Sodium Products (R.S.P.) generated from the neutralisation of the acid component of the combustion fumes of the waste-to-energy plant of San Vittore del Lazio (FR), **regenerating sodium bicarbonate and producing pure calcium chloride dihydrate**.
The process involves the following operations:
- Leaching, during which all the sodium salts present in high concentrations in the P.S.R. are dissolved;
- Carbonation of the brine thus obtained to transform the sodium into a bicarbonate compound;
- Production of calcium chloride dihydrate in granules **for industrial uses**.

The residual fraction of hazardous waste resulting from the process and destined for disposal is thus **significantly reduced in volume and mass** compared to the quantities previously treated, with a consequent reduction in the costs of disposal and supply of sodium bicarbonate.
The carbon dioxide (CO_2) **necessary for the carbonation phase**, several thousand tonnes per year, **is drawn from the gas** sent into the atmosphere through the flue.
The objectives of the initiative and of the synergistic process undertaken between WA.TRE.CO and Acea Ambiente are the reduction of the quantities of waste to be sent to the landfill, the transformation of the same into a second raw material and the reduction of emissions into the atmosphere, meeting and sharing the principle of sustainable development and the promotion of a circular economy.
Source: https://www.gruppo.acea.it/it/gruppo/media-eventi/workshop-acea-ecomondo

In line with the European vision of the Circular Economy, Acea manages the waste cycle in order to recover, recycle and reuse waste in the best possible way and, when possible, recover energy. The Group, in particular, occupies itself with the following phases of the waste cycle:
- **treatment of municipal solid waste** (MSW) and other types of waste (like green waste from separate collection, industrial waste, etc.), **for the recovery of material** and disposal of only the residues in landfills;
- **incineration with energy recovery** with consequent reduction of the soil needed for disposal;
- **production of high quality compost** to be directed towards agriculture.

In addition to the above, **Aquaser**, a subsidiary of Acea, collects and manages **the sludge produced by the urban wastewater treatment cycle** so that it can be disposed of after any treatment, giving priority to the recovery of material and energy.
The following paragraphs provide further information on the operational aspects of the activities mentioned above. However, these are **modern plants**, recently revamped, that **use advanced technologies** necessary to make waste management as efficient as possible.

INTEGRATED WASTE TREATMENT AT THE ORVIETO PLANT

The company **Acea Ambiente** manages a major plant for the treatment, recovery and disposal of waste in Umbria, 3 km from the town of Orvieto. The main plant sections are mechanical biological treatment of solid urban waste, composting and refining of the organic fraction of the separated waste and disposal in landfills. The activities carried out allow the recovery of material (production of quality compost) and energy (use of the biogas produced).
Management is carried out in compliance with certified management systems (see *Corporate identity, Management systems*) with the aim of achieving **maximum recovery from the materials** and encouraging both the **production of energy from renewable sources** and the **reduction of waste to be sent to landfill**. In 2018 the total waste entering the plant was **91,142 tonnes**. 56% (about 51,300 tonnes) was disposed of in landfills and the remainder almost entirely sent to the **anaerobic digestion and composting** section of the treatment plant. For more details see *Environmental Accounts*.
As specified above, at the Orvieto site there are two energy production plants powered respectively by the biogas produced

by the anaerobic section of the treatment plant and by the biogas produced by the landfill. The electricity generated is broken down as follows:

- at the treatment plant, **in 2018, the biogas produced** was about **3.1 Mm³** and about **5.6 GWh of electricity was sold to the grid;**
- **about 7.7 Mm³ of biogas were produced at the landfill** and **about 11.7 GWh of electricity was sold to the grid.**

The drop in biogas and energy produced compared to 2017 (-15%) is due to ongoing works to extend the landfill the unavailability of techniques in the treatment plant because of improvements to the anaerobic digestion section.
The Orvieto hub **is also equipped with a photovoltaic plant** owned by Acea Produzione, which generated about 450 MWh in 2018, used to **cover part of the plant's consumption of electricity.**
Taken as a whole, the biogas treatment line, the plant making efficient use of the biogas from landfill and the photovoltaic plant have allowed a **transfer to the electricity grid equal to 3,230 TOE (Tonnes of Oil Equivalent).**

WASTE TO ENERGY

Energy recovery from waste is a phase of the Circular Economy[110] that both Europe and Italy want to develop. In fact, in addition to providing energy and economic advantages, it allows a **notable volumetric reduction and the biological stabilisation of waste**, avoiding as far as possible the disposal of this waste in landfill as such.

In addition to the activities already described of waste treatment and anaerobic digestion, **Acea Ambiente** also manages the waste-to-energy process through **two plants**, one in San Vittore del Lazio and the other in Terni. The plants operate according to certified environmental management systems. Indeed, between the end of 2017 and 2018 they obtained the renewal of their environmental certification (UNI EN ISO 14001:2015) and extended the EMAS III European registration to the whole of 2021. For more on these aspects see also the section on Management systems in Corporate identity.

The Plant of San Vittore del Lazio is comprised by **three independent lines** of waste to energy designed to be fed with fuel waste-derived fuel (WDF), now called Secondary Solid Fuel (SSF), with these characteristics:

- 52 MW_t of thermal power installed for line 1 and 56.7 MW_t of thermal power installed for each of the other two lines;
- 13.9 MW_t of electric power installed for line 1 and 15.1 MW_t of each of the other two lines;
- Approximately 400,000 t/year of CSS, sludge and other waste at full capacity.

2018 was a year of normal operation. The plant's **actual available electric power was about 44 MW** and about **307 GWh** of electric power was produced. In 2018 energy from waste has been generated from about **357,200 tonnes of waste**.
In its current configuration, the San Vittore del Lazio plant is the largest in the Lazio Region and plays an important role in the management of urban waste, both for the particularly advanced technologies used for its construction and for its considerable treatment potential.

TABLE NO. 51 - THE SAN VITTORE DEL LAZIO WASTE-TO-ENERGY PLANT: OPERATING DATA (2016-2018)

	u. m.	2016	2017	2018
incinerated fuel	t	281,917	345,639	357,174
gross electric power produced	GWh	243.68	301.15	306.731
conversion efficiency (*)	kWh/kg SSF	0.86	0.87	0.86

(*) Relationship between gross electricity produced (GWh) and quantity of SSF converted from waste to energy (t).

The Terni plant is comprised of **a waste to energy line** and has the following characteristics:

- 52 MW_t of thermal power installed;
- 13.6 MW_e of electrical power installed;
- 120,000 t/year of pulper waste (paper mill waste resulting from the pulping of waste paper), as the maximum potential for incoming waste.

TABLE NO. 52 - TERNI WASTE-TO-ENERGY PLANT: OPERATING DATA (2016-2018)

	u. m.	2016	2017	2018
pulp incinerated	t	99,768	99,970	99,971
gross energy produced	GWh	83.07	83.10	82.41
conversion efficiency (*)	kWh/kg pulp	0.83	0.83	0.82

(*) Relationship between gross electricity produced and quantity of pulper waste converted to energy.

110 The European Union's circular economy package has been in force since 04.07.2018.

The plant of Terni is **also equipped with a photovoltaic plant**, which in 2018 has generated about 341 MWh of electricity, in part consumed on site (about two-thirds) and in part injected into the grid.
For data on the emissions of both waste to energy plants see the chapter *Air emissions* in addition to the data in the Environmental accounts.

HIGH QUALITY COMPOST PRODUCTION

In addition to the plant in Orvieto, Acea Ambiente has three composting facilities located in Aprilia, Sabaudia and Monterotondo Marittimo.
While as mentioned above the **Aprilia plant** has been under seizure since December 2017, it has been running at almost full capacity[111]. The plant, which is one of the facilities used for the recovery of the organic fraction from separate waste collection in Lazio, will be expanded to allow the recovery of **up to 120,000 t/year of organic fraction** and to launch a **section for anaerobic digestion** with **recovery of electrical and thermal energy**. The plant will also be equipped with an industrial wastewater recovery system. The new section is expected to be operational by December 2019.
The Sabaudia plant has undergone various activities of revamping/maintenance since 2016, and operations were resumed in August 2018[112]. When the liquid waste treatment section is reactivated, as in the past it will be possible to reuse the purified water for industrial uses. The plant has a treatment capacity of **20,000 tonnes of compostable waste per year and 30,000 tonnes of liquid waste per year**.
Finally, during the year, the **Monterotondo Marittimo plant** started work on the construction of a new composting section and a **new anaerobic digestion section** that will allow recovery of electrical and thermal energy. In its final configuration, the plant will be able to recover up to **70,000 tonnes/year of organic waste fraction, green fraction and sludge**.
The aforementioned works, which will transform the Aprilia and Monterotondo Marittimo plants into **integrated composting and anaerobic digestion plants**, will make it possible to produce biogas and thus generate electricity from a renewable source, in line with the prospect of sustainable growth and to **combat climate change**.

In 2018 **Aquaser**, which performs the activity of **transporting and disposal of sludge** from biological purification and waste deriving from the purification of water, of treatment of waste water and liquid waste, **managed**, inter alia, **about 198,000 t of sludge from purification** coming from the water companies of the Group[113], of which about **152,000 tonnes of sludge from Acea Ato 2, Acea Ato 5 and Gesesa**.
The dried out and dehydrated sludge coming from these companies were transported to the following end destinations:

- 80.7% to material recovery operations (pretreatments aimed at agricultural use - conditioning, composting);
- 2.5% to recovery of energy (waste-to-energy).

The remaining 16.8% was disposed of. The direct spillage was not used in agriculture.

WATER SEGMENT

REFERENCE BOUNDARY

The scope of reference includes the companies Acea Ato 2, Acea Ato 5 and Gesesa. Acque, Gori[114], Acquedotto del Fiora, Publiacqua and Umbra Acque, water companies not included in the scope of the *Consolidated Non-Financial Statement* (pursuant to Legislative Decree no. 254/2016). They have been included only in the area of reporting of water graphs, where their contribution is immediately evident, and in a few other global data (water fed into the system and analytical calculations). Specific data concerning these companies are provided in a separate chapter, *Water Company data sheets and overseas activities*.

382 Mm^3 OF POTABLE WATER SUPPLIED BY ACEA ATO 2, ACEA ATO 5 AND GESESA

ROME'S HISTORIC NETWORK: REAL LOSSES FALL TO **38%** (41% IN 2017)

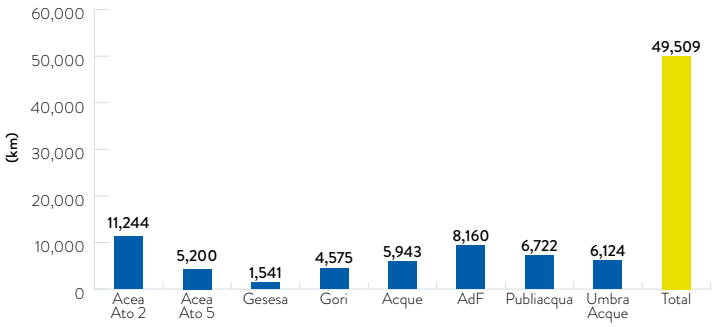
ABOUT **18,000 km** KM OF POTABLE WATER NETWORK MANAGED BY ACEA ATO 2, ACEA ATO 5 AND GESESA

MORE THAN **480,900 analytic tests** ON DRINKING WATER (ACEA ATO 2, ACEA ATO 5 AND GESESA)

111 On 14 April 2018 the Public Prosecutor authorised the resumption of operations by removing the seals from the Aprilia plant, without prejudice to the seizure.
112 On 16.08.2018 deliveries were resumed for composting only, while the liquid waste treatment section, also being revamped, is inactive. A review of the AIA (Integrated Environmental Authorisation) is pending.
113 The data detailed here for the sake of completeness concerns sludge for which Aquaser has managed the entire supply chain, from loading to transport and final disposal, originating from the following Group companies: Acea Ato 2, Acea Ato 5, Gesesa, Acquedotto del Fiora, Umbra Acque, Publiacqua.
114 Gori was added to the scope of consolidation on a full basis in November 2018. Therefore, for the present reporting cycle it has not been considered within the scope of the *Consolidated Non-Financial Declaration*. See the section on *Water Company data sheets and overseas activities*.

Of all the Group's core businesses, the **management of water** in all phases of the **integrated water service** is one of the **most important**. The activities are carried out with a growing focus, in line with the greater attention to water resources at an international level. The protection of the resource is expressed in the priority of **recovering losses** (see the box in the paragraph *Attention to water consumption*), in the already mentioned **protection of springs** (paragraph *Protection of the local region*) and searches for new springs and also in an increasingly precise **monitoring** of water consumption, seeking to reduce it.
The **total** pool of users served in Italy by the **Group**[115] is about 8.6 million inhabitants, with **volumes of drinking water fed** into the network in 2018 equal to about **1,260 million cubic metres**. The **volumes of drinking water introduced by Acea Ato 2, Acea Ato 5 and Gesesa** amounted to **721 million cubic metres**, with a total supply of 382 million cubic metres for **4.3 million inhabitants** served. For specific data on the three companies, see the *Environmental Accounts*.
In **Ato 2 - Central Lazio** alone, comprising the city of Rome and 111 other municipalities – of which 79[116] under management at 31 December 2018 – the **volume of water fed into the network** serving the approximately 3.7 million inhabitants, was approximately **600 million cubic metres** (of which 438 million cubic metres in the "historical network" of Rome and Fiumicino)[117].

CHART NO. 44 - THE WATER DISTRIBUTION NETWORK OF THE GROUP IN ITALY (2018)

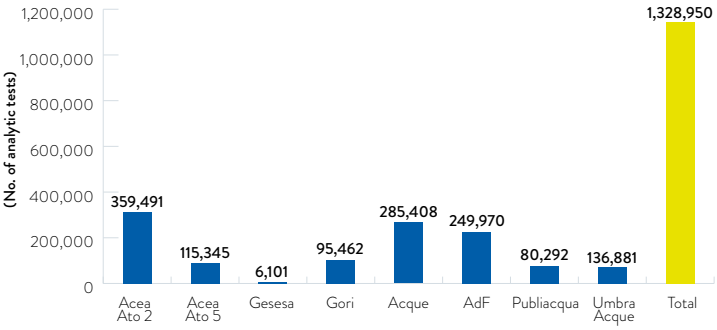


NB The kilometres of network include the aqueducts. The Acea Ato 2 data come from GIS.

WATER QUALITY

The **checks on the quality of the drinking water** supplied and of effluent returned to the environment, after the process of purification, are performed in a planned and constant manner by the companies of the water industrial area. The **analyses** on the **drinking water** distributed to users play an **essential role** for the resulting health spin-offs. A summary of the work carried out in this area, by all the water companies, is shown in Chart no. 45.

CHART NO. 45 - TESTS OF DRINKING WATER, TOTAL AND BY COMPANY (2018)



In **Rome**, the qualitative characteristics of the resource collected and distributed are monitored through **continuous testing**, with instruments located along the water systems and through **daily sampling** at the collectors and in the distribution network.
In Lazio there are areas of volcanic origin where the water has drinkability problems, linked to the natural presence of some substances in greater concentrations compared to those permitted by the relevant legislation. In these areas Acea Ato 2 has performed, over the years, a number of initiatives aimed at solving these problems, increasing the purification plants able to remove the unwanted substances and returning their values of concentration well below the legal limits.
Regular monitoring of the chemical/biological parameters of the water which circulates in the distribution network of the

115 As specified at the start of the chapter, the data of the total inhabitants served by the water business, of the volume fed into the network, and the size of the networks and checks on the water (shown in special graphs) include all the operational companies in the Group, also those not included within the scope of the Consolidated Non-Financial Statement.

116 In 17 other municipalities the integrated water service was managed partially.

117 The items of the water balance of the past three years were calculated using the calculation criteria supplied by ARERA.

water system allows the quality safety level to be kept high. Altogether about 359,491[118] analytical tests in the territory of Ato 2, for a total of 10,708 samples – in addition to those of the Health Authority – were carried out during 2018 in the Grottarossa Laboratories, managed by Acea Elabori.
The analytical checks on the water and the relative measurements are also performed by Group companies independently.

The subsidiary Acea Elabori, accredited pursuant to the ISO/IEC 17025 standard, performs and certifies chemical and physical and bacteriological analyses in different substrates, including water (see Table no. 53 for the analyses performed on Rome drinking water). Gesesa instead uses two outside laboratories (see the Environmental Accounts or the Gesesa data and also for the aggregate data).

ANALYSES PERFORMED BY ACEA ELABORI ON DRINKING WATER - ROME HISTORICAL NETWORK (2016-2018)

sampling area	no. of sampling points	no. of samples			no. of analyses		
	2018	2016	2017	2018	2016	2017	2018
collection	45	469	423	437	21,085	21,636	21,119
water system and water feed pipes	26	158	183	130	6,051	6,599	5,167
tanks/water centres	21	248	119	152	8,974	4,988	6,306
distribution networks	320	4,208	3,381	3,326	135,943	109,838	109,571
total	**412**	**5,083**	**4,106**	**4,045**	**173,702**	**143,061**	**142,163**

AVERAGE CHEMICAL AND MICROBIOLOGICAL PROPERTIES OF THE DRINKING WATER DISTRIBUTED AT ROME, THE MUNICIPALITIES OF ACEA ATO 5 AND BENEVENTO (2018)

parameters	unit of measurement	average value - Rome	average value - Acea Ato 5 municipalities	average value - Gesesa (Pezzapiana site)	legal parametric value (Legislative Decree no. 31/01)
turbidity	NTU	**<0.5**	**0.9**	**0.51**	no anomalous changes
temperature	°C	**12.7**	**13.5**	**exempt (*)**	not required
hydrogen ion concentration	pH unit	**7.4**	**7.3**	**7.5**	> 6.5 and < 9.5
electrical conductivity	µS/cm at 20 °C	**560**	**595**	**896**	<2500
chlorides	mg/l Cl	**6.6**	**5.9**	**46.8**	<250
sulphates	mg/l SO_4	**13.7**	**11.31**	**66**	<250
calcium	mg/l Ca	**100.6**	**115.9**	**exempt (*)**	not required
magnesium	mg/l Mg	**19.0**	**17.1**	**exempt (*)**	not required
sodium	mg/l Na	**4.7**	**3.6**	**37.0**	<200
potassium	mg/l K	**2.0**	**1.23**	**exempt (*)**	not required
hardness	°F	**32.9**	**36**	**35.6**	(**)
free residual chlorine	mg/l Cl_2	**0.15**	**0.19**	**0.15**	(***)
alkalinity	mg/l $CaCO_3$	**435**	**358**	**exempt (*)**	not required
calculated fixed residue	mg/l	**408**	**426.7**	**612**	(****)
nitrates	mg/l NO_3	**3.5**	**3.8**	**37.9**	<50
nitrites	mg/l NO_2	**<0.05**	**0.1**	**<0.03**	<0.50
ammonia	mg/l NH_4	**<0.10**	**<0.1**	**exempt (*)**	<0.50
fluorides	mg/l F	**0.14**	**0.15**	**0.5**	<1.50
bicarbonates	mg/l HCO_3	**400**	**436.3**	**exempt (*)**	not required
total organic carbon	mg/l C	**0.58**	**0.53**	**exempt (*)**	no anomalous changes
iron	µg/l Fe	**11.8**	**16.1**	**<20**	<200
copper	mg/l Cu	**0.003**	**0.00**	**<0.01**	<1.0
lead	µg/l Pb	**0.4**	**0.3**	**2**	<10
cadmium	µg/l Cd	**<0.2**	**<0.2**	**<2.0**	<5.0

[118] The data on analytical testing of drinking water from 2018 also include analyses on recently acquired aqueducts (Civitavecchia and others).

AVERAGE CHEMICAL AND MICROBIOLOGICAL PROPERTIES OF THE DRINKING WATER DISTRIBUTED AT ROME, THE MUNICIPALITIES OF ACEA ATO 5 AND BENEVENTO (2018) (follow)

parameters	unit of measurement	average value - Rome	average value - Acea Ato 5 municipalities	average value - Gesesa (Pezzapiana site)	legal parametric value (Legislative Decree no. 31/01)
chromium	µg/l Cr	<5.0	<5.0	<2.0	<50
nickel	µg/l Ni	<2.0	<0.2	<2.0	<20
manganese	µg/l Mn	0.4	3.1	<2.0	<50
arsenic	µg/l As	<1.0	2.9	exempt (*)	<10
vanadium	µg/l V	2.4	1.7	<2.0	<140
total trihalomethanes	µg/l	1.0	0.7	<0.9	<30
trichloroethylene	µg/l	<0.10	<0.10	<1.0	<10
tetrachloroethylene	µg/l	<0.10	<0.10	<1.0	<10
1.2 - dichloroethane	µg/l	<0.30	<0.30	<0.1	<3.0
benzene	µg/l	<0.10	<0.10	exempt (*)	<1.0
benzo (a) pyrene	µg/l	<0.003	<0.003	exempt (*)	<0.010
coliform bacteria at 37° C	MPN/100 ml	0	0	0	0
e. coli	MPN/100 ml	0	0	0	0
Enterococci	CFU/100 ml	0	0	0	0

(*) In accordance with Legislative Decree no. 31/01 and in agreement with the health authority, Gesesa is exempted from supplying the parameter.
(**) Recommended values: 15-50° F - the lower limit applies to water subjected to softening or desalination treatment.
(***) Recommended value 0.2 mg/l.
(****) Maximum value recommended: 1,500 mg/l.

WATER SAFETY PLANS

The implementation of a **Water Safety Plan** (WSP) is required for all water systems by the Decree of the Ministry of Health of 14.06.2017, in implementation of European Union Directive 2015/1787, which endorsed the WSP methodology developed by the World Health Organisation (WHO). The aforementioned Directive 1787 amends the annexes of the European Drinking Water Directive 98/83/EC, which is currently being revised by the European Parliament and the Council. It will make WSPs mandatory and the current draft provides for a six-year implementation period.
The WSP approach is to **prevent and reduce the risks inherent in the drinking water service**, assessing dangerous events along the entire water supply chain including collection, treatment and distribution to the user meter. The risk is calculated according to the severity and probability of a pollution event or water shortage. Based on this assessment, the following are defined: **actions to mitigate risks, monitoring systems, operating procedures** under normal and emergency conditions, the water **quality control plan**, the methods for **informing the public** and the competent authorities, etc. WSPs must also be constantly updated to take into account plant development, changes in the regulatory environment and climate and environmental changes. Finally, the implementation of WSPs must be carried out according to internationally recognised methodologies developed by the WHO. In Italy, the Istituto Superiore di Sanità (ISS) has introduced WHO guidelines and will therefore have to approve WSPs.

THE ACEA ATO 2 WATER SAFETY PLANS

For Acea Ato 2, in the first two years the implementation of the water safety plans (WSPs) will affect the water system supplied by the new water treatment plant of the Tiber located in Grottarossa and the water network of the City of Rome and the Vatican, now supplied by the Paolo Aqueduct, with non-potable water taken from the Tiber. The assessment of the health risks of the latter system, which is not drinkable, is included in the safety plan and is interconnected thereto since the Paolo Aqueduct will no longer be supplied by water from the Tiber but by the treated wastewater from the COBIS treatment plant.
Starting in the second half of 2019, the WSP will be launched for the water system supplied by other aqueducts, primarily serving Rome and Fiumicino.
In 2018 the WSP team was set up with the participation of Acea staff and representatives of the bodies concerned. A web platform was created with these same bodies on which the documents produced are published and a web/GIS environment where the data of the plants covered by the WSP are collected. Moreover, the risk assessment of the water system supplied by the new Grottarossa plant was carried out and shared with the authorities. To this end, plant inspections were carried out and checklists drawn up in accordance with WHO guidelines.
Finally, Acea Ato 2 established partnerships with major operators in the water sector to share experiences and best practices.

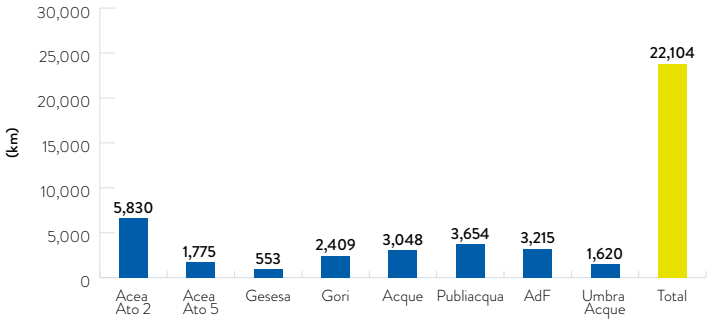
At Acea Ato 5 and Gesesa, before drafting the Water Safety Plans (WSPs), several employees attended the "National Training Course for team leaders for the implementation of Water Safety Plans (WSPs)" organised by the ISS and the Ministry of Health.

SEWERAGE SERVICE AND TREATMENT SYSTEM

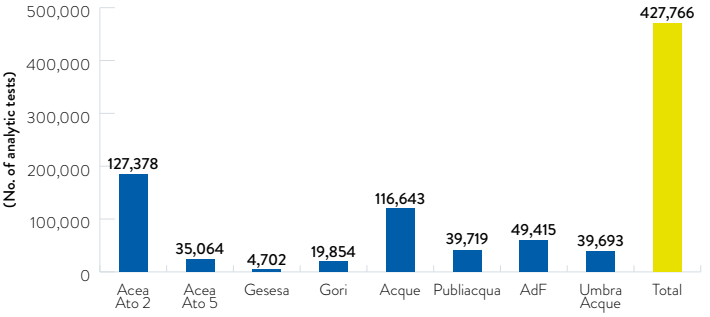
ABOUT **152,992 t** OF SLUDGE PRODUCED BY ACEA ATO 2, ACEA ATO 5 AND GESESA, OF WHICH **38%** RECOVERED

APPROXIMATELY **8,160 km** OF SEWERAGE NETWORK AND **333 treatment plants**, MANAGED BY ACEA ATO 2, ACEA ATO 5 AND GESESA, FOR **604 Mm^3** OF TREATED WATER

The integrated water service (IWS) includes the management of the sewerage and treatment system. The water resource, after uses for the various civil purposes, is **collected through the sewer pipes** and **sent to the purifiers**. There pollutants are **removed via physical processes** (filtering, sedimentation, flocculation) **and biological ones** (aerobic and/or anaerobic decomposition of the organic substance with bacteria). Thanks to approximately **865 treatment plants** (of which **333** managed by Acea Ato 2, Acea Ato 5 and Gesesa), the total volumes of water treated by the Group[119] in 2018 were approximately **859 million cubic metres**, of which 604 million cubic metres by Acea Ato 2, Acea Ato 5 and Gesesa. **The water in output from the plants** cited, after having undergone the purification treatments described, **has chemical and biological properties compatible with the life of the receiver body of water** and in accordance with the values of the parameters which must not be exceeded in order to guarantee full compatibility (as per Legislative Decree no. 152/2006). The sewerage networks managed amount to more than **22,100 km**, of which 9,158 km relate to the three companies cited.



NB The sewerage networks managed by Acea Ato 2 in 2018 are equal to about 6,830 km, of which 5,830 km monitored by GIS cartography.



For the companies operating in the Lazio area and partly in the province of Benevento, the percentage coverage of the sewer and purification services, out of the total users served by the water service, and the volumes of effluent treated are given in Tables nos. 54 and 55.
In particular, for **Acea Ato 2**, the **good abatement performance**

[119] Again in this case, the data relating to the number of treatment plants, the volumes treated, the size of the networks and the controls refer to the main Group companies operating in the water sector, including those not included in the full scope of consolidation.

achieved in the **purification process**, which allowed approximately 580 million cubic metres of sewage to be made compatible with the receiver ecosystem, were confirmed by the over **127,000 calculations** performed. A **positive result** was in fact confirmed, i.e. values of the concentrations of the contaminants below legal limits, **in 94% of the tests performed on water from the plants**, moreover in an environmental situation which foresees the observance of some of the strictest regulations in Italy.

TABLE NO. 54 - PERCENTAGE COVERAGE OF THE SEWER AND PURIFICATION SERVICES OVER THE TOTAL UTILITIES OF THE WATER COMPANIES OPERATING IN LAZIO AND AT BENEVENTO (2016-2018)

company	2016		2017		2018	
	sewer	purification	sewer	purification	sewer	purification
Acea Ato 2	91.9%	88.7%	91.7%	88.0%	91.6%	88.2%
Acea Ato 5	64.0%	52.5%	67.7%	56.5%	66.9%	56.1%
Gesesa	81.1%	26.2%	81.2%	26.1%	80.2%	27.3%

TABLE NO. 55 - VOLUMES OF EFFLUENT TREATED BY WATER COMPANIES OPERATING IN LAZIO AND AT BENEVENTO (2016-2018) (Mm^3)

company	2016	2017	2018
Acea Ato 2	595.2	553.6	582.7
Acea Ato 5	26.7	21.1	21.2
Gesesa (*)	-	-	-

(*) For the time being there are no flow meters at the entry of the purification plants managed by Gesesa. The company intends to install them by the end of 2019.

In the "historic" area managed by Acea Ato 2, which includes **Rome and Fiumicino**, the **main purification plants treated in 2018 approximately 490 million of cubic metres of wastewater**, a figure that has increased (467 million cubic metres of effluent treated in 2017). Considering also the smaller purifiers and the plants of the municipalities acquired in Ato 2 (a total of 170) a **total volume of approximately 583 million cubic metres of wastewater treated** is obtained, an increase of 5% compared to 2017. The cause of this increase was substantially due to the elevated rainfall, since part of the rainwater also flows into the Rome drains system.
Tables 56 and 57 show the details of the main parameters from the Acea Ato 2 and Acea Ato 5 treatment plants. Other indicators of the efficiency of purification are described in the section *Key environmental performance indicators - Water Segment* of the *Environmental Accounts*.

TABLE NO. 56 - OUTPUT PARAMETERS OF THE MAIN PURIFIERS MANAGED BY ACEA ATO 2 SPA - MUNICIPALITY OF ROME (2018)

	Rome South purifier	Rome North purifier	Rome East purifier (*)	Ostia purifier	concentration limits in surface waters LEGISLATIVE DECREE No. 152/06
parameter		average values (mg/l)			
BOD_5	15	9	8	4	≤ 25
COD	29	20	28	20	≤ 125
SST	17	15	19	10	≤ 35
Nitrogen (ammoniac, nitric and nitrous)	9	11	13	5	-
phosphorus	1	2	2	2	-
		output quantity (t)			
COD	7,957	1,676	2,285	522	-
SST	4,674	1,320	1,585	245	-

(*) The data of the Roma Est purifier are in part influenced by the various maintenance works carried out at the plant during the year.

TABLE NO. 57 - OUTPUT PARAMETERS OF THE MAIN PURIFIERS MANAGED BY ACEA ATO 5 SPA - MUNICIPALITY OF FROSINONE (2018)

parameter	average values (mg/l)	concentration limits in surface waters (Legislative Decree no. 152/06)
BOD_5	3.7	≤ 25
COD	20.3	≤ 125
SST	6.0	≤ 35
NH_4^+	4.3	-
phosphorus	1.0	-
	output quantity (t)	
COD	1,175	
SST	493	

The sludge produced during the purification process **is mostly** sent for **recovery of material** (see in *Environment Segment*, the paragraph *High quality compost production*). Due to uncertainties about the application of current legislation, 2018 was a difficult year for those who produce sludge and have the burden of managing its disposal or final recovery (see also the dedicated box).

THE SITUATION OF SLUDGE DISPOSAL AND RECOVERY FOR ACEA ATO 2

In 2018, as a result of some legal pronouncements and **possible regulatory revisions regarding sludge suitable for agronomic recovery**, problems arose along the entire sludge production and management chain. In particular, there was a critical progressive reduction of the spaces in the treatment sites where the sludge coming from the treatment plants was to be conferred. The situation has been made even more critical due to the extraordinary weather events (snow emergency in winter 2018) that have not allowed the continuous use of the contracted disposal companies.
Following sentence no. 1782 of 20 July 2018 issued by the Lombardy Regional Administrative Court, there was a block on deliveries to disposal plants that guaranteed up to 50% of the company's disposal space, and Acea Ato 2 made efforts using targeted communications and discussions with the relevant bodies to resolve the critical situation.
During the year, the production of sludge, sands and gratings for all the plants managed amounted to approximately 67,000 tonnes (excluding liquid sludge, which was disposed of to third parties precisely because of the emergency situation), with a **reduction of approximately 50,000 tonnes** compared to 2017. The company has taken steps to ensure the management of the plants and, in June, the dryer in North Rome.
In addition, measures have been planned for the medium term to reduce the quantities of sludge produced by major plants, including:

- The launching in November 2018 of a technological trial for sludge reduction at the Ostia plant;
- The signing of disposal contracts with foreign suppliers.

These actions will allow for a **substantial reduction in the quantities produced** in the near future and **greater flexibility in the management of deliveries** to disposers.

THE USE OF ENERGY AND WATER

ENERGY EFFICIENCY ENHANCEMENT: IN ARETI, ABOUT **4.4 GWh** OF SAVINGS PER YEAR AND **1,600 t** OF CO_2 NOT EMITTED
IN ACEA ATO 2 ABOUT **5.2 GWh** OF SAVINGS PER YEAR AND **1,900 t** OF CO_2 NOT EMITTED

APPROXIMATELY **422,000 GWh of electrical consumption** OF THE GROUP'S MEMBER COMPANIES FROM GO-CERTIFIED **renewable energy**

leak search campaigns: IN ATO 2 MORE THAN **10,000 km** OF WATER DISTRIBUTION NETWORK WERE MONITORED

ENERGY CONSUMPTION

THE GROUP'S ENERGY CONSUMPTION

Total direct and indirect energy consumption amounted to **about 12,300 TJ**, an increase of about 2% compared to 2017. The increase was due to the **increase in direct consumption** (Table no. 58) – which involves **the use of primary sources for the operation of the production system** – in particular the energy produced by the hydroelectric power plants, the CAR power plant in Tor di Valle and, to a lesser extent, also by the waste-to-energy plants, almost entirely offset by the **decrease in indirect consumption**, which includes the losses that occur in the Rome electrical grid, attributable to the transformation and transport phases (Table no. 59). The latter, in fact, have **fallen by about 5%**, thanks mainly to **lower consumption of public lighting** due to the numerous replacements of traditional lamps with LED systems, but also thanks to a **slight decrease in technical losses of the grid** (-3%) and a **decrease in global electricity consumption for the distribution of potable/non-potable water**.

It should also be pointed out that, for the second year running, the **electricity consumption of the main companies**, and in particular consumption linked to waste management plants, the distribution of drinking and non-drinking water, purification and consumption for the work sites, **for a total of approximately 422,000 GWh, was certified as coming from renewable sources** (certification by means of the Guarantees of Origin - GOs). (Table no. 59).

Trends in **energy consumption intensity indices** are shown in Table no. 60.

TABLE NO. 58 - DIRECT ENERGY CONSUMPTION OF THE MAIN COMPANIES IN THE GROUP (2016-2018)

	2016	2017	2018
ENERGY PER SOURCE		TJ (GWh)	
RDF/SSF and pulper (waste to energy) - renewable share	3,198.9 (888.6)	3,638.2 (1,010.6)	3,947.1 (1,096.4)
biogas (100% renewable)	169.9 (47.2)	207.2 (57.6)	179.5 (49.9)
RDF/SSF and pulper (waste to energy) - non-renewable share	2,952.8 (820.2)	3,584.5 (995.7)	3,594.0 (998.3)
methane (for electricity generation, district heating, water area dryers and heating for offices)	566.2 (157.3)	732.0 (203.3)	955.7 (265.5)
fuel oil (for electricity generation and for heating offices)	34.5 (9.6)	48.2 (13.4)	22.7 (6.3)
petrol (road haulage)	4.9 (1.4)	2.9 (0.8)	3.5 (1.0)
diesel (road haulage) (*)	61.6 (17.1)	129.6 (36.0)	124.4 (34.6)
LPG (heating)	0.8 (0.2)	0.8 (0.2)	0.2 (0.1)
total	**6,989.6 (1,941.6)**	**8,343.4 (2,317.6)**	**8,827.1 (2,452.0)**

(*) The figures for diesel consumption for road transport in 2017 and 2018 include Aquaser heavy vehicles.

NB The energy produced by the Group plants and fed into the network is illustrated in the Environmental Accounts (Products - Energy Segment).

TABLE NO. 59 - INDIRECT ENERGY CONSUMPTION OF THE MAIN COMPANIES IN THE GROUP (2016-2018)

	2016	2017	2018
TYPES OF INDIRECT CONSUMPTION		TJ (GWh)	
electrical energy losses on the distribution networks and transport	1,283.8 (356.6)	1,244.9 (345.8)	1,204.6 (334.6)
plosses and self-consumption in the production of electrical energy (*)	209.8 (58.3)	232.5 (64.6)	243.4 (67.6)
losses of heat in the district heating network	86.2 (23.9)	72.5 (20.1)	91.0 (25.3)
consumption for public lighting	604.3 (167.9)	416.3 (115.6)	302.3 (84.0)
electrical consumption for waste management plants (**)	19.7 (5.5)	27.5 (7.7)	28.5 (7.9)
electricity consumption for distribution of drinking and non-drinking water (*) (***)	875.9 (243.3)	994.5 (276.2)	885.2 (245.9)

TABLE NO. 59 - INDIRECT ENERGY CONSUMPTION OF THE MAIN COMPANIES IN THE GROUP (2016-2018) (follow)

	2016	2017	2018
TYPES OF INDIRECT CONSUMPTION		TJ (GWh)	
electricity consumption for effluent purification (*) (***)	681.7 (189.4)	662.4 (184.0)	699.6 (194.3)
consumption of electrical energy for the offices (**)	35.7 (9.9)	36.1 (10.0)	34.8 (9.7)
total indirect energy consumption	**3,767.5 (1,046.5)**	**3,686.7 (1,024.0)**	**3,489.4 (969.3)**

(*) Following adjustments, some data for 2016 and 2017 have been modified with respect to the published figures. There have been minimum adjustments for energy produced in 2016 and consolidated figures for 2017 (electricity consumed by the distribution of drinking water and by sewerage treatment plants).

(**) GO-certified energy (Guarantee of Origin).

(**) 90% of the energy used is GO-certified.

TABLE NO. 60 ENERGY INTENSITY INDICES (2016-2018)

energy consumption intensity index	u.m.	2016	2017	2018
electrical energy consumed for public lighting per lamp	TJ/lamp	0.0027	0.0019	0.0013
total electrical energy consumed by Acea Ato 2, Acea Ato 5 and Gesesa for water supplied (*)	TJ/Mm^3	3.8429	4.1592	4.1339
electrical energy consumed by Acea Ato 2, Acea Ato 5 and Gesesa for sewer service per km of sewer network	TJ/km	0.0193	0.0163	0.0172

(*) The decrease in electricity consumption for water delivered in 2018 is mainly due to the higher rainfall of the year compared to 2017. The figures for the previous two years have been corrected with actual results.

ENERGY CONSUMPTION OUTSIDE OF THE GROUP

Since 2015, Acea has been monitoring **energy consumption outside the Group** along the supply chain using specific questionnaires. In December 2018 the questionnaire was sent to more than 100 suppliers, the most representative in relation to the orders value for the year. Thanks to the results from 37 of those contacted (equal to 29% of the total Acea expenditure for the procurement of goods/services and works), their total energy consumption was estimated at approximately 318,676 GJ.

ENERGY SAVING

During 2018 **Ecogena** maintained its certification as an ESCo (Società di Servizi Energetici - Energy Services Company), in accordance with UNI CEI 11352. It is therefore the appropriate body to develop the **energy efficiency initiatives of the Group companies** and report their results to the Gestore dei Servizi Energetici (GSE) for the **awarding of Energy Efficiency Certificates** (TEE).

The activities assigned to Ecogena include also the design and building of **trigeneration plants**[120] for the production, in combined mode, of **electrical, heat and cooling energy**. In **2018 cogeneration plants were managed**, combined with **district heating networks for a total of 6.6 MW of electrical power**[121]. Total energy production is in line with the previous year.

As at **31.12.2018**, the plants managed by Ecogena had been awarded **6,683 TEEs** under the Ministerial Decree of 5 September 2011, of which 1,359 related to 2017 production (and finalised in 2018) (see Table no. 61).

In order to achieve the aim of energy saving, as regards Areti, actions concentrated on acquiring EETs on the market governed by the electricity market authority (EMA), as well as purchasing 1,359 certificates from Ecogena. The residual obligation for 2018 was **89,078 TEEs**, compared with the initial 111,348 TEEs, to which should be added the residual portion of the 2017 obligation, equal to 44,512 TEEs, and the residual portion for 2016, equal to 35,610 TEEs. In November **2018, part of the remainder of 2016, equal to 15,344 TEE, was cancelled**.

TABLE NO. 61 - ENERGY EFFICIENCY CERTIFICATES AND THE PRODUCTION OF ENERGY BY ECOGENA PLANTS (2016-2018)

	2016	2017	2018
ENERGY PRODUCED (*)		TJ (GWh)	
Electricity	66.2 (18.4)	61.9 (17.2)	54.1 (15.0)
of which plants owned by Ecogena	*65.0 (18.1)*	*56.7 (15.7)*	*50.3 (14.0)*

120 Cogeneration, i.e. the combined production of electrical and thermal energy, allows high efficiencies to be achieved, between 80 and 90%. Trigeneration, which is a special application of cogeneration, allows use of a part of the thermal energy recovered in order to produce cooling energy in the form of cooled water for air conditioning in rooms or for industrial processes.

121 The 6.6 MW includes 1 MW relating to management of the Prepo power plant, in the municipality of Perugia, not owned by Ecogena.

TABLE NO. 61 - ENERGY EFFICIENCY CERTIFICATES AND THE PRODUCTION OF ENERGY BY ECOGENA PLANTS (2016-2018) (follow)

	2016	2017	2018
ENERGY PRODUCED (*)		TJ (GWh)	
of which plants owned by third parties	*1.4 (0.4)*	*5.1 (1.4)*	*3.9 (1.1)*
Thermal energy	87.6 (24.3)	90.4 (25.1)	95.4 (26.5)
of which plants owned by Ecogena	72.1 (20.0)	74.8 (20.8)	81.1 (22.5)
of which plants owned by third parties	15.4 (4.3)	15.7 (4.4)	14.3 (4.0)
Refrigeration energy (all owned plants)	15.6 (4.3)	17.0 (4.7)	34.5 (9.6)
		TEEs	
TOTAL TEEs (all from plants owned by Ecogena)	1,203	1,039	1,359

(*) Estimated 2018 data, due to unavailability of November and December. Figures for the previous two years have been adjusted due to improved reporting.

ENERGY EFFICIENCY ACTIONS

Acea, during the year in question, carried out various **schemes for the recovery of energy efficiency in the processes managed**, in particular in the **companies in the Water, Energy Infrastructure and Environment segments**.

With regard to the headquarters in Piazzale Ostiense and following the energy efficiency works in 2017, in 2018 the **Energy Performance Service** was launched, i.e. the measurement and periodic reporting of the consumption recorded on the power lines being reconfigured in the same location. As at 31.12.2018 the intervention produced **energy savings of 109 MWh**.

For the **Water industrial segment** – considering the companies in the perimeter: Acea Ato 2, Acea Ato 5 and Gesesa – this year there was a decrease in consumption (-5% compared to 2017), mainly due to less dry weather conditions, which allowed less use of emergency systems that are very energy-intensive. In addition, **where possible the companies have improved their specific energy efficiency**.

In terms of energy efficiency, in 2018 **Acea Ato 2 achieved energy savings of about 18.7 TJ/year,** with **savings of about 1,870 tonnes of CO_2 emissions**. More specifically, significant projects focused on the one hand on **the recovery of water losses**, which led to an **efficiency gain of 11.5 TJ**, and on the other hand on **treatment**, where projects to **optimise the oxidation sector of the treatment plants** (Capoluogo, Cerquette, Cobis and Ostia) led to an **energy efficiency gain of 6.8 TJ**. The replacement of lighting fixtures with LED systems at the company's plants continued in 2018, with savings of about 0.14 TJ.

Acea Ato 5 saw a **decrease in consumption** (about 7%) mainly due to better climatic conditions, but also to some interventions aimed at increasing energy efficiency, both at two purifiers (Madonna del Piano and Castro dei Volsci) and at water pumps and well fields, thanks to the installation of suitable instrumentation – inverters, level probes and interconnections – which produced an efficiency of about 3.5 TJ.

Gesesa's consumption increased in absolute terms, but this is due to the acquisition of a municipality (Morcone) and the commissioning of five new sewerage pumps and the same number of treatment plants. Compared to 2017, savings of about 1 GWh was achieved with the same number of electrical user accounts due to an **optimisation of the distribution of the flow rates of the Sorienza spring and a reduction in network pressures**.

For the **Energy Infrastructure** segment, the company **Areti**, which manages electrical energy distribution, continued the **efficiency raising schemes** set up following the **energy diagnoses performed at some company locations**, as part of the UNI EN ISO 50001 energy management system and according to Legislative Decree no. 102/2014.

In particular, in 2018 the transformation of the air conditioning and domestic hot water production system into heat pumps at the San Leone site in Via Grotte d'Arcaccio, Rome was completed.

Particularly **important are the works on the distribution network** aimed at energy saving. This involves, in particular, optimisation of the set-up of the MV network and gradual transformation of the voltage level from 8.4 to 20 kV and other adjustments for the HV and LV lines and the use of **268** MV/LV **transformers with very low losses**. Table no. 62 shows the type of work and the relative energy savings of the last three years. These efficiencies have led **in 2018** to overall energy savings of **about 15.8 TJ and about 1,600 tonnes of CO_2 avoided**.

There was also a **reduction in the energy consumption of public lighting systems**: between 2016 and 2018, the total number of lamps fell from 220,474 to 225,619. On the other hand, consumption for public lighting **fell from 167.9 GWh** (604 TJ) in 2016 **to about 84 GWh** (302 TJ) in 2018, being halved mainly due to the installation of **LED technology lamps**: from 84,871 in 2016 to 191,200 in 2018.

Finally, in the **Environment** segment, in 2018 a number of energy **efficiency initiatives** were launched for lines 2 and 3 **of the San Vittore plant**. The initiatives consisted in replacing the "overheating benches" of lines 2 and 3, which improved the thermal exchange of combustion fumes in the boiler with water, and in creating a new "setting" for the $DeNO_x$ [122] plant of line 3, with the reprogramming of the quantities of methane (and ammonia solution) necessary to reduce nitrogen oxides, both with positive repercussions on consumption.

[122] The $DeNO_x$ system is the system for the reduction of nitrogen oxides (NO_x) that uses a conversion reaction with ammonia, generating nitrogen.

TABLE 62 - ENERGY EFFICIENCY IN ARETI (2016-2018)

action	2016	2017	2018
ENERGY SAVING OBTAINED		(GJ)	
reduction in losses on the network	29,365	24,959	14,627 (*)
reduction in losses through the purchase of new transformers	474	662	1,112
Transformation of air conditioning and domestic hot water production system into heat pumps	-	-	47
thermal power plant revamping	61	61	61
renovation of inside lighting system in one of the locations	5	5	5
renovation of outside lighting system at CP Casaletto	-	54	54

(*) Value estimated while awaiting the network analytical study.

ATTENTION TO WATER CONSUMPTION

The **water consumption of the Group**, illustrated in Table no. 63, refers both to **industrial processes** and uses for district heating and **civil uses**. The decrease in consumption is due to the **reduction in consumption by processes**, mainly attributable to efficiency actions at plants of the company Acea Ato 2.

TABLE NO. 63 - WATER CONSUMPTION OF THE GROUP'S MAIN COMPANIES (2016-2018)

	2016	2017	2018
type of consumption		**(Mm^3)**	
industrial processes: district heating and others for thermoelectric generation, other Acea Ambiente plants, Water companies	**0.14**	**0.97**	**0.29**
of which aqueduct	*0.080*	*0.896*	*0.211*
of which well	*0.060*	*0.060*	*0.053*
of which rainfall	*0.000*	*0.003*	*0.000*
of which river water	*0.000*	*0.003*	*0.003*
from tankers	*0.000*	*0.001*	*0.000*
of which recovered water	*0.002*	*0.005*	*0.025*
water consumption for civil use	**2.12**	**1.43**	**1.71**
of which aqueduct	2.117	1.432	1.712
of which well	0.000	0.000	0.001
of which tankers	0.004	0.001	0.001
total water consumption	**2.26**	**2.40**	**2.01**

In some plants, **projects have been launched to recover process wastewater, to reuse it for industrial use**. At the San Vittore del Lazio waste-to-energy plant the rainwater is reused in the process of production of demi water after treatment in a special chemical and physics plant[123]. Thanks to the presence of this technology the volumes of water discharged into a body of water were zero and the **volumes of water recovered** were equal to **12,200 cubic metres**.

At the **Aprilia composting plant**, where the treatment plant for wastewater that can be reused in the industrial cycle has been operating since 2017, **approximately 5,900 cubic metres of water have been recycled**.

Overall, **Acea Ato 2** recorded a reduction in consumption for civil/process uses that went from 1.8 Mm^3 in 2017 to 1.3 Mm^3 in 2018.

Finally, at the Orvieto installations centre a system is in operation for collection of rainfall coming from the roof of the treatment system building to top up the fire-fighting reserve.

WATER LEAKS

Sustainable water management includes the issue of **limiting losses from distribution networks**. During 2018, in line with the previous year, the water companies – and in particular Acea Ato 2 – continued its intense search for leaks in order to recover as much water as possible (see box *Recovery of losses in Rome and in the municipalities of Ato 2*).

Together with the search for hidden leaks, Acea Ato 2 continued **dividing the area into districts**, aimed at increasing the efficiency of portions of the region, defining interventions or reconfigurations of network structures through the verification of the perimeters of water districts and the optimisation of pressures. To date, approximately 4,200 km of Rome's distribution network have been studied and **72 measurement districts** have been created. For about 1,000 km of distribution network the study was complemented by a mathematical model using pressure control valves and the installation of instrumentation for remote management of the network.

[123] The dedicated chemical-physical plant went into operation in January 2017.

During the year, Acea Ato 2 also carried out network **efficiency improvement** actions in **21 municipalities** in the province. The study focused on **1,200 km of water network** (to complement the 1,000 km already examined in 2017), the activity involving surveys, flow and pressure measurements, map production, user analysis and water balancing, mathematical modelling and searches for leaks. The results of the study and efficiency actions were imported into the GIS systems.

LEAK RECOVERY PLAN IN ROME AND THE COMMUNITIES OF ATO 2

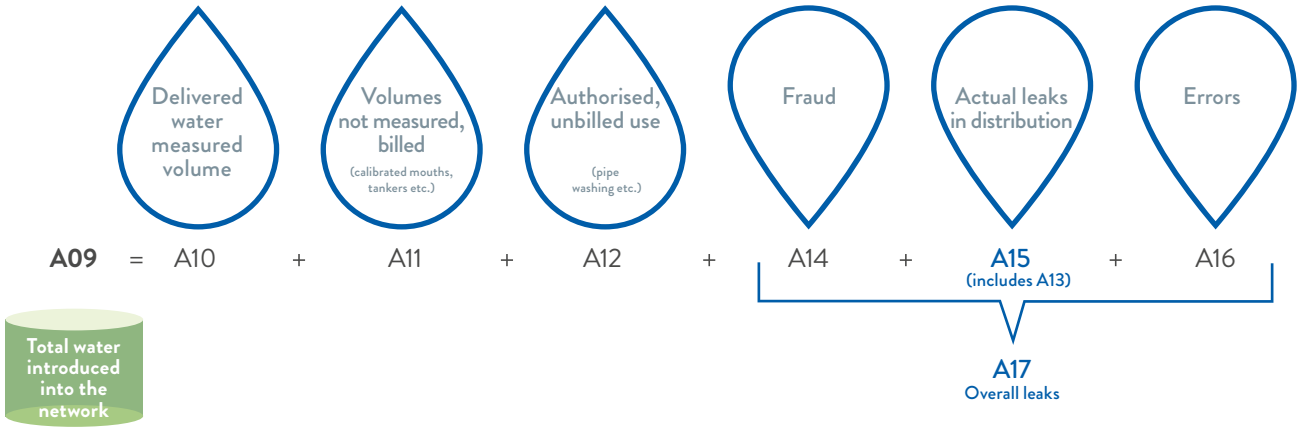
In 2018, following the water emergency that involved the city of Rome in 2017, the search for leaks in the city's water network continued and was extended to the networks of the municipalities of Ato 2.
The Action Plan provided for the subdivision of the territory to be monitored in lots and the searches for leaks were carried out with the help of operational squads in the various areas, coordinated by a team of experts who then processed the data acquired and directed the repair work.

A total of **10,000 km of distribution network were monitored** during the year (for a total of 21,000 km of network monitored since the start of activities in 2017) with the identification of about **2,000 hidden leak**.[124]

In 2018 Acea Ato 5 carried out the analysis of the water network (in particular in parts of the territories of Arpino, Pico, Villa Santa Lucia) and the **search and repair of leaks, scheduling** about 2,654 orders to **search for leaks**. Moreover, in the municipalities of **Ceccano and Frosinone**, reclamation works were carried out on the water networks that allowed a **recovery of water** estimated at about 4 l/s for the municipality of Ceccano and about 10 l/s for the municipality of Frosinone.
In 2018 **Gesesa** further developed the division of water networks into districts by extending the reduction of pressures and setting the goal of covering all the municipalities managed.
In 2018, the analysis of the set-up of the water networks and **leak detection and recovery** led to **291 interventions and the reclamation of about 0.84 km** of water supply network.

As regards the issue of water losses, in order to make the data from different operators comparable and define the quantities that contribute to estimating them, Ministerial Decree no. 99/97 supplies a reference model, together with the measures with which, in recent years, **ARERA** has intervened by introducing progressive changes to the calculation process. The water balance data, illustrated in detail in the ***"Environmental Accounts"***[125], were processed, ensuring the comparability of the last three years. Chart no. 48 shows **the model specified in Ministerial Decree 99/97**, considering the interventions of the ARERA regulation.

CHART NO. 48 - REAL WATER LOSSES (MODEL OF MINISTERIAL DECREE NO. 99/97, REGULATORY INTEGRATIONS OF ARERA)



In 2018, the search and repair of leaks in the city of **Rome** described above ("historical network") resulted in a **decrease in real losses**, which stood at **38%** (compared to 41% in 2017). The value of real losses also fell for the entire Ato 2 network to 44% (45.5% in 2017).

In **Acea Ato 5** (Frosinone) the real losses in 2018 amounted to approximately 72.8% of the amount injected into the network. As the figure has increased, an extraordinary plan is expected to be launched in 2019 that will lead to the division of the networks into districts, which – together with the results of a user search campaign that has not yet been initiated – is expected to result in a reduction in the losses.
Finally, at **Gesesa** the real losses in 2018 amounted to approximately **38%**, with a significant improvement (45% in 2017). See the *Environmental Accounts* for details.

[124] Hidden leaks are defined as water leaks due to breakage or malfunctioning of private water systems, whether they are buried or embedded, they are not detectable from the outside in a direct or obvious way.

[125] The water reports of the companies of Campania, Umbria and Tuscany, with consolidated net worth, can be examined in the chapter *Water Company data sheets and overseas activities.*.

EMISSIONS

CONTINUOUS ANALYSIS OF EMISSIONS FROM WASTE-TO-ENERGY PLANTS: VALUES OF POLLUTANTS SIGNIFICANTLY BELOW THE LEGAL LIMITS

EMISSIONS INTENSITY INDEX (SCOPE 2) FROM NETWORK LEAKS OUT OF THE TOTAL DISTRIBUTED ELECTRICAL POWER IMPROVED:

0.0113 t/MWh

AIR EMISSIONS

Atmospheric emissions from Acea plants are carefully monitored every year. In particular, at the **waste-to-energy plants** monitoring is carried out by means of **fixed and mobile stations** that sample and analyse the fumes coming out of the chimneys, measuring numerous parameters that are periodically checked by internal personnel and certified by qualified external laboratories. In 2018, the **values of the main pollutants** were also **significantly below the legal limits** (see Table no. 64). In any case, the **principle of precaution** still applies, as well as attention and seeking out technological solutions with increasing performance from the issue quality viewpoint.

In 2018, surveys of **odorous emissions** and the monitoring of **"diffuse and fugitive emissions"** were also conducted, with outcomes that were not critical.

The waste-to-energy plants are also managed according to UNI EN ISO 14001 standard, the OHSAS 1800:2007 standard and the European EMAS III scheme. The EMAS registration, after verification by the competent authorities during the year, has been extended until 2021.

TABLE NO. 64 - AIR EMISSIONS FROM THE SAN VITTORE DEL LAZIO AND TERNI WASTE-TO-ENERGY PLANTS (2016-2018)

		San Vittore del Lazio plant (*)				Terni plant (*)			
pollutant	**u.m.**	**benchmark(**)**	**2016**	**2017**	**2018**	**benchmark(**)**	**2016**	**2017**	**2018**
HCl	mg/Nm^3	8	0.069	0.053	0.184	10	4.221	4.002	4.499
NOx	mg/Nm^3	70	16.440	18.089	28.273	200	134.445	134.274	140.157
SO_2	mg/Nm^3	40	0.032	0.014	0.006	50	0.297	0.490	0.194
HF	mg/Nm^3	1	0.010	0.011	0.021	1	0.924	0.122	1.084
CO	mg/Nm^3	40	1.065	1.447	1.320	25	0.108	1.018	0.084
total particles (particulate matter)	mg/Nm^3	3	0.004	0.006	0.006	5	0.753	0.678	0.705
PAH (polycyclic aromatic hydrocarbons)	mg/Nm^3	0.01	0.00001	0.00001	0.00002	0.01	<0.001	0.0001	0.5900
dioxins and furans (PCDD +PCDF)	mg/Nm^3	0.1	0.0044	0.0047	0.0065	0.1	<0.01	0.0173	0.00005
heavy metals (Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V)	mg/Nm^3	0.5	0.0193	0.0262	0.0253	0.5	0.0263	0.1085	< 0.001

(*) The analysis of PAH, dioxins and furans and heavy metals and their composites are four-monthly and discontinuous. The "<" symbol identifies the concentration values that are equal to or below the thresholds that the devices used by the laboratory are capable of measuring.

(**) Reference parameters, Legislative Decree no. 46/2014, 2000/76/EC and AIA, are separate for each waste-to-energy plant.

NB The figures for the San Vittore plant refer to the arithmetic averages on the two operating lines for 2016 and three lines for the two-year period 2017-2018.

In addition to the monitoring of air quality mentioned above, at the San Vittore del Lazio waste-to-energy plant the **quality of the surrounding soils and groundwater** are also periodically monitored, in particular, the bioaccumulation of heavy metals on the lichen present in the soils. During the year, two monitoring campaigns of 15 days each were carried out at the two fixed control units to determine heavy metals, particulate matter (PM_{10} e $PM_{2,5}$) and other pollutants. The results of **all the monitoring campaigns**, using both fixed and mobile monitoring devices, **did not indicate excessive levels** for the measured parameters.

GREENHOUSE GAS EMISSIONS

Greenhouse gas emissions, as defined in the international document Greenhouse Gas Protocol (or GHG Protocol), aligned with **ISO 14064** which was **implemented in 2018**, are classified into the following three types:

- **Scope 1 emissions**: direct greenhouse gas emissions;
- **Scope 2 emissions**: indirect greenhouse gas emissions;
- **Scope 3 emissions**: other indirect greenhouse gas emissions.

Acea quantifies its CO_2 emissions by **assessing the carbon footprint of individual macro production processes** according to the guidelines of the *GHG Protocol*[126]; In fact, as mentioned above, it participates in the annual completion of the international questionnaire on carbon dioxide emissions, the so-called "CDP" (see the box in the section *Mitigation and adaptation to climate change*).
Scope 1 emissions are **direct emissions**. They **mainly come from the Group's waste-to-energy plants and thermoelectric power plants** and include emissions from the heating process, dryers, generators, vehicles in its fleet (with reference to petrol and diesel engines) and, lastly, from sulphur hexafluoride (SF_6) losses that can occur at Areti plants, and from freon gases in air conditioners, the latter being reported this year for the first time.
As mentioned, the most significant contribution comes from the CO_2 emitted by the waste-to-energy plants. The figure decreased in 2018 mainly due to a new method of determining CO_2 emissions at the San Vittore plant in Lazio: instead of calculating the value we now have the actual data from continuous monitoring of the chimney.
Scope 2 greenhouse gas emissions are indirect, deriving from the consumption of electricity and also kept under control.
In both cases, they concern emissions which Acea monitors regularly, also disclosing them, as mentioned, by means of the *CDP* (see Table no. 67).

Finally, greenhouse gas emissions of the ***Scope 3*** type are represented by **other indirect emissions**, like those deriving from the purchase of goods/services and works, from employee travel for work and from commuting by employees. With regard to Scope 3 emissions, Acea has been monitoring its suppliers for some years now, so that they are aware of the environmental impact and estimates the data relating to the movements of employees (see Table no. 67 below).

Three Group plants, specifically the waste-to-energy plant in Terni and the thermoelectric plants in Montemartini and Tor di Valle, are subject to the Emission Trading Scheme (ETS). The allowances assigned under the NAP (National Allocation Plan) framework, in respect of the actual emissions registered in the three-year period 2016-2018, are shown in Table no. 65.

TABLE NO. 65 - CO_2 EMISSION ALLOWANCES AS PER THE NATIONAL ALLOCATION PLAN (NAP) AND ACTUAL EMISSIONS BY PLANT (2016-2018)

	2016		2017		2018	
system	t					
	assigned by NAP	actual	assigned by NAP	actual	assigned by NAP	actual
Tor di Valle (*)	7,969	23,313	6,869	33,507	5,805	41,946
Montemartini	0	1,297	0	2,278	0	607
Terni waste-to-energy plant	0	112,865	0	118,653	0	114,093 (**)

(*) As with previous years, in 2018 the applicable legislative framework allowed the Tor di Valle plant to benefit from free of charge emission allowances (5,805 t) as it serves a remote heating network.

(**) Estimated emissions, pending certification by the responsible body.

INTENSITY INDICES FOR GREENHOUSE GAS EMISSIONS

One of the monitored intensity indices for greenhouse gas emissions (see Table no. 67) concerns **Scope 2 carbon dioxide emissions, deriving from leaks** in the network for the distribution of electricity, in **respect to the total electricity distributed**. This index has **improved further**, changing from 0.0115 t/MWh in 2017 to **0.0113 t/MWh** in 2018, in line with the continuous decrease in relative leaks in the network (technical leaks/distributed electricity).

With regard to other atmospheric emissions and in particular to the most significant macro-pollutants due to the main production processes of the plants (Acea Ambiente and Acea Produzione), see the summary data in Table no. 66. Compared to the 2017 data, they show substantial stability relating to NO_x (nitrogen oxide) and a decrease in other types of pollutants, in particular SO_x (sulphur oxide).

126 See www.ghgprotocol.org for more information.

TABLE NO. 66 - TOTAL EMISSIONS OF ATMOSPHERIC POLLUTANTS FROM ACEA GROUP PLANTS (2016-2018)

emissions	2016	2017	2018
		(t)	
CO	6.28	6.81	6.38
NO_x	171.13	198.20	189.40
SO_x	0.28	0.42	0.16
particles (particulate matter)	0.55	0.55	0.50

NB The emissions refer to the following companies: Acea Ambiente - waste-to-energy plant and Acea Produzione.

Monitoring carried out on installations at risk[127] has shown that **emissions of substances responsible for reducing the ozone layer** are **not present in significant quantities** (see Table no. 67 and the *Environmental accounts, Resources used*).

TABLE NO. 67 - ENVIRONMENTAL INDICATORS: CO_2 EMISSIONS, GREENHOUSE GAS INTENSITY INDICES AND VEHICLE EMISSIONS (2016-2018)

CO_2 EMISSIONS				
SCOPE 1 EMISSIONS				
FROM ENERGY PRODUCTION PLANTS				
	u. m.	**2016**	**2017**	**2018**
CO_2 emissions from Acea Produzione thermoelectric plants	t	24,610	33,507	42,553
CO_2 emissions from Acea Ambiente waste-to-energy plants (*)	t	338,552	375,159	307,160
FROM WASTE MANAGEMENT, ENERGY DISTRIBUTION, HEATING PLANTS AND VEHICLE FLEET				
CO_2 emissions from waste management plants	t	-	932	927
CO_2 emissions from dryers water plants	t	-	2,026	3,381
CO_2 emissions from heating	t	1,018	1,008	751
CO_2 emissions from vehicle fleet (**)	t	4,891	7,371	9,407
CO_2 emissions from Areti plants (from SF_6) (***)	t	14,820	14,100	11,233
CO_2 emissions from refrigerants (****)	t	-	-	46
TOTAL SCOPE 1 EMISSIONS	**t**	**383,891**	**434,103**	**375,458**
SCOPE 2 EMISSIONS				
CO_2 emissions from location based consumption of electricity consumption (market based) (*****)	t	349,718 (422,576)	332,547 (170,072)	304,412 (158,479)
SCOPE 3 EMISSIONS				
CO_2 emissions deriving from the purchase of goods/services and works (******)	t	17,099	24,134	23,876
CO_2 emissions from commuting	t	3,687	3,286	4,088
CO_2 emissions from business travel	t	197	152	160

127 This is primarily air conditioning equipment using refrigerant gases subject to the 1987 Montreal protocol, particularly chlorofluorocarbons.

INTENSITY INDICES FOR GREENHOUSE GAS EMISSIONS

intensity indices of the GHG emissions	u. m.	2016	2017	2018
CO_2 emissions (Scope 1 + Scope 2)/Acea Group added value	(t/k€)	0.723	0.789	0.647
Scope 1 CO_2 emissions/gross production (*******)	(g/kWh)	480.9	487.7	361.3
Scope 2 CO_2 emissions deriving from losses on the electrical energy distribution network/distributed GWh (******)	(t/MWh)	0.0119	0.0115	0.0113

(*) The 2016 figure for San Vittore has been corrected. In 2018, the plant's data was measured at the chimney (in the previous two years it was calculated). The 2017 figure for Terni has been adjusted, while the 2018 figure is estimated pending certification by a third-party body.

(**) 2018 includes emissions from the fuel consumption of heavy duty vehicles used by Aquaser.

(***) These are the tonnes of equivalent CO_2 corresponding to the emissions of insulating SF_6 present in Areti's HV equipment (1 t di SF_6 equates to 23,500 t of CO_2, GHG Protocol-5th Assessment Report- AR5): 0.478 tonnes in 2018 (0.60 x 23,500 = 11,233 t). The values for 2017 and 2018 are not comparable to those of the previous years when factor 22,800 of the 4th Assessment Report- AR4 was used.

(****) The contribution due to the replenishment of HCFC fluids in the Group's plants was calculated for the first time in 2018.

(*****) The indirect emissions (Scope 2) include the companies within the scope of the consolidated Non-Financial Statement: Acea Ambiente, Acquaser, Acea Produzione, Areti, Acea SpA and the water companies Acea Ato 2, Acea Ato 5 and Gesesa. As an emission factor per unit of electricity consumed (t CO_2/MWh), for the location-based calculation the value of 0.36 was used, as per Terna's "International comparisons" document (October 2018).
As from 2016 Scope 2 type emissions datum was also calculated using the Market Based method. The Residual Mixes coefficients are respectively for 2016, 2017 and 2018: 0.435 t/MWh, 0.465 t/MWh and 0.476 t/MWh (Source: AIB document "European Residual Mixes 2017").
Considering the whole Group and so also including the other water companies, Gori, Umbra Acque, Acquedotto del Fiora, Publiacqua, Acque, for the sole proprietary quota part of Acea, for the three-year period 2016-2018, di Location based CO_2 emissions are equal to 409,128 t, 398,287 t and 369,596 t respectively, whereas for the Market-based emissions they are equal to 494,363 t, 235,812 t and 244,750 t.

(******) This value, estimated, refers to suppliers of goods, services and works and includes transport emissions. The figure for 2017 was corrected.

(*******) Since 2018, the emissions of Scope 1 included in this index have been emissions from power generation plants. The reduction in 2018 depends mainly on the value of emissions at San Vittore, where emissions were measured instead of using the calculation used for the previous two years. The 2017 value of Terni emissions has been adjusted and is greater than what was previously published in the Environmental accounts.

(********) Network leakage considered for Scope 2 emissions and for calculating the indicator regarding the three-year period 2016-2018, are as follows: 128,388 t, 124,479 t and 120,450 t (due to the technical leakage of electricity from the network).

NB Emission factors for Scope 1 emissions are taken from the standard parameters - ISPRA data 2017, DEFRA 2018 and GHG Protocol-5th Assessment Report- AR5.

WATER COMPANY DATA SHEETS AND OVERSEAS ACTIVITIES

This chapter presents data and information outside the scope of the consolidated non-financial declaration (see *Disclosing Sustainability: methodological note*). The first part presents the activities, information and environmental accounts data for the main companies of the Group which operate in the water segment in Campania, Umbria and Tuscany, consolidated using the equity method in the statutory Sustainability Report. The second part describes the activities of the operating companies abroad. It should be noted that the company Gori, which joined the scope of consolidation on a line-by-line basis in November 2018, has not been included within the scope of the DNF for this reporting cycle, but is considered to be the same as the other water companies in which it has an interest.

WATER ACTIVITIES IN CAMPANIA, UMBRIA AND TUSCANY

Once again in 2018, for the preparation of water balances and, in particular, for the calculation of water losses, the companies followed the criteria specified by ARERA, in addition to Ministerial Decree 99/97, for the three-year period, unless otherwise specified.

GORI

Gori SpA is the entity that manages the Integrated Water Service for the Sarnese-Vesuvian District Area (formerly Ato 3 "Sarnese-Vesuvian" of the Campania Region).
It is a joint-stock company with a predominantly public-owned share capital, where the first private minority shareholder (which holds 37.05% of the share capital) was identified given its technical-industrial and management abilities: it is Sarnese Vesuviano Srl, 99.16% of whose share capital is owned by Acea SpA. The Sarnese Vesuviano district comprises 76 municipalities (59 in the province of Naples and 17 in the province of Salerno), fully acquired under management as of 31/12/2009. The district served has around 1,446,000 inhabitants, with over 526,000 customers; the water network and sewerage network cover more than 4,500 km and 2,400 km, respectively.

HUMAN RESOURCES IN FIGURES

GORI SPA EMPLOYEES: STAFF BREAKDOWN (2017-2018)

(no.)	2017				2018			
	men	women	**total**	weight %	men	women	**total**	weight %
executives	6	2	**8**	1.2	6	2	**8**	1.0
managers	17	1	**18**	2.8	18	1	**19**	2.4
clerical workers	299	60	**359**	55.4	359	81	**440**	55.8
workmen	263	0	**263**	40.6	322	0	**322**	40.8
total	**585**	**63**	**648**	**100.0**	**705**	**84**	**789**	**100.0**

GORI SPA EMPLOYEES: CONTRACT TYPE (2017-2018)

(no.)	2017			2018		
	men	women	**total**	men	women	**total**
staff with permanent contract	585	63	**648**	705	83	**788**
(of which) part-time staff	*0*	*1*	*1*	*0*	*1*	***1***
permanent staff	0	0	**0**	0	0	**0**
staff under apprenticeship contracts	0	0	**0**	0	1	**1**
total	**585**	**63**	**648**	**705**	**84**	**789**

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2017-2018)

	2017	2018
accidents (no.)	33	20
total days of absence (*)	241	443
hours worked	1,023,504	1,249,176
Frequency index (FI) (number of accidents per 1,000,000/working hours)	**32.42**	**16.01**
Severity index (SI) (days of absence per 1,000/working hours)	**0.23**	**0.35**

(*) The value also includes the days of absence due to the continuing or returning effects of accidents occurring in previous years.

TRAINING COURSES AND COSTS IN GORI SPA (2017-2018)

course type	courses (no.)		editions (no.)		training (hours)		costs (€)	
	2017	2018	2017	2018	2017	2018	2017	2018
personnel management (*)	0	0	0	0	0	0	0	0
IT	25	21	42	46	3,462	2,826	76,613	2,343
new hires (*)	0	1	0	3	0	192	0	0
environment	3	2	5	2	1,508	60	24,980	0
technical-specialised (**)	13	22	20	36	850	3,696	3,608	31,499
managerial (***)	2	2	8	13	358	1,236	12,919	0
administrative-managerial	0	0	0	0	0	0	0	0
safety	13	11	49	39	5,270	5,055	18,493	70,023
legal	3	8	12	15	1,596	284	3,300	3,500
experiential	2	7	5	23	5,233	5,428	108,740	88,840
total	**61**	**72**	**141**	**174**	**18,277**	**18,777**	**248,653**	**196,206**

(*) The training may be carried out by teaching staff within the Group.

(**) Technical-specialised training includes the courses given to the staff of the laboratory by the accredited bodies regarding technical quality and sampling.

(***) In 2018, a representation of managers and executives was involved in the "Managerial Academy" training programme promoted by the Parent Company.

TRAINED EMPLOYEES (2017-2018)

(no.)	2017			2018		
	men	women	**total**	men	women	**total**
	565	57	**622**	696	80	**776**

NETWORK AND PLANT CONSISTENCY AND ENVIRONMENTAL DATA

WATER SYSTEM MANAGED BY GORI SPA (active plants) (2016-2018)

	2016	2017	2018
water network (km)	4,501.50	4,500.38	4,574.50
aqueducts and transport networks (km)	*452.96*	*455.89*	*467.19*
distribution network (km)	*4,048.55*	*4,044.49*	*4,107.31*
well intake structures (no.)	75	76	90
spring intake structures (no.) (*)	4	4	10
pumping stations (no.) (**)	98	104	101
reservoirs (no.) (***)	163	169	170

(*) In 2018 the data relating to springs increased following the adoption of a new calculation method which, for the Funuto Spring complex – until last year counted as a single spring – separately considers the active springs belonging to the same complex (in 2017 the complex was considered as one spring only, in 2018 the 7 active springs out of the 12 total were considered).

(**) The 2017 data have been adjusted and aligned with the ARERA communication. Compared to the previous year, the data for 2018 are affected by the decommissioning of the Pastore, Sistema Alto, Via Ponte Don Melillo and Rione Gescal water pumping plants and the inclusion of the Traiano pumping station.

(***) The data for 2017 have been adjusted and aligned with the ARERA communication. The data include the Boccia al Mauro di Gori, Traiano, Per Visciano and Piano del Canto tanks.

CONSISTENCY OF THE PURIFICATION AND SEWERAGE PLANTS MANAGED BY GORI SPA (2016-2018)

	2016	2017	2018
purification plants (no.)	7	7	7
sewerage pumping stations (no.) (*)	165	169	174
sewerage network (km)	2,333	2,413	2,409

(*) Since 2018, Gori has taken over the management of 5 new sewerage systems (net of two divestments).

CERTIFICATIONS

Since 2015, Gori has had an occupational safety management system certified in accordance with **BS OHSAS 18001:2007**. In 2018 the company Gori Servizi received certifications for its Quality Management System compliant with the **UNI ISO 9001:2015 standard** and for the Environmental Management System meeting the **UNI ISO 14001:2015 standard**.

GORI SPA ENVIRONMENTAL ACCOUNTS (2016-2018)

PRODUCTS AND ANALYTICAL TESTS	u. m.	2016	2017	2018	Δ% 2018/2017
DRINKING WATER					
drinking water from the environment	**Mm³**	**44.41**	**70.98**	**55.89**	**-21.3**
From wells	*Mm³*	*41.45*	*69.10*	*54.14*	*-21.6*
From springs	*Mm³*	*2.96*	*1.87*	*1.74*	*-7.0*
water from other aqueduct systems	**Mm³**	**158.20**	**126.20**	**139.47**	**10.5**
drinking water released into the network (*)	**Mm³**	**202.62**	**202.52**	**193.34**	**-4.5**
Total drinking water supplied (*)	**Mm³**	**90.37**	**89.49**	**89.93**	**0.5**
ASSESSMENT OF THE LOSSES ACCORDING TO MINISTERIAL DECREE NO. 99/97 AND IN CONFORMITY WITH THE ARERA REQUIREMENTS					
Overall leaks (size A17) (*)	Mm³	111.80	113.03	103.41	-8.5
Actual leaks (size A15 of Ministerial Decree 99/97) (*)	Mm³	87.76	88.16	81.17	-7.9
WASTEWATER TREATED					
water treated in the main treatment plants	**Mm³**	**8.2**	**9.0**	**7.7**	**-14.4**
ANALYTICAL TESTS ON DRINKING WATER AND WASTEWATER					
no. analytical tests on drinking water	**no.**	**81,590**	**101,460**	**95,462**	**-5.9**
no. analytical tests on wastewater (**)	**no.**	**19,454**	**19,180**	**19,854**	**3.5**

(*) The data for 2017 have been updated compared to the previous publication and are consistent with the final data sent to ARERA..

(**) The value includes determinations completed on sewerage network and purification plant wastewater.

RESOURCES USED	u. m.	2016	2017	2018	Δ% 2018/2017
COLLECTION, SUPPLY AND DISTRIBUTION DRINKING AND NON-DRINKING WATER					
materials					
sodium hypochlorite	t	401.9	196.9	159.5	-19.0
ELECTRICITY (*)					
Total electricity for drinking water	**GWh**	**52.38**	**71.63**	**78.31**	**9.3**
electricity for water pumping stations	*GWh*	*52.14*	*71.46*	*77.54*	*8.5*
electricity for offices	*GWh*	*0.24*	*0.17*	*0.76*	*-*
WASTEWATER TREATMENT					
materials					
polyelectrolyte powder	t	30.7	19.0	14.5	-23.7
polyelectrolyte emulsion	t	33.1	34.0	49.2	44.7
sodium hypochlorite	t	172.2	152.0	101.9	-33.0
ferric chloride aiding flocculation (40%)	t	129.0	122.0	165.0	35.2
citric acid	t	1.2	4.0	5.0	25.0
peracetic acid, polyamine/anti-foaming agent	t	96.2	81.0	100.4	24.0
aluminium polychloride	t	4.1	4.0	7.3	82.5
mineral oil and fats	t	6.4	6.0	3.5	-41.7
other (artificial COD + soda for deodorisation)	t	2.2	3.1	4.7	51.6
ELECTRICITY FOR WASTEWATER					
Total electricity for wastewater	**GWh**	**14.76**	**14.00**	**14.59**	**4.2**
electricity for treatment	*GWh*	*10.15*	*9.02*	*9.20*	*2.0*
electricity for pumping stations	*GWh*	*4.61*	*4.99*	*5.39*	*8.0*

RESOURCES USED (follow)	u. m.	2016	2017	2018	Δ% 2018/2017
OTHER CONSUMPTION (**)					
Total other drinking water consumption	**m³**	**7,797**	**7,282**	**8,827**	**21.2**
drinking water consumed for non-industrial water uses (the data relate to consumption for offices, outside showers, etc.)	*m³*	*7,797*	*7,282*	*8,827*	*21.2*
drinking water consumed for process water uses (washing machinery and bays, etc.)	*m³*	*0*	*0*	*0*	-

(*) In 2018 the increase in electricity consumption relating to pumping equipment and administrative offices was due to the transfer of the management and related accounting of electricity use – which until last year were managed by third parties – to Gori.

(**) The data related to the item "other consumption" are estimated. The value related to process water usage is null given that industrial water is used.

WASTE	u. m.	2016	2017	2018	Δ% 2018/2017
SPECIFIC WASTE FROM TREATMENT OF WASTEWATER					
treatment sludge (*)	t	12,526	6,318	4,743	-24.9
sand and sediment from treatment	t	2,382	2,187	944	-56.8
WASTE (PURSUANT TO LEGISLATIVE DECREE NO. 152/06 EXCLUDING SLUDGE AND SAND (**)					
hazardous waste	t	0.067	0.058	0.060	3.4
non-hazardous waste	t	5.20	10.0	93.0	-

(*) The reduced production of sludge is due to the activation in 2017 of the dryer at the Scafati purification plant which allowed a notably reduction in the humidity fraction of dehydrated sludge.

(**) As in previous years, the variability in quantities of hazardous and non-hazardous waste derives from purification processes – excluding sludge, sediment and sand – these are associated to extraneous factors, and therefore can be highly variable.

TOTAL COD IN INPUT AND OUTPUT (2016-2018)

(t/year)	2016	2017	2018
COD_{in}	2,772	3,239	1,882
COD_{out}	158	213	152

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS MANAGED BY GORI SPA (2016-2018)

parameter	average values (mg/l) 2016	average values (mg/l) 2017	average values (mg/l) 2018
BOD_5	9	9	10
COD	20	24	22
SST	20	23	15
NH_4^+	1	1	2
phosphorus	1	1	1

TREATMENT EFFICIENCY OF THE MAIN TREATMENT PLANTS MANAGED BY GORI SPA (2016-2018)

parameter	average values (%) 2016	average values (%) 2017	average values (%) 2018
$100x(COD_{in} - COD_{out})/COD_{in}$	94	93	93
$100x(SST_{in} - SST_{out})/SST_{in}$	84	84	86
$100x(NH_4^+{}_{in} - NH_4^+{}_{out})/ NH_4^+{}_{in}$	97	97	96
$100x(PO_4^{-3}{}_{in} - PO_4^{-3}{}_{out})/ PO_4^{-3}{}_{in}$	69	53	67

EFFICIENCY

During the three-year period 2016-2018, Gori has implemented energy efficiency interventions and achieved the savings shown in the table.

GORI SPA ENERGY EFFICIENCY (2016-2018)

action	energy savings achieved 2016 (kWh)	energy savings achieved 2017 (kWh)	energy savings achieved 2018 (kWh)
Tartaglia plant - well field - actions on networks and division into districts (Municipalities of San Giorgio a Cremano and Portici)	833,424	-	1,014,394
Scafati treatment plant - removal of waste water in the tanks for secondary pumping, rationalisation of the biological oxidisation system - installation of the new lighting system using LED bulbs (Municipality of Scafati)	676,424	864,448	-
Suppezza plant - well field - installation of load regulation valve and remote control there of (Municipality of Castellammare di Stabia)	466.396	-	520.495
Fontana Grande plant - pumping - actions on networks and division into districts (Municipality of Castellammare di Stabia)	418,929	-	422,934
Murata plant - lifting - regulation and functioning electric pumps via inverter (Municipality of Cercola)	385,525	-	-
Sala well - actions on networks and division into districts (Municipality of Corbara)	101,586		78,696
Parrocchia well - actions on networks and division into districts (Municipality of Palma Campania)	69,951	46,664	12,607
Torretta well - actions on networks and division into districts (Municipality of Pagani)	31,699	-	42,366
Spiano well - actions on networks and division into districts (Municipality of Mercato San Severino)	13,353	-	36,179
Mercato Palazzo field wells - installation of TLC system - electromechanical revamping (Municipality of Sarno)	-	-	4,232,926

UMBRA ACQUE

Umbra Acque SpA is a company with predominantly public capital, in which Acea SpA has a 40% interest. Since 1 January 2003 the company manages the integrated water service for integrated territorial authorities (ATI) - Umbria 1 and 2, consisting of 38 municipalities, of which 37 in the province di Perugia and 1 (San Venanzo) in the province of Terni, serving a total population of around 502,000 inhabitants for 233,000 users served. The water network extends for about 6,124 km and the sewerage network 1,620 km.

HUMAN RESOURCES IN FIGURES

UMBRA ACQUE SPA EMPLOYEES: BREAKDOWN OF HUMAN RESOURCES (2017-2018)

(no.)	2017				2018			
	men	women	**total**	weight %	men	women	**total**	weight %
executives	4	0	**4**	1.2	4	0	**4**	1.1
managers	7	2	**9**	2.7	9	2	**11**	2.9
clerical workers	63	58	**121**	35.9	72	75	**147**	39.1
workmen	203	0	**203**	60.2	214	0	**214**	56.9
total	**277**	**60**	**337**	**100.0**	**299**	**77**	**376**	**100.0**

UMBRA ACQUE SPA EMPLOYEES: CONTRACT TYPE (2017-2018)

(no.)	2017			2018		
	men	women	**total**	men	women	**total**
staff with permanent contract	272	50	**322**	255	51	**306**
(of which) part-time staff	*2*	*8*	***10***	*2*	*6*	***8***
permanent staff	5	9	**14**	36	24	**60**
staff under apprenticeship contracts	0	1	**1**	8	2	**10**
total	**277**	**60**	**337**	**299**	**77**	**376**

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2017-2018)

	2017 (*)	2018
accidents (no.)	15	19
total days of absence	1,212	818
hours worked	568,260	615,479
Frequency index (FI) (number of accidents per 1,000,000/working hours)	**26.39**	**30.87**
Severity index (SI) (days of absence per 1,000/working hours)	**2.13**	**1.33**

(*) The value "hours worked" 2017 was estimated; the FI and SI indices are also consequent to estimation.

COURSES AND TRAINING COSTS IN UMBRA ACQUE SPA (2017-2018)

course type	courses (no.)		editions (no.)		training (hours)		costs (€)	
	2017	2018	2017	2018	2017	2018	2017 (*)	2018
advanced training	0	1	0	1	0	4	0	2,600
specialised technician	37	62	58	87	1,929	3,561	77,748	71,714
legal	7	6	7	6	61	92	1,110	8,384
managerial	11	10	11	15	706	1,016	28,366	27,307
administrative-managerial	0	0	0	0	0	0	0	0
safety	0	16	0	39	0	1,366	0	13,240
total	**55**	**95**	**76**	**148**	**2,696**	**6,039**	**107,224**	**123,245**

(*) Costs 2017 were calculated proportionately to the hourly cost related to the previous year.

TRAINED EMPLOYEES (2017-2018)

(no.)	2017			2018		
	men	women	**total**	men	women	**total**
	277	60	**337**	182	64	**283**

NETWORK AND PLANT CONSISTENCY AND ENVIRONMENTAL DATA

WATER SYSTEM MANAGED BY UMBRA ACQUE SPA (2016-2018)

	2016	2017	2018
water network (km)	6,398	6,071	6,124
aqueducts and transport networks (km)	*385*	*1,363*	*1,388*
distribution network (km)	*6,013*	*4,708*	*4,736*
well intake structures (no.)	219	222	219
spring intake structures (no.)	289	289	285
river intake structures (no.)	2	2	2
pumping stations (no.)	238	250	261
piezometers (no.)	1	1	1
reservoirs (no.)	580	587	587
disinfection/treatment plants (no.)	249	250	250

CONSISTENCY OF THE PURIFICATION AND SEWERAGE PLANTS MANAGED BY UMBRA ACQUE SPA (2016-2018)

	2016	2017	2018
purification plants (no.)	117	117	114
sewerage pumping stations (no.)	206	216	223
sewerage network (km) (*)	3,543	3,543	1,620

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

CERTIFICATIONS

Umbra Acqua has implemented an **Integrated Quality, Environment and Safety Management System** (QAS) in compliance with the **UNI ISO 9001:2015, UNI ISO 14001:2015 and BS OHSAS 18001:2007** standards.

In 2018, the company successfully passed the audit for the renewal of the Quality Management System certification according to the **UNI ISO 9001:2015 standard**.

The Laboratory of Analysis, accredited as per the **UNI ISO/IEC 17025:2005 standard**, has extended the accreditation to both chemical and microbiological tests, for aqueous matrices of natural type, for human consumption and discharge, on multiple parameters, including pH, conductivity, metals, anions, microbiological tests (like bacteria Escherichia Coli and Enterococci), total nitrogen and total phosphorus.

In 2018, 54 accredited tests were carried out.

UMBRA ACQUE SPA ENVIRONMENTAL ACCOUNTS (2016-2018)

PRODUCTS AND ANALYTICAL TESTS	u. m.	2016	2017	2018	Δ% 2018/2017
DRINKING WATER					
drinking water from the environment	**Mm³**	**58.17**	**58.63**	**58.69**	**0.1**
From wells	*Mm³*	*44.30*	*46.85*	*46.05*	*-1.7*
From springs	*Mm³*	*13.87*	*11.78*	*12.64*	*7.3*
water from other aqueduct systems	**Mm³**	**1.07**	**1.21**	**1.37**	**13.2**
drinking water released into network	**Mm³**	**59.00**	**59.59**	**60.06**	**0.8**
Total drinking water supplied	**Mm³**	**27.83**	**28.04**	**28.55**	**1.8**
ASSESSMENT OF THE LOSSES ACCORDING TO MINISTERIAL DECREE NO. 99/97 AND IN CONFORMITY WITH THE ARERA REQUIREMENTS					
Overall leaks (size A17)	Mm³	26.04	26.08	25.65	-1.6
Actual leaks (size A15 of Ministerial Decree 99/97)	Mm³	24.59	24.67	24.50	-0.7
TREATED WASTEWATER					
water treated in the main treatment plants	**Mm³**	**59.2**	**56.0**	**61.3**	**9.5**
ANALYTICAL TESTS ON DRINKING WATER AND WASTEWATER					
total no. analytical tests on drinking water	**no.**	**72,420**	**79,750**	**136,881**	**71.6**
of which no. analytical tests on drinking water (*)	*no.*	*69,820*	*71,250*	*129,381*	*81.6*
of which no. analytical tests on surface water	*no.*	*2,600*	*8,500*	*7,500*	*-11.8*
no. analytical tests on wastewater	**no.**	**36,169**	**38,128**	**39,693**	**-4.1**

(*) The higher value is linked to an increase in the parameters tested for each sample analysed and in particular to the expression of the individual analytes linked to pesticides in the Test Reports.

RESOURCES USED	u. m.	2016	2017	2018	Δ% 2018/2017
COLLECTION, SUPPLY AND DISTRIBUTION DRINKING AND NON-DRINKING WATER					
materials (*)					
sodium hypochlorite	t	52.1	60.0	60.0	-
sodium chloride	t	153.0	200.0	200.0	-
hydrochloric acid	t	150.6	200.0	200.0	-
aluminium polychloride	t	4.0	12.0	12.0	-
phosphoric acid (10%)	t	6.4	9.0	9.0	-
acetic acid	t	86.7	100.0	0.0	-
ELECTRICITY					
Total electricity for drinking water	**GWh**	**63.20**	**71.86**	**71.46**	**-0.6**
electricity for water pumping stations	*GWh*	*62.85*	*71.49*	*71.08*	*-0.6*
electricity for offices	*GWh*	*0.36*	*0.37*	*0.38*	*2.7*

RESOURCES USED (follow)	u. m.	2016	2017	2018	Δ% 2018/2017
WASTEWATER TREATMENT					
materials					
polyelectrolyte emulsion	t	78.7	80.0	90.9	13.6
ferric chloride (40%)	t	49.6	40.0	28.0	-30.0
mineral oil and fats (*)	t	1.40	1.40	1.40	-
ELECTRICITY FOR WASTEWATER					
Total electricity for wastewater	**GWh**	**20.58**	**20.93**	**21.02**	**0.4**
electricity for treatment	*GWh*	*16.27*	*16.97*	*16.29*	*-4.0*
electricity for pumping stations	*GWh*	*4.19*	*3.84*	*4.62*	*20.3*
electricity for offices	*GWh*	*0.12*	*0.12*	*0.11*	*-8.3*
OTHER CONSUMPTION					
OTHER DRINKING WATER CONSUMPTION (*)	**m^3**	**28,889**	**28,889**	**28,889**	**-**
drinking water consumed for non-industrial water uses (the data relate to consumption for offices, outside showers, etc.)	*m^3*	*2,282*	*2,282*	*2,282*	-
drinking water consumed for process water uses (washing machinery and bays, etc.)	*m^3*	*26,607*	*26,607*	*26,607*	-

(*) Data are estimated.

WASTE	u. m.	2016	2017	2018	Δ% 2018/2017
SPECIFIC WASTE FROM TREATMENT OF WASTEWATER					
treatment sludge (*)	t	23,099	19,573	13,185	-32.6
sand and sediment from treatment	t	1,321	1,238	841	-32.1
WASTE PURSUANT TO LEGISLATIVE DECREE NO. 152/06 EXCLUDING SLUDGE AND SAND					
hazardous waste	t	11.8	8.9	6.0	-32.6
non-hazardous waste (*)	t	16,747.5	9,604.6	6,693.0	-30.3

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

TOTAL COD IN INPUT AND OUTPUT (2016-2018)

(t/year)	2016	2017	2018
COD_{in}	21,312.71	24,015.45	33,394.80
COD_{out}	3,411.79	3,079.46	2,777.02

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS MANAGED BY UMBRA ACQUE SPA (2016-2018)

parameter	average values (mg/l) 2016	average values (mg/l) 2017	average values (mg/l) 2018
BOD_5	29.3	24.4	21.6
COD	57.6	55.0	45.3
SST	33.7	25.1	24.6
NH_4+	5.3	7.3	8.0
phosphorus	1.9	2.3	2.0

TREATMENT EFFICIENCY OF THE MAIN TREATMENT PLANTS MANAGED BY UMBRA ACQUE SPA (2016-2018)

parameter	average values (%) 2016	average values (%) 2017	average values (%) 2018
$100x(COD_{in} - COD_{out})/COD_{in}$	84.0	87.2	91.7
$100x(SST_{in} - SST_{out})/SST_{in}$	91.4	94.5	90.3
$100x(NH_4+_{in} - NH_4+_{out})/ NH_4+_{in}$	85.9	83.3	80.7
$100x(PO_4^{-3}{}_{in} - PO_4^{-3}{}_{out})/ PO_4^{-3}{}_{in}$	38.9	35.9	31.4

PUBLIACQUA

Publiacqua SpA is a mixed company, for the majority in public hands; Acea's equity interest is through the company Acque Blu Fiorentine SpA. It has managed the integrated water service in Ato 3 - Medio Valdano since 2002. The territory includes more than 1.2 million inhabitants, with 395,000 users served, with cities of great artistic and environmental merit, including Florence, Prato and Pistoia. The water network and sewerage network cover more than 6,720 km and 3,650 km, respectively.

HUMAN RESOURCES IN FIGURES

PUBLIACQUA SPA EMPLOYEES: STAFF BREAKDOWN (2017-2018)

(no.)	2017 (*)				2018			
	men	women	**total**	weight %	Men	women	**total**	weight %
executives	3	1	**4**	0.7	3	1	**4**	0.7
managers	10	8	**18**	3.2	9	8	**17**	3.0
clerical workers	170	132	**302**	53.0	172	127	**299**	52.4
workmen	240	6	**246**	43.2	245	6	**251**	44.0
total	**423**	**147**	**570**	**100.0**	**429**	**142**	**571**	**100.0**

(*) The figures for 2017 have been restated compared to what was previously published.

PUBLIACQUA SPA EMPLOYEES: CONTRACT TYPE (2017-2018)

(no.)	2017			2018		
	men	women	**total**	men	women	**total**
permanent staff with open-ended contract (*)	422	147	**569**	425	142	**567**
(of which) part-time staff (*)	*3*	*12*	***15***	*3*	*12*	***15***
permanent staff	1	0	**1**	4	0	**4**
staff under apprenticeship contracts	0	0	**0**	0	0	**0**
total	**423**	**147**	**570**	**429**	**142**	**571**

(*) Figures for 2017 have been restated compared to last year's publication.

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2017-2018)

	2017 (*)	2018
accidents (no.)	22	25
total days of absence (**)	274	594
hours worked	934,119	938,324
Frequency index (FI) (number of accidents per 1,000,000/working hours)	**23.55**	**26.64**
Severity index (SI) (days of absence per 1,000/working hours)	**0.29**	**0.63**

(*) Figures for 2017 have been restated compared to last year's publication.

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

TRAINING COURSES AND COSTS IN PUBLIACQUA (2017-2018)

course type	courses (no.)		editions (no.)		training (hours)		costs (€)	
	2017	2018	2017	2018	2017 (*)	2018	2017	2018
advanced training	33 (*)	5	33 (*)	12	601	615	37,000	11,000
IT	10	4	24	6	1,121	85	23,000	10,700
languages	1	1	12	15	186	100	4,800	4,000
technical-specialised	38	36	71	66	3,275	4,050	23,000	64,500
managerial	1	5	7	11	138	338	9,000	19,300
administrative-managerial	39	46	87	77	1,217	1,438	73,000	28,500
safety	32	42	116	186	5,728	5,555	45,000	60,000
total	**154 (*)**	**139**	**350 (*)**	**373**	**12,264**	**12,180**	**214,800**	**198,000**

(*) Figures for 2017 have been restated compared to last year's publication.

TRAINED EMPLOYEES (2017-2018)

(no.)	2017 (*)			2018		
	men	women	**total**	men	women	**total** (**)
	397	140	**537**	440	148	**588**

(*) Figures for 2017 have been restated compared to last year's publication.

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

In 2018 the training focused mainly on safety and technical-specialised areas.

NETWORK AND PLANT CONSISTENCY AND ENVIRONMENTAL DATA

WATER SYSTEM MANAGED BY PUBLIACQUA SPA (*) (2016-2018)

	2016 (**)	2017 (**)	2018
water network (km)	6,701	6,715	6,722
aqueducts and transport networks (km)	*1,347*	*1,347*	*1,357*
distribution network (km)	*5,354*	*5,368*	*5,365*
well intake structures (no.)	594	595	608
spring intake structures (no.)	846	846	861
river intake structures (no.)	60	60	62
lake intake structures (no.)	20	22	23
pumping stations (no.)	421	423	424
reservoirs (no.)	913	910	911
disinfection/treatment plants (no.)	103	106	107

(*) The data are consistent with the communication to ARERA concerning the managed infrastructures.

(**) Data for 2016 and 2017 have been restated compared to what was published in previous years.

CONSISTENCY OF THE PURIFICATION AND SEWERAGE PLANTS MANAGED BY PUBLIACQUA SPA (*) (2016-2018)

	2016	2017	2018
purification plants (no.)	127	126	128
sewerage lifting systems (no.) (**)	203	209	208
sewerage network (km) (**)	3,567	3,622	3,654

(*) The data are consistent with the communication to ARERA concerning the managed infrastructures.

(**) The data for the years 2016 and 2017 have been adjusted compared to what was published in previous years.

CERTIFICATIONS

Publiacqua has developed an Integrated Management System for Quality, Environment and Safety in compliance with the **UNI ISO 9001:2015, UNI ISO 14001:2015 and BS OHSAS 18001:2007** standards applied to all company activities.

In 2018 it passed the audits for the maintenance of the three certifications.

Finally, the analysis laboratory is accredited according to the **UNI ISO/IEC 17025:2005** standard.

PUBLIACQUA SPA ENVIRONMENTAL ACCOUNTS (2016-2018)

PRODUCTS AND ANALYTICAL TESTS	u. m.	2016 (*)	2017 (*)	2018	Δ% 2018/2017
DRINKING WATER					
drinking water from the environment	**Mm³**	**165.9**	**165.8**	**163.8**	**-1.2**
from lakes/rivers	*Mm³*	*105.4*	*106.5*	*105.2*	*-1.2*
from wells	*Mm³*	*49.2*	*48.0*	*47.4*	*-1.3*
from springs	*Mm³*	*11.3*	*11.3*	*11.2*	*-0.9*
drinking water released into network	**Mm³**	**152.6**	**151.4**	**150.4**	**-0.7**
total drinking water supplied	**Mm³**	**81.0**	**81.0**	**80.0**	**-1.2**

PUBLIACQUA SPA ENVIRONMENTAL ACCOUNTS (2016-2018) (follow)

PRODUCTS AND ANALYTICAL TESTS	u. m.	2016 (*)	2017 (*)	2018	Δ% 2018/2017
ASSESSMENT OF THE LOSSES ACCORDING TO MINISTERIAL DECREE NO. 99/97 AND IN CONFORMITY WITH THE ARERA REQUIREMENTS					
Overall leaks (size A17)	Mm^3	67.1	65.9	65.8	-0.2
Actual leaks (size A15 of Ministerial Decree 99/97)	Mm^3	54.6	53.5	53.5	-
TREATED WASTEWATER					
water treated in the main treatment plants	**Mm^3**	**106.8**	**102.0**	**112.5**	**10.3**
ANALYTICAL TESTS ON DRINKING WATER AND WASTEWATER					
no. analytical tests on drinking water	**no.**	**220,787**	**225,261**	**249,970**	**11.0**
of which no. analytical tests on surface water (**)	*no.*	*21,447*	*22,743*	*23,309*	*2.5*
no. analytical tests on wastewater	**no.**	**40,906**	**39,535**	**39,719**	**0.5**

(*) Data for 2016 and 2017 have been restated compared to what was published in previous years.

(**) This concerns analyses on crude surface water (untreated); they are include in the value for the analytical tests on drinking water.

RESOURCES USED	u. m.	2016	2017 (*)	2018	Δ% 2018/2017
COLLECTION, SUPPLY AND DISTRIBUTION DRINKING AND NON-DRINKING WATER					
materials					
sodium hypochlorite	t	1,396	1,509	1,354	-10.3
sodium chloride	t	314	278	276	-0.7
hydrochloric acid	t	359	302	312	3.3
flocculant	t	5,474	4,219	4,611	9.3
purate	t	384	431	407	-5.6
sulphuric acid	t	586	709	682	-3.8
oxygen	t	54	31	70	-
acetic acid	t	143	76	104	36.8
carbon dioxide excluding drinking fountains	t	705	791	682	-13.8
ferrous chloride	t	31	40	37	-7.5
phosphoric acid	t	19	13	18	38.5
ELECTRICITY					
total electricity for drinking water	**GWh**	**79.5**	**79.3**	**78.3**	**-1.3**
electricity for water pumping stations	*GWh*	*78.4*	*77.8*	*76.8*	*-1.3*
electricity for offices	*GWh*	*1.1*	*1.5*	*1.4*	*-6.7*
WASTEWATER TREATMENT					
materials					
polyelectrolyte emulsion	t	236	308	288	-6.5
sodium hypochlorite	t	13	15	30	100.0
peracetic acid, caustic soda, polyamine/anti-foaming agent	t	7	7	11	57.1
aluminium polychloride	t	4,318	4,120	4,080	-1.0
lime	t	224	305	387	26.9
acetic acid 80%	t	272	304	214	-29.6
ELECTRICITY FOR WASTEWATER					
total electricity for wastewater	**GWh**	**36.2**	**35.5**	**37.1**	**4.5**
electricity for treatment	*GWh*	*31.2*	*31.3*	*33.1*	*5.8*
electricity for pumping stations	*GWh*	*4.5*	*4.1*	*3.9*	*-4.9*
electricity for offices	*GWh*	*0.5*	*0.1*	*0.1*	-

RESOURCES USED (follow)	u. m.	2016	2017 (*)	2018	Δ% 2018/2017
OTHER CONSUMPTION					
Other drinking water consumption	m^3	**n.a.**	**n.a.**	**n.a.**	-

(*) Figures for 2017 have been restated compared to last year's publication.

WASTE	u. m.	2016	2017	2018	Δ% 2018/2017
SPECIFIC WASTE FROM TREATMENT OF WASTEWATER(*)					
treatment sludge	t	26,159	28,792	29,340	1.9
sand and sediment from treatment	t	1,086	767	793	3.4
WASTE PURSUANT TO LEGISLATIVE DECREE NO. 152/06 EXCLUDING SLUDGE AND SAND(*)					
hazardous waste	t	46	39	42	7.7
non-hazardous waste	t	11,570	9,606	11,136	15.9

TOTAL COD IN INPUT AND OUTPUT (2016-2018) (*)

(t/year)	2016	2017	2018
COD_{in} (*)	16,441	18,091	17,031
COD_{out}	1,774	1,756	2,011

(*) Figures for 2017 have been restated compared to last year's publication.

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS MANAGED BY PUBLIACQUA SPA - SAN COLOMBANO (2016-2018) (*)

parameter	average values (mg/l) 2016	average values (mg/l) 2017	average values (mg/l) 2018
BOD_5	2.2	2.1	2.4
COD	15.6	16.0	16.8
SST	7.6	6.0	8.4
NH_4^+	1.1	0.7	0.8
phosphorus	0.9	0.9	0.8

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

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS MANAGED BY PUBLIACQUA SPA (2016-2018) (*)

parameter	average values (mg/l) 2016	average values (mg/l) 2017	average values (mg/l) 2018
BOD_5	2.4	4.1	3.0
COD	16.6	24.7	21.0
SST	6.7	7.1	11.0
NH_4^+	1.3	3.2	2.5
phosphorus	1.0	2.0	1.6

(*) The figures include 36 treatment plants, including San Colombano, which treat a total of 98% of wastewater and 96% of the organic load (COD) of Publiacqua.

PURIFICATION EFFICIENCY OF THE MAIN PURIFICATION PLANTS MANAGED BY PUBLIACQUA SPA (2016-2018)

parameter	average values (%) 2016	average values (%) 2017	average values (%) 2018
$100x(COD_{in} - COD_{out})/COD_{in}$	85.7	89.4	86.1
$100x(SST_{in} - SST_{out})/SST_{in}$	84.0	92.1	88.4
$100x(NH_{4\,in}^{+} - NH_{4\,out}^{+})/ NH_{4\,in}^{+}$	94.8	97.1	96.1
$100x(PO_{4\,in}^{-3} - PO_{4\,out}^{-3})/ PO_{4\,in}^{-3}$	67.2	70.9	68.3

EFFICIENCY OF THE MAIN PURIFICATION PLANTS MANAGED BY PUBLIACQUA SPA (2016-2018) (*)

parameter	average values (%) 2016	average values (%) 2017	average values (%) 2018
$100x(COD_{in} - COD_{out})/COD_{in}$	89.2	90.6	93.3
$100x(SST_{in} - SST_{out})/SST_{in}$	89.9	93.2	91.8
$100x(NH_{4\,in}^{+} - NH_{4\,out}^{+})/ NH_{4\,in}^{+}$	94.6	95.5	91.9
$100x(PO_{4\,in}^{-3} - PO_{4\,out}^{-3})/ PO_{4\,in}^{-3}$	66.5	67.4	60.6

(*) The figures include 36 treatment plants, including San Colombano, which treat a total of 98% of wastewater and 96% of the organic load (COD) of Publiacqua.

In addition to programmes to replace energy-intensive machinery and measures to improve the efficiency of water addition and purification processes undertaken in recent years, important results were achieved in 2018 in processes to improve network efficiency. To this end, the "indirect" energy costs saved as a result of the division of the network into districts have been quantified.

ENERGY EFFICIENCY PUBLIACQUA SPA (2016-2018)

action	energy savings achieved 2016 (kWh)	energy savings achieved 2017 (kWh)	energy savings achieved 2018 (kWh)
Anconella drinking water conversion plant - check valve boosted	115,000	-	130,000
Acquifer 1 (Prato acquifer) - new pumps boosted	100,000	100,000	-
Acquifer 2 - inverter pumps boosted	100,000	-	-
San Giovanni V water treatment system - revamping of pump delivery pipes	-	-	30,000
network efficiency project	-	-	300,000

ACQUEDOTTO DEL FIORA

Acquedotto del Fiora SpA has managed the integrated water service for the largest Optimal Area of Operations in Tuscany, Ato 6 - Ombrone, comprising 56 municipalities and covering an area of over 7,600 km^2, since 1 January 2002. The population served is about 403,000 inhabitants, since in the summer period it doubles, for more than 231,000 users served. The territory served has many **protected areas featuring high biodiversity**, including in particular, due to their special natural importance, Maremma Natural Park and Monte Labro Natural Park.
Activities for management of the water service relate to both networks (aqueduct and sewers) and plants (water purification, wastewater treatment, desalination, etc.) of the 28 municipalities of the province of Grosseto and 27 (out of a total 35) municipalities of the province of Siena. The water network is about 8,160 km long and the sewerage network about 3,215 km long.

HUMAN RESOURCES IN FIGURES

ACQUEDOTTO DEL FIORA SPA EMPLOYEES: STAFF BREAKDOWN (2017-2018)

(no.)	2017				2018			
	men	women	**total**	weight %	men	women	**total**	weight %
executives	1	0	**1**	0.3	1	0	**1**	0.2
managers	11	5	**16**	3.9	11	5	**16**	3.9
clerical workers	125	99	**224**	55.0	122	101	**223**	54.5
workmen	165	1	**166**	40.8	168	1	**169**	41.3
total	**302**	**105**	**407**	**100.0**	**302**	**107**	**409**	**100.0**

ACQUEDOTTO DEL FIORA SPA EMPLOYEES: CONTRACT TYPE (2017-2018)

(no.)	2017			2018		
	men	women	**total**	men	women	**total**
staff with permanent contract	299	100	**399**	298	102	**400**
(of which) part-time staff	*4*	*13*	***17***	*4*	*15*	***19***
permanent staff	2	5	**7**	4	4	**8**
staff under apprenticeship contracts	1	0	**1**	1	0	**1**
total	**302**	**105**	**407**	**303**	**106**	**409**

(*) The value also includes the days of absence due to the continuing or returning effects of accidents occurring in previous years.

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2017-2018)

	2017	2018
accidents (no.)	6	11
total days of absence (*)	92	264
hours worked	656,850	670,106
Frequency index (FI) (number of accidents per 1,000,000/working hours)	**9.13**	**16.42**
Severity index (SI) (days of absence per 1,000/working hours)	**0.14**	**0.58**

TRAINING COURSES AND COSTS IN ACQUEDOTTO DEL FIORA SPA (2017-2018)

course type	courses (no.)		editions (no.)		training (hours)		costs (€)	
	2017	2018	2017	2018	2017	2018	2017	2018
IT	11	7	23	21	1,701	750	8,123	10,632
new hires	1	1	4	4	64	84	0	0
technical-specialised	3	25	55	48	1,925	926	17,614	27,140
managerial	1	3	7	13	89	976	12,200	0
administrative-managerial	13	10	17	42	610	844	6,960	14,505
Safety	11	26	32	55	3,674	3,879	7,856	13,449
total	**40**	**72**	**138**	**183**	**8,063**	**7,459**	**52,753**	**65,726**

TRAINED EMPLOYEES (2017-2018)

(no.)	2017			2018		
	men	women	**total**	men	women	**total**
	271	80	**351**	236	80	**316**

In 2018, the company intensified its training in the field of occupational health and safety, also after obtaining certification in 2017. In particular, the project "Take care of yourself" was implemented, aimed at personnel with operational tasks, and e-learning training was launched for updates required by Legislative Decree 81/08 and on Basic Life Support first aid.

The project "Task analysis and skill review" was also carried out, which analysed critical training issues and identified the appropriate improvement, process and/or organisational actions. Finally, specific training was provided on the General Data Protection Regulation - Privacy (GDPR).

NETWORK AND PLANT CONSISTENCY AND ENVIRONMENTAL DATA

WATER SYSTEM MANAGED BY ACQUEDOTTO DEL FIORA SPA (active plants) (2016-2018)

	2016	2017	2018
water network (km) (*)	9,294	9,315	8,160
aqueducts and transport networks (km)	*1,955*	*1,967*	*1,966*
distribution network (km)	*7,339*	*7,348*	*6,194*
well intake structures (no.)	184	184	188
spring intake structures (no.)	248	248	248
river intake structures (no.)	1	1	1
lake intake structures (no.)	3	3	3
pumping stations (no.)	284	284	291
piezometers (no.)	13	13	13
reservoirs (no.)	796	796	800
disinfection/treatment plants (no.)	31	31	32
seawater desalination plant (n.)	3	3	3

(*) From 2018 the total length of the water network does not include the connections, as resolved by ARERA 917/2017.

CONSISTENCY OF THE PURIFICATION AND SEWERAGE PLANTS MANAGED BY ACQUEDOTTO DEL FIORA SPA (2016-2018)

	2016	2017	2018
treatment plants (no.) (*)	142	144	145
sewerage pumping stations (no.)	270	271	273
sewerage network (km)	3,214	3,215	3,215

(*) The figure does not include the Imhoff pits.

CERTIFICATIONS

In 2018 Acquedotto del Fiora obtained its **first Integrated Quality and Safety Certification.**

In particular, the transition to the 2018 edition of the **UNI ISO 9001 standard** took place and compliance with the **BS OHSAS 18001:2007 standard** was audited.

ACQUEDOTTO DEL FIORA SPA ENVIRONMENTAL ACCOUNTS (2016-2018)

PRODUCTS AND ANALYTICAL TESTS	u. m.	2016	2017	2018	Δ% 2018/2017
DRINKING WATER (*)					
drinking water from the environment	**Mm³**	**60.72**	**62.79**	**60.36**	**-3.9**
from lakes/rivers	*Mm³*	*0.72*	*1.27*	*1.75*	*37.8*
from wells	*Mm³*	*19.36*	*23.71*	*21.90*	*-7.6*
from springs	*Mm³*	*40.31*	*37.81*	*36.71*	*-2.9*
water from other aqueduct systems	**Mm³**	**0.72**	**0.94**	**0.61**	**-35.1**
drinking water released into network	**Mm³**	**56.27**	**58.29**	**56.03**	**-3.9**
total drinking water supplied	**Mm³**	**29.40**	**29.40**	**29.40**	**-**
ASSESSMENT OF THE LOSSES ACCORDING TO MINISTERIAL DECREE NO. 99/97 AND IN CONFORMITY WITH THE ARERA REQUIREMENTS					
Overall leaks (size A17)	Mm³	27.61	27.99	25.73	-8.1
Actual leaks (size A15 of Ministerial Decree 99/97)	Mm³	26.05	26.17	23.91	-8.6
TREATED WASTEWATER					
water treated in the main treatment plants	**Mm³**	**16.16**	**15.70**	**16.89**	**7.6**
water treated in plants with a capacity of more than 2,000 population equivalent	**Mm³**	**25.20**	**23.20**	**26.54**	**14.4**
ANALYTICAL TESTS ON DRINKING WATER AND WASTEWATER					
total no. analytical tests on drinking water	**no.**	**81,847**	**77,137**	**80,292**	**4.1**
no. analytical tests on drinking water	*no.*	*81,216*	*76,459*	*79,862*	*4.5*
no. analytical tests on surface water	*no.*	*631*	*678*	*430*	*-36.6*
no. analytical tests on wastewater	**no.**	**44,730**	**44,304**	**49,415**	**11.5**

(*) Figures for 2017 have been restated compared to last year's publication. The 2018 data are estimated because they were only partially available at the time of publication.

RESOURCES USED	u. m.	2016	2017	2018	Δ% 2018/2017
COLLECTION, SUPPLY AND DISTRIBUTION DRINKING AND NON-DRINKING WATER					
materials (*)					
sodium hypochlorite	t	303	227	278	22.5
sodium chloride	t	5	5	6	20.0
hydrochloric acid	t	2	3	5	66.7
aluminium polychloride	t	13	9	4	-55.6
carbon dioxide	t	20	26	10	-61.5
descaling	t	13	17	8	-52.9
sodium hydroxide	t	3	4	6	50.0
magnesium sulphate heptahydrate	t	17	14	12	-14.3
semicalcium dolomite	t	15	10	9	-10.0
calcium carbonate	t	16	11	9	-18.2
food polyphosphates	t	1	2	2	-
ELECTRICITY					
total electricity for drinking water (**)	**GWh**	**35.9**	**36.7**	**35.1**	**-4.4**
electricity for water lifting stations (***)	*GWh*	*35.5*	*36.3*	*34.6*	*-4.7*
electricity for offices	*GWh*	*0.4*	*0.4*	*0.5*	*25.0*

WASTEWATER TREATMENT					
materials (****)					
polyelectrolyte emulsion	t	117.55	155.25	123.85	-20.2
sodium hypochlorite	t	250.94	316.05	319.16	1.0
aluminium polychloride	t	48.6	12.65	7.35	-41.9
peracetic acid	t	-	26.4	102.76	-
ELECTRICITY FOR WASTEWATER					
total electricity for wastewater	**GWh**	**21.0**	**24.2**	**25.1**	**4.1**
electricity for treatment	*GWh*	*17.4*	*21.8*	*22.5*	*3.2*
electricity for pumping stations	*GWh*	*3.6*	*2.4*	*2.6*	*8.3*
OTHER CONSUMPTION					
other drinking water consumption	**m^3**	**n.a.**	**n.a.**	**n.a.**	**-**

(*) The figures for 2016 and 2017 have been adjusted compared to what was published in previous years.

(**) 2018 data are estimated.

(***) Includes consumption for cathodic protection, storage tanks, switching chambers and others.

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

In some purification plants of Ponte a Tressa in the municipality of Siena, there is an industrial water network which allows treated wastewater for washing machinery and for the bathrooms in the office building. Moreover, at the Punta Ala purification plant in the Municipality of Castiglione della Pescaia, treated water is reused for irrigation purposes.

WASTE (*)	**u. m.**	**2016**	**2017**	**2018**	**Δ% 2018/2017**
SPECIFIC WASTE FROM TREATMENT OF WASTEWATER					
treatment sludge	t	11,625.51	11,289.34	8,486.43	-24.8
sand and sediment from treatment	t	507.32	484.40	524.58	8.3
WASTE PURSUANT TO LEGISLATIVE DECREE NO. 152/06 EXCLUDING SLUDGE AND SAND					
hazardous waste	t	74.36	48.42	10.71	-77.9
non-hazardous waste	t	666.74	732.51	237.73	-67.5

(*) The waste produced was all delivered for disposal or final recovery in Italy. The lack of delivery plants, despite the fact that the Order of the President of the Region of Tuscany no. 2/2018 required local landfills to accept quotas of sludge from various operators of the regional water service, led in 2018 to a decrease in the quantities of sludge produced sent for disposal. With regard to the items "hazardous waste" and "non-hazardous waste", the decrease recorded in 2018 is due to the completion of extraordinary works that in recent years have produced large quantities of obsolete materials sent for recovery/disposal.

TOTAL COD IN INPUT AND OUTPUT (2016-2018)

(t/year)	**2016**	**2017**	**2018**
COD_{in}	7,990	6,428	8,752
COD_{out}	900	720	592

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS MANAGED BY ACQUEDOTTO DEL FIORA SPA (*) (2016-2018)

parameter	**average values (mg/l) 2016**	**average values (mg/l) 2017**	**average values (mg/l) 2018**
BOD_5	13.4	7.9	8.3
COD	55.6	41.0	35.0
SST	12.5	10.0	9.1
NH_4^+	4.8	6.4	10.4
phosphorus	2.5	2.6	2.8

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

TREATMENT EFFICIENCY OF THE MAIN TREATMENT PLANTS MANAGED BY ACQUEDOTTO DEL FIORA SPA (*) (2016-2018)

parameter	average values (%) 2016	average values (%) 2017	average values (%) 2018
$100x(COD_{in} - COD_{out})/COD_{in}$	88.7	88.8	92.3
$100x(SST_{in} - SST_{out})/SST_{in}$	93.7	92.9	95.0
$100x(NH_{4\ in}^{+} - NH_{4\ out}^{+})/ NH_{4\ in}^{+}$	85.4	81.8	74.7
$100x(PO_{4\ in}^{-3} - PO_{4\ out}^{-3})/ PO_{4\ in}^{-3}$	53.5	46.0	53.5

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

Acquedotto del Fiora brought about interventions to increase energy efficiency both in the context of known technologies (inverter, high efficiency motors, recourse to LED technology for lighting, more efficient pumps, remote control) and developing **pilot projects**, especially regarding more energy consuming plants.
The table shows the main actions with an estimate of the related energy saving.

ACQUEDOTTO DEL FIORA ENERGY EFFICIENCY (2016-2018)

action	energy savings achieved 2016 (kWh)	energy savings achieved 2017 (kWh)	energy savings achieved 2018 (kWh)
efficiency improvement of drinking water pumping systems	129,682	225,000	-
efficiency improvement of treatment processes	-	-	38,000
replacement of lighting fixtures with LED fixtures	10,000	2,100	-

ACQUE

Acque SpA operates as the sole manager of the integrated water cycle of Lower Valdarno, a region that includes 55 municipalities in the provinces of Pisa, Lucca, Florence, Pistoia and Siena, where more than 738,000 inhabitants live, equal to about 328,000 user accounts. The service is carried out on the basis of the concession agreement issued by the Autorità Idrica Toscana (AIT). The water network extends for about 5,943 km and the sewerage network for about 3,048 km.

HUMAN RESOURCES IN FIGURES

ACQUE SPA EMPLOYEES: STAFF BREAKDOWN (2017-2018)

(no.)	2017				2018			
	men	women	**total**	weight %	men	women	**total**	weight %
executives	4	2	**6**	1.5	3	2	**5**	1.2
managers	5	4	**9**	2.2	5	4	**9**	2.2
clerical workers	94	144	**238**	59.4	91	151	**242**	60.0
workmen	148	0	**148**	36.9	147	0	**147**	36.5
total	**251**	**150**	**401**	**100.0**	**246**	**157**	**403**	**100.0**

ACQUE SPA EMPLOYEES: CONTRACT TYPE (2017-2018)

(no.)	2017			2018		
	men	women	**total**	men	women	**total**
staff with permanent contract	250	140	**390**	239	146	**385**
(of which) part-time staff	*4*	*32*	**36**	*4*	*29*	**33**
permanent staff	1	10	**11**	7	11	**18**
staff under apprenticeship contracts	0	0	**0**	0	0	**0**
total	**251**	**150**	**401**	**246**	**157**	**403**

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2017-2018) (*)

	2017	2018
accidents (no.)	9	6
total days of absence (**)	173	99
hours worked	639,710	646,149
Frequency index (FI) (number of accidents per 1,000,000/working hours)	**14.07**	**9.29**
Severity index (SI) (days of absence per 1,000/working hours)	**0.27**	**0.15**

(*) The values of the frequency and severity indices improved compared to 2017, returning to values similar to those of previous years.
(**) The value also excludes days of absent related to persistent or reopened injuries from previous years.

TRAINING COURSES AND COSTS IN ACQUE SPA (2017-2018)

course type	courses (no.)		sessions (no.)		training (hours)		costs (€) (*)	
	2017	2018	2017	2018	2017	2018	2017	2018
IT	16	7	46	14	1,333	490	n.a.	n.a.
new hires	1	1	3	3	313	326	n.a.	n.a.
technical-specialised	47	47	59	54	1,155	923	n.a.	n.a.
managerial	3	4	13	9	521	504	n.a.	n.a.
safety	21	25	65	84	2,853	4,643	n.a.	n.a.
environment	3	2	10	4	442	84	n.a.	n.a.
cross-cutting (**)	10	5	24	15	1,215	643	n.a.	n.a.
total (***)	**101**	**91**	**220**	**183**	**7,832**	**7,613**	**134,711**	**50,844**

(*) No cost data are available broken down by type of training.
(**) Cross-cutting training also includes training pursuant to Legislative Decree 231/01 and e-learning. Figures for 2017 have been restated compared to last year's publication.
(***) Some data have been restated compared to last year's publication.

TRAINED EMPLOYEES (2017-2018)

(no.)	2017 (*)			2018		
	men	women	**total**	men	women	**total**
	268	162	**430**	256	135	**391**

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

In 2018 training was provided to personnel from all business sectors (operational, commercial, administrative and personnel management), for a total of 7,613 hours. Safety training has been consistent, also as a result of the implementation of the **Road Safety Management System** in accordance with **UNI ISO 39001:2016**. Training initiatives promoted by the internal Academy have also been implemented to encourage the professional and personal growth of employees through the exchange of experience and information.

NETWORK AND PLANT CONSISTENCY AND ENVIRONMENTAL DATA

WATER SYSTEM MANAGED BY ACQUE SPA (active plants) (2016-2018)

	2016	2017	2018
water network (km)	5,912	5,921	5,943
aqueducts and transport networks (km)	*829*	*834*	*835*
distribution network (km)	*5,083*	*5,087*	*5,107*
well intake structures (no.)	531	531	525
spring intake structures (no.)	299	299	297
river and lake intake structures (no.)	22	21	20
reservoirs (no.)	569	568	561
disinfection/treatment plants (no.)	267	240	234
pumping stations (no.)	415	415	409

CONSISTENCY OF THE PURIFICATION AND SEWERAGE PLANTS MANAGED BY ACQUE SPA (2016-2018)

	2016	2017	2018
purification plants (no.)	139	139	138
sewerage pumping stations (no.)	527	531	544
sewerage network (km)	3,095	3,066	3,048

CERTIFICATIONS

Acque has implemented an Integrated Management System certified according to the **Best4 plus** scheme (quality, environment, safety, energy and social responsibility). This is accompanied by the **UNI ISO/IEC 17025:2005** certification of the laboratories, for which in the year was obtained renewal of accreditation and extension to additional parameters and the certification of the management system for road safety according to **UNI ISO 39001:2016**. Moreover, in 2018 Acque received certification for the implementation of the management system for the prevention of corruption according to the **UNI ISO 37001:2016** standard.

ACQUE SPA ENVIRONMENTAL ACCOUNTS (2016-2018)

PRODUCTS AND ANALYTICAL TESTS	u. m.	2016	2017	2018	Δ% 2018/2017
DRINKING WATER (*)					
drinking water from the environment	**Mm³**	**71.78**	**73.29**	**71.13**	**-2.9**
from lakes/rivers	*Mm³*	*3.36*	*3.48*	*3.83*	*10.1*
from wells	*Mm³*	*61.08*	*63.38*	*60.16*	*-5.1*
from springs	*Mm³*	*7.34*	*6.43*	*7.14*	*11.0*
water from other aqueduct systems	**Mm³**	**7.03**	**6.77**	**6.62**	**-2.2**
drinking water transferred to other aqueduct systems	Mm³	0.95	1.08	0.86	-20.4
production losses between catchment and network entry	Mm³	4.09	4.71	4.08	-13.4
drinking water released into company network	Mm³	73.76	74.26	72.81	-2.0
drinking water injected into the network + drinking water transferred to other systems and production losses between catchment and entry into the network	**Mm³**	**78.80**	**80.05**	**77.74**	**-2.9**
total drinking water supplied	**Mm³**	**47.68**	**44.42**	**44.42**	**-**
ASSESSMENT OF THE LOSSES ACCORDING TO MINISTERIAL DECREE NO. 99/97 AND IN CONFORMITY WITH THE ARERA REQUIREMENTS (**)					
Overall leaks (size A17)	Mm³	27.03	27.80	26.35	-5.2
Actual leaks (size A15 of Ministerial Decree 99/97)	Mm³	18.32	18.79	17.56	-6.5
TREATED WASTEWATER					
treated water in all treatment plants	**Mm³**	**51.40**	**45.31**	**47.25**	**4.3**
ANALYTICAL TESTS ON DRINKING WATER AND WASTEWATER					
no. analytical tests on drinking water *(including surface water tests)*	**no.**	**278,603**	**266,850**	**285,408**	**7.0**
no. analytical tests on wastewater	**no.**	**123,646**	**119,742**	**116,643**	**-2.6**

(*) The figures for 2016 and 2017 have been adjusted and are to be considered as definitive. The 2018 figures are estimated.

(**) The 2017 figures have been restated and are final. The 2018 figures are estimated.

RESOURCES USED	u. m.	2016	2017	2018	Δ% 2018/2017
COLLECTION, SUPPLY AND DISTRIBUTION DRINKING AND NON-DRINKING WATER					
materials					
laboratory reagents (chemical section and microbiological section)	t	2.49	2.37	3.51	48.1
sodium hypochlorite	t	250.03	220.30	187.92	-14.7
hydrochloric acid	t	395.03	394.51	383.53	-2.8
potassium permanganate	t	3.00	3.85	2.12	-44.9
aluminium polychloride	t	17.91	9.41	30.60	-

RESOURCES USED (follow)	u. m.	2016	2017	2018	Δ% 2018/2017
COLLECTION, SUPPLY AND DISTRIBUTION DRINKING AND NON-DRINKING WATER					
materials					
salt in bags	t	4.85	7.05	0.00	-
sodium chloride	t	357.23	377.47	384.68	1.9
lye	t	3.65	1.12	0.00	-
sodium metabisulphite	t	1.25	2.17	0.00	-
phosphoric acid	t	0.15	0.00	0.00	-
citric acid	t	1.58	1.98	0.45	-77.3
alifos L	t	0.00	0.03	0.10	-
aluminium polychlorosulphate	t	157.49	170.22	154.83	-9.0
other	t	0.00	0.00	1.32	-
ELECTRICITY (*)					
total electricity for drinking water	**GWh**	**52.08**	**55.41**	**54.04**	**-2.5**
electricity for water pumping stations	*GWh*	*51.55*	*55.09*	*53.58*	*-2.7*
electricity for offices	*GWh*	*0.53*	*0.32*	*0.46*	*43.8*
WASTEWATER TREATMENT					
materials					
polyelectrolyte powder	t	1.00	0.00	0.00	-
polyelectrolyte emulsion (**)	t	130.60	140.98	137.93	-2.2
aluminium polychloride	t	4.45	9.00	15.70	74.5
ferric chloride for sludge dehydration (40%)	t	529.65	437.83	471.76	7.8
sodium hypochlorite for final disinfection	t	1.00	14.42	64.9	-
peracetic acid for disinfection	t	9.50	12.00	4.0	-66.7
sulphuric acid	t	0.00	2.30	0.00	-
ferrous chloride 31.5%	t	0.00	10.22	5.37	-47.5
caustic soda 30% (sodium hydroxide) - Solvay	t	0.40	1.57	0.38	-75.8
citric acid	t	0.00	0.10	0.00	-
biotek base L - biological reactivator	t	0.06	0.12	0.00	-
nutrients	t	466.93	479.40	514.85	7.4
other	t	0.00	0.26	0.01	-
ELECTRICITY FOR WASTEWATER (*)					
total electricity for wastewater	**GWh**	**31.69**	**31.83**	**33.18**	**4.2**
electricity for treatment	*GWh*	*24.92*	*26.12*	*26.81*	*2.6*
electricity for pumping stations	*GWh*	*6.44*	*5.53*	*6.09*	*10.2*
electricity for offices	*GWh*	*0.33*	*0.18*	*0.28*	*55.6*
OTHER CONSUMPTION					
Other drinking water consumption	**m^3**	**287,554**	**277,104**	**283,673**	**2.4**
drinking water consumed for non-industrial water uses (the data relate to consumption for offices, outside showers, etc.) (***)	*m^3*	*59,862*	*55,459*	*62,028*	*11.8*
drinking water consumed for process water uses (washing machinery and bays, etc.) (****)	*m^3*	*219,413*	*221,645*	*221,645*	-

(*) Electricity data 2018 are estimated for December.

(**) The figure for 2017 has been adjusted from what was published last year.

(***) The value is partially estimated.

(****) The 2017 value has been adjusted; the 2018 figure, not available at the time of publication, was estimated in line with the 2017 figure.

WASTE (*)	u. m.	2016	2017	2018	Δ% 2018/2017
SPECIFIC WASTE FROM TREATMENT OF WASTEWATER					
treatment sludge	t	21,125.40	21,577.26	17,634.77	-18.3
sand and sediment from treatment	t	2,894.49	2,308.86	3,500.43	51.6
WASTE PURSUANT TO LEGISLATIVE DECREE NO. 152/06 EXCLUDING SLUDGE AND SAND					
hazardous waste	t	10.38	30.15	31.82	5.5
non-hazardous waste	t	43,919.86	49,410.19	63,179.64	27.9

(*) The lack of delivery plants, despite the fact that the Order of the President of the Region of Tuscany no. 2/2018 required local landfills to accept quotas of sludge from various operators of the regional water service, led in 2018 to a decrease in the quantities of sludge produced sent for disposal.

To wash the sludge dewatering equipment (belt presses) the company uses water recovered from industrial processes, for an estimated volume of about 239,803 m^3 in 2018.

TOTAL COD IN INPUT AND OUTPUT (2016-2018)

(t/year)	2016	2017	2018
COD_{in}	24,167	22,789	21,708
COD_{out}	2,380	1,603	1,521

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS MANAGED BY ACQUE SPA (*) (2016-2018)

parameter	average values (mg/l) 2016	average values (mg/l) 2017	average values (mg/l) 2018
BOD_5	8.4	5.3	6.2
COD	43.3	34.3	30.6
SST	10.3	7.6	7.4
NH_4^+	6.3	4.7	5.0
phosphorus	2.5	2.4	2.1

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

TREATMENT EFFICIENCY OF THE MAIN TREATMENT PLANTS MANAGED BY ACQUE SPA (*) (2016-2018)

parameter	average values (%) 2016	average values (%) 2017	average values (%) 2018
$100x(COD_{in} - COD_{out})/COD_{in}$	90.1	93.5	93.5
$100x(SST_{in} - SST_{out})/SST_{in}$	95.4	97.2	97.5
$100x(NH_{4\,in}^{+} - NH_{4\,out}^{+})/ NH_{4\,in}^{+}$	84.4	87.4	87.2
$100x(PO_{4\,in}^{-3} - PO_{4\,out}^{-3})/ PO_{4\,in}^{-3}$	68.4	74.6	73.0

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

Acque has brought about energy efficiency interventions, predicting the savings indicated in the table.

ACQUE SPA ENERGY EFFICIENCY (2016-2018)

action	energy savings achieved 2016 (kWh)	energy savings achieved 2017 (kWh)	energy savings achieved 2018 (kWh)
Le Lame plant - replacement of the aeration system	30,000	45,000	45,000
S. Jacopo system - replacement of the aeration system	40,000	40,000	70,000
intermunicipal water treatment - automation and revamping	550,000	550,000	600,000
La Fontina treatment plant - start automation and other efficiency improvements	-	-	10,000
smaller plants - efficiency improvements and pumps	6,000	6,000	6,000

OVERSEAS ACTIVITIES

Acea operates abroad in the water service sector. In particular, it is present in Peru, Honduras and the Dominican Republic, serving a total of about 4.2 million people.
Overseas activities have a limited incidence from an economic and financial viewpoint, in terms of consolidation percentage, but a brief description of them is given here because of their social importance.
The operations are carried out by companies created **through partnerships with local and international stakeholders**. The objective is to improve the service, especially as regards **technical and management aspects**. This is possible thanks to **staff training** and the **transfer of know-how** to local businesses.

CONSORCIO AGUA AZUL SA

The Consorcio Agua Azul was set up with the mission to produce drinking water for the local public-owned water company: SEDAPAL (Drinking water and sewerage service in Lima). The Consortium constructed the infrastructures required to satisfy part of the drinking water needs of the **northern areas of Lima, Peru**, using the surface and underground waters of the river Chillón and will be responsible for their management until 2027, when it will be transferred to the State.

CONSORCIO AGUA AZUL SA - MAIN CORPORATE AND OPERATIONAL DATA

Country (area)	Peru (north Lima - Cono Norte)
inhabitants served	839,000
customer	Sedapal (Drinking water and sewerage service in Lima, state owned)
sources of financing	equity capital and bonds issued on the Peruvian market
duration of the contract	07.04.2000 – 18.06.2027
purpose of the project	BOT (Build-Operate-Transfer) project for the construction and management of a drinking water supply system that draws on the water of the Chillón river and the underlying aquifer
shareholders	Acea SpA (25.5%), Impregilo International Infrastructures N.V. (25.5%), Marubeni Co. (29%), Inversiones Liquidas S.A.C (20%)
number of employees at 31.12.2018	33
turnover (in thousands of euro)	12,300

In 2018, in continuity with previous years, the Consorcio carried out several important initiatives for sustainability.
With regard to the development of human capital, the following were carried out: **training programme on environmental issues and safety at work** staged at university specialisation departments and local companies of primary importance, offering **2,382 hours of training** for internal staff and contractors; coordinated safety drills for the Carabayllo fire brigade; theoretical and practical courses **on the use of fertilisers, garden care and conversion to organic farming**, organised by the Chillón Valley Producers' Association, for a total of **1,796 hours of training provided**.
The relationship with the education world has been the subject of great attention. In partnership with the Faculty of Engineering of the National University of Peru training courses were organised on the **design and management of treatment plants with rapid filtration** for graduates of Latin American countries, and continued the **internship** programme offered to students and recent graduates of schools in the area.
In addition, **1,679 kits** containing teaching materials were distributed to primary schools and preschools (compared to 1,641 in 2017). This year too, distributed backpacks were made entirely of **recycled plastic materials** and distinguished by printed phrases encouraging the **proper use of water resources** and the respect of the environment.
Still with a view to involvement and attention to the territory, in 2018 the company hosted **309 visitors at its facilities**, including students, delegations of companies operating in the sector and regional institutions.
With regard to corporate welfare, in addition to administering the **annual assessment questionnaire on company climate**, which again this year registered a level of satisfaction equal to 100%, the Consorcio promoted an **influenza vaccination campaign** for employees and their families.
From the viewpoint of corporate social responsibility, the Consorcio Agua Azul confirmed its **support to state entities** (such as the State Police, primary schools, the Ministry of Agriculture and the Ministry of Health), **non-profit organisations** (such as associations for the rehabilitation of drug addicts) **and consumer associations**. For the Christmas holidays, **2,014 toys were donated to the children** of the local communities and restaurant vouchers were offered to the children of employees.
The Consorcio has maintained its **certification of the Integrated Quality and Environment System** according to **UNI ISO 9001:2008** and **UNI ISO 14001:2004**, valid until 2020. The management system implemented enables the optimisation of the production processes and simultaneously the significant reduction of the environmental impact, through actions aimed at energy saving and reducing the use of paper. During the year, the company satisfied the regulatory requirements concerning workers' rights and health and safety in the workplace.
Finally, in January a **multi-sector working group** was set up with the aim of **sharing certain issues related to the company's contractual activities** concerning the protection of the Chillón river basin. The monthly meetings were called directly by the local water authority, with the participation of the Water Resources Council of the Chillón - Rímac - Lurín basin.

CONSORCIO SERVICIO SUR

In the second half of 2018, the Consorcio Servicio Sur joint venture, led by Acea International in partnership with Peruvian partners, was awarded the tender for the management of the preventive and corrective maintenance contract for the water and sewerage network in the southern area of Lima (Peru), launched by the Peruvian state water company SEDAPAL, for a period of three years.

CONSORCIO SERVICIO SUR - MAIN CORPORATE AND OPERATIONAL DATA

Country (area)	Peru (south Lima)
inhabitants served	1,121,886
customer	Sedapal (drinking water and sewerage service in Lima, state owned)
sources of financing	equity
duration of the contract	24.08.2018 – 24.08.2021
purpose of the project	preventive and corrective maintenance of the water and sewerage system in the area south of Lima
shareholders	Acea International (50%), Acea Ato 2 (1%), Conhydra (29%), Valjo (14%), India (6%)
number of employees at 31.12.2018	193
turnover 2018 (in thousands of euros)	1,000

From the point of view of the **sharing economy**, the company allows employees to use **company vehicles** for **commuting** and promotes **carpooling in company cars**. This significantly reduces travel times and energy consumption.

AGUAS DE SAN PEDRO

Aguas de San Pedro ASP is the holder of a thirty-year contract for the management of the integrated water service in the city of San Pedro Sula in Honduras. During the year the company started a programme of interventions for the **enhancement, treatment and improvement of the water service and sewerage network** covering the entire city.

In 2018, 119,222, users were served and 69% of them were supplied with meters. The coverage of the drinking water service is equal to 99% of the population, 83% for sewerage services.

AGUAS DE SAN PEDRO SA - MAIN COMPANY AND OPERATING DATA

Country (area)	Honduras (San Pedro Sula)
inhabitants served	755,000
customer	municipal administration
sources of financing	equity capital and loans from commercial banks
duration of the contract	01.02.2001 – 01.02.2031
purpose of the project	concession of the integrated water service for the town of San Pedro de Sula
shareholders	Acea SpA 60.65%, Ireti SpA 39.35%
number of employees at 31.12.2018	425
turnover (in thousands of euro)	32,400

In line with previous years, in 2018 the company continued its programme of **technical assistance to rural communities**, and confirmed its commitment to promoting **initiatives to protect the environment**, continuing the **programme for the conservation of the El Merendón nature reserve**, declared a protected area for the production of water in San Pedro Sula.
The initiatives include various measures implemented starting in 2016, including:

- the "Un millon de Árboles para el Merendón" (One million trees for the Merendon) **reforestation** project: fruit trees – **56,093 in 2018** – and others for producing wood in the affected areas were planted, reaching a total of 765,628 plants since the start of the project;
- **environmental training**, which included 12 training courses for farmers benefiting from the reforestation project, involving 295 people for a total of 70 hours;
- **fire prevention**, with campaigns for the protection of the local region;
- **social assistance** of various kinds and technical assistance for the rural communities of Merendón.

In particular the programme for technical assistance to rural communities involved training for the community leaders who **manage and maintain water systems**, with the objective of enhancing their knowledge on the quality of water, the management and maintenance of the systems and the basic principles of hydraulics. In addition, about **1,500 bio-filters for drinking water** have been installed in 33 local communities of the Merendón; the creation of **5 committees for the promotion and dissemination of good hygiene practices was promoted** to benefit children, and the maintenance of water and sanitation equipment was performed in some schools.
With regard to personnel, implementation of the **workplace health plan continued**, as provided for in the *EMS-IHSS-ASP Corporate Medical System*, with the implementation of **targeted campaigns** on women's well-being, nutrition and healthy lifestyles; sports activities were organised for employees, and **vaccination campaigns** were offered against influenza, hepatitis A and B, tetanus and medical examinations to diagnose osteoporosis, as well as campaigns for ophthalmology and dentistry.
In 2018 certifications of the Quality Management System in compliance with the **UNI ISO 9001:2008** standard and of the laboratories according to the **UNI ISO/IEC 17025:2005** standard were confirmed.

ACEA DOMINICANA SA

Acea Dominicana deals with the commercial management of the water service in the **northern and eastern areas of Santo Domingo** in the **Dominican Republic**. The activities include the management of customer relations, the billing cycle and cost estimates, the installation of new meters and directing the works for new connections. The project is one of the first experiments of private participation in water services in the Dominican Republic.

The framework of a contractual addendum already signed by Acea Dominicana and Corporacion del Acueducto y Alcantarillado De Santo Domingo (CAASD), which extended the contract duration until 30 September 2023, also includes the financing, supply and installation of 30,000 meters for new users and the replacement of 10,000 meters for existing users. Apart from the foregoing, the company also carries out maintenance on the entire meter park.

ACEA DOMINICANA SA - MAIN CORPORATE AND OPERATIONAL DATA

Country (area)	Dominican Republic (north and east Santo Domingo)
inhabitants served	1,500,000
customer	Corporación del Acueducto y Alcantarillado de Santo Domingo (CAASD)
duration of the contract	01.10.2003 – 30.09.2023
purpose of the project	commercial management of the water service
shareholders	Acea SpA 100%
number of employees at 31.12.2018	178
turnover (in thousands of euro)	3,800

In 2018, the company supported various social activities in order to improve the relationship between the customer and the institutions. In this sense, in collaboration with CAASD, **educational campaigns for schools in the capital were launched** with the aim of **raising awareness among students about the proper use of water**, also distributing gadgets and kits containing school supplies.

In the **poorest areas of Santo Domingo** and **Boca Chica**, the promotional campaign **"Plan Deuda Cero" (Zero Debt Plan)** continued, aimed at users who are in arrears and want to cancel their debt through personalised payment plans, thus being able to fully enjoy the service.

Acea Dominicana also continued its commitment to **raising public awareness of the correct use of water resources** and **respecting the economic conditions of the contract**, necessary for the continuous improvement of the service offered by the company.

In 2018, with reference to the Quality Management System implemented and certified according to **UNI ISO 9001:2015**, numerous activities were carried out to improve the level of services offered both to the main customer (CAASD) and to users in the areas managed.

Moreover, the **development of software and applications** continued, aimed at improving **operational efficiency** in the land and facilitated bill payment options for clients. With these programs, Acea Dominicana **has achieved a total and timely control of the activities that take place in the field**, resulting in an **increase in the level of performance of the service**, allowing each customer, through a simple free app, to report faults in real time, make a complaint, **monitor their consumption** and make payments.

As regards the management of human resources, Acea Dominicana, in fulfilment of the regulations provided by the Dominican law on Employment and Social Rights, has always adopted **corporate policies aimed at safeguarding the rights and dignity of its workers**. Consistently with this approach, the private health insurance policy has been renewed and a severance fund has been allocated, **neither of which are compulsory** in the Dominican Republic.

GRI STANDARD CONTENT INDEX: REPORTING PRINCIPLES, GENERAL STANDARDS AND SPECIFIC MATERIAL STANDARDS

The Sustainability Report was prepared in accordance with **GRI Standards (ed. 2016): comprehensive**[128] **option**, as shown below in the GRI Content Index, which includes:

- reference to Reporting Principles (GRI 101 - Foundation 2016);
- the **definition of the 56 general standards** (GRI 102: General Disclosure 2016) **and 25 specific topics** ("Topic-specific Standards": 200-Economic, 300-Environmental, 400-Social) **deemed material** and **relevant indicators**, with **the indication of sections and pages of the document** where they can be found - **or responses to the indicators - and reporting of any omissions or "non-materiality" of certain indicators** included in material topics;
- **the extension of the "materiality" of each topic (specific standards), in other words its significance within the organisation** (Group or companies traceable to specific business sectors) **or outside of it** (for example supply chain, community).

Lastly, the right-hand columns of the Content Index give the main compliances with the topics provided under Legislative Decree no. 254/2016.

STANDARD GRI CONTENT INDEX		
GRI Standard	definition of GRI standards notes (responses or reporting of omissions or non-materiality) sections and reference pages	Compliance with Legislative Decree 254/2016
GRI 101: Foundation 2016 (Reporting Principles)		
GENERAL DISCLOSURES		
	ORGANIZATIONAL PROFILE	
GRI 102: General Disclosures 2016	**102-1 Name of the organization.** Acea SpA *Corporate identity* page 24.	**Art. 3 paragraph 1, letter a)**: the corporate management and organisation model
	102-2 Activities, brands, products, and services. *Corporate identity* pages 24ff., 25 chart no. 2.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-3 Location of headquarters. Piazzale Ostiense 2, 00154 Rome	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-4 Location of operations (number of countries where the organization operates, and the names of countries where it has significant operations and/or that are relevant to the topics covered in the report). *Corporate identity* pages 24f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-5 Ownership and legal form. *Corporate identity* pages 33f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-6 Markets served (including: geographic locations, sectors served, types of customers and beneficiaries). *Corporate identity* pages 24f., 34, 82ff.; *Relations with stakeholders* pages 82ff., 84 table no. 11.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-7 Scale of the organization (including: number of employees; net sales - for private sector organizations - or net revenues – for public sector organizations; total capitalization broken down in terms of debt and equity; quantity of products or services provided). *Corporate identity* pages 24, table no 6, 34 table no. 7; *Relations with stakeholders* pages 144, table no. 35, 166.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-8 Information on employees and other workers (total number of employees by employment type and gender, employment contract by region etc.; whether a significant portion of the organization's activities are performed by workers who are not employees. If applicable, a description of the nature and scale of work performed). *Relations with stakeholders* pages 142f., 144f., 152.	**Art. 3 paragraph 2, letter d):** social aspects and aspects related to staff management

[128] The definition of the general and specific standard elements have been translated from the English version of the Consolidated set of GRI Sustainability reporting standards 2016, see the original edition.

GRI 102: General Disclosures 2016	**102-9 Description of the organization's supply chain.** *Corporate identity* pages 26-29; *Relations with stakeholders* pages 137, 139.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-10 Significant changes to the organization's size, structure, ownership, or supply chain (including: changes in the location of, or changes in operations, including facility openings, closings, and expansions; changes in the share capital structure and other capital formation, maintenance, and alteration operations; changes in the location of suppliers, the structure of the supply chain, or relationships with suppliers etc.). *Corporate identity* pages 33f.; *Relations with stakeholders* page 139.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-11 Precautionary Principle or approach (whether and how the organization applies the Precautionary Principle or approach). *Corporate identity* pages 67ff., 73 and table no. 8; *Relations with stakeholders* page 172; *Relations with the environment* page 202.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-12 External initiatives (a list of externally-developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes, or which it endorses). *Membership in the United Nations Global Compact* pages 19ff.; *Corporate identity* pages 36ff., 73 table no. 8; *Relations with stakeholders* pages 137, 153, 171; *Relations with the environment* page 180.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-13 Membership of associations (the reporting should include memberships maintained at the organizational level in associations or organizations in which it holds a position on the governance body, participates in projects or committees, provides substantive funding beyond routine membership dues, or views its membership as strategic). *Relations with stakeholders* page 170.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	STRATEGY	
	102-14 Statement from senior decision-maker (such as CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and its strategy for addressing sustainability. *Letter to stakeholders* pages 6-7; *Corporate identity* pages 34ff., 36ff., 40-63, 72f.	**Art. 3, paragraph 7:** The responsibility for ensuring that the report is [...] compliant rests with the directors
	102-15 Description of key impacts, risks, and opportunities. *Corporate identity pages* 26-29, 33f., 35f., 36f., 40-63, 66, 70f., 72f.; *Relations with stakeholders* pages 104, 169, 172; *Relations with the environment* page 193.	**Art. 3 paragraph 1, letter c):** the main risks, generated or incurred **Art. 3 paragraph 2, letter c):** the impact [...] on the environment and on health and safety
	ETHICS AND INTEGRITY	
	102-16 Description of the organization's values, principles, standards, and norms of behavior. *Corporate identity pages* 36ff., 64ff., 67, 69, 72f., 78 chart no. 16; *Relations with stakeholders* page 136.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-17 Mechanisms for advice and concerns about ethics (description of internal and external mechanisms for seeking advice about ethical and lawful behavior, and organizational integrity; reporting concerns about unethical or unlawful behavior, and organizational integrity etc.). *Corporate identity* pages 64, 70.	**Art. 3, paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 2, letter e):** respect for human rights, the measures taken to prevent their violations, as well as actions taken to prevent attitudes and actions that are in any case discriminatory
	GOVERNANCE	
	102-18 Governance structure of the organization, including committees of the highest governance body. Committees responsible for decision-making on economic, environmental, and social topics. *Corporate identity* pages 64ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-19 Process for delegating authority for economic, environmental, and social topics from the highest governance body to senior executives and other employees. The Board of Directors confers management delegations to the Chief Executive Officer, who, in the framework of the corporate macro-structure resolved by the Board itself, confers powers and delegations to the management, in compliance with the missions and responsibilities of the various structures. Normally, the process for any type of delegation (and therefore also for economic, environmental and social aspects) occurs through the analysis of the need/ requirement for a power to be attributed.	**Art. 3 paragraph 1, letter a)**: the corporate management and organisation model

GRI 102: General Disclosures 2016	**102-20 Executive-level responsibility for economic, environmental, and social topics (whether the organization has appointed an executive-level position or positions with responsibility for economic, environmental, and social topics; whether post holders report directly to the highest governance body).** In Acea SpA, the Risk & Compliance Function, which reports hierarchically to the Chairman and is functional to the Chief Executive Officer, among other things coordinates and develops issues relating to social and environmental sustainability, supporting Group companies in planning the actions necessary to achieve the objectives, reporting annually on the effects through the Sustainability Report. This function includes the Sustainability Unit, whose manager is the Group CSR manager.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-21 Processes for consultation between stakeholders and the highest governance body on economic, environmental, and social topics. If consultation is delegated, describe to whom it is delegated and how the resulting feedback is provided to the highest governance body. During the year, management was invited to participate in meetings of the governing bodies, providing specific information and knowledge during the meetings. It is also worth mentioning the activity carried out by the Sustainability Advisory Board on the supervision of the progress of the Sustainability Plan, the results of which are communicated to Top Management. *Corporate identity* pages 36ff., 64ff.; *Relations with stakeholders* page 166.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-22 Composition of the highest governance body and its committees (executive or non-executive, independence, gender, competencies relating to economic, environmental, and social topics etc.). *Corporate identity* pages 64f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-23 Chair of the highest governance body (the organization shall report whether the Chair is also an executive officer in the organization, his or her function within the organization's management and the reasons for this arrangement). *Corporate identity* pages 64f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-24 Nomination and selection processes for the highest governance body and its committees (criteria used for nominating and selecting highest governance body members, including whether and how diversity, independence, expertise and experience relating to economic, environmental, and social topics are considered, stakeholders, including shareholders, are involved). In the composition of its corporate bodies, Acea ensures a balanced representation of gender, provided under law no. 120/2011, transposed into its articles of association in the same way as it guarantees the presence of independents, governed under such articles of association and the law in force. Diversity of gender in the governing body and Committees constitutes a particularly important element in relation to both mitigation of the "single mode of thought" and the different way in which men and women exercise their leadership. Shareholders are involved in these selection processes and in compliance with the recommendations of the Self-Governance Code, they are steered in the choice of candidates to put forward in the lists of orientation drawn up by the Board of Directors of Acea, subject to the opinion of the Appointments Committee and considering the outcomes of self-assessment and the dimension and composition of the governing body. *Corporate identity* pages 64f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-25 Processes for the highest governance body to ensure conflicts of interest are avoided and managed. The risk of conflict of interest in Acea is monitored thanks to internal corporate governance systems and procedures (Management, organisation and control model, Code of Ethics, Related Parties Transactions procedure, independent Directors). These tools are used to intervene in the various frameworks within which a conflict of interest may arise: in relations between controlling and minority stakeholders, between Acea and Related Parties and between Acea and Public Administrations. *Corporate identity* pages 64ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-26 Highest governance body's and senior executives' roles in the development, approval, and updating of the organization's purpose, value or mission statements, strategies, policies, and goals related to economic, environmental, and social topics. *Disclosing sustainability: methodological note* page 12; *Corporate identity* pages 36ff., 40-63, 64ff., 72f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model

GRI 102: General Disclosures 2016	**102-27 Measures taken to develop and enhance the highest governance body's collective knowledge of economic, environmental, and social topics.** *Disclosing sustainability: methodological note* page 12; *Corporate identity* pages 36f., 38, 64f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-28 Processes for evaluating the highest governance body's performance with respect to governance of economic, environmental, and social topics. The non-executive directors receive a fixed remuneration, determined by the Shareholders' Meeting, commensurate to the commitment required of them. *Corporate identity* pages 64, 66, 74; *Relations with stakeholders* page 162.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-29 Highest governance body's role in identifying and managing economic, environmental, and social topics and their impacts, risks, and opportunities – including its role in the implementation of due diligence processes. *Disclosing sustainability: methodological note* page 12; *Corporate identity* pages 38, 40f., 64ff., 67ff., 72f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-30 Highest governance body's role in reviewing the effectiveness of the organization's risk management processes for economic, environmental, and social topics. *Disclosing sustainability: methodological note* page 12, *Corporate identity* pages 40f., 64ff., 67ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-31 Frequency of the highest governance body's review of economic, environmental, and social topics and their impacts, risks, and opportunities. *Disclosing sustainability: methodological note* page 12, *Corporate identity* pages 40f., 64, 72f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-32 The highest committee or position that formally reviews and approves the organization's sustainability report and ensures that all material topics are covered. *Disclosing sustainability: methodological note* page 12; *Corporate identity* page 66.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-33 Process for communicating critical concerns to the highest governance body. The Board of Directors (BoD) receives constant information on potentially critical situations, primarily through the work carried out by the Control and Risk Committee, to which the manager of the Audit Function periodically reports, who interacts freely with the Board of Directors. The activities carried out and the findings of the Supervisory Boards (pursuant to Legislative Decree no. 231/01) which could lead to the emergence of a risk of responsibility for the company are the subject of flows of information to the BoD. The CEO, also in his role as Director in charge of the Internal Control and Risk Management System, constantly provides information to the Board of Directors concerning operating performance and the effective existence of potentially critical situations. *Corporate identity* pages 66, 68, 70f., 74.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-34 Nature and total number of critical concerns that were communicated to the highest governance body; mechanism(s) used to address and resolve critical concerns. *Corporate identity* pages 69f., 70f., 74.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-35 Remuneration policies for the highest governance body and senior executives (fixed pay and variable pay, sign-on bonuses or recruitment incentive payments, termination payments etc.). How performance criteria in the remuneration policies relate to the highest governance body's and senior executives' objectives for economic, environmental, and social topics. We point out that in Acea, for the Top Management, Managers having strategic responsibility and managerial roles with greater impact on Group business, the clawback clause is applied - a right to ask the return of variable components in remuneration, in the short and long term if such components were paid on the basis of conduct of gross negligence or wilful misconduct. No agreements are in place which provide fixed indemnities or clauses aimed at safeguarding Group Directors if the working relationship is terminating, for this mater reference is made to the institutions under the Collective Labour Agreement for Directors of Service Companies of Public Utility. Within the Catalogue of Group Objectives, which provides a set of indicators for assigning to Management performance targets, the contexts in which to retrace the identified objectives are defined amongst which those associated to the treatment/ remedy of non-conformities for Quality the Environment Safety and Energy. *Corporate identity* pages 64ff.; *Relations with stakeholders* page 162.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model

GRI 102: General Disclosures 2016	**102-36 Process for determining remuneration; whether remuneration consultants are involved in determining remuneration and whether they are independent of management.** No external subjects to the company were involved in determining the remuneration Policy. *Corporate identity* pages 64ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-37 Stakeholders' involvement in remuneration. *Corporate identity* page 66.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-38 Ratio of the annual total compensation for the organization's highest-paid individual in each country of significant operations to the median annual total compensation for all employees (excluding the highest-paid individual) in the same Country. The ratio between remuneration for the highest-paid individual and average employee for 2018 is given by retributive multiple 7.46, which is compared to a mean value of 14.82 of peer companies. See also the 2018 Remuneration Report available on the Acea Group website (www.gruppo.acea.it). *Corporate identity* page 66.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-39 Ratio of the percentage increase in annual total compensation for the organization's highest-paid individual in each Country of significant operations to the median percentage increase in annual total compensation for all employees (excluding the highest-paid individual) in the same Country. The company chose to only provide the datum concerning the ratio between the remuneration of the highest-paid individual and the median remuneration of the employees, in line with the Glass Lewis European guidelines, one of the main proxy advisors.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	STAKEHOLDER ENGAGEMENT	
	102-40 List of stakeholder groups engaged by the organization. *Disclosing sustainability: methodological note* pages 13ff.; *Corporate identity* pages 74-77; *Relations with stakeholders* pages 85-90, 98, 99, 100, 103f., 106, 107f., 109f., 121, 122, 124, 126, 129ff., 132ff., 141ff., 152ff., 156ff., 158f., 161ff., 166, 167, 169ff.; *Relations with the environment* page 188.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-41 Percentage of total employees covered by collective bargaining agreements. *Relations with stakeholders* page 152.	**Art. 3, paragraph 2, letter d):** social aspects and aspects relating to staff management
	102-42 Basis for identifying and selecting stakeholders with whom to engage. *Disclosing sustainability: methodological note* pages 13ff.; *Corporate identity* pages 74-77; *Relations with stakeholders* pages 85-90, 99, 100, 103, 106, 107f., 109f., 121, 122, 124, 126, 129ff., 132ff., 141ff., 152ff., 156ff., 158f., 161ff., 164, 166, 167, 171.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-43 Approach to stakeholder engagement (including frequency of engagement by type and by stakeholder group, and an indication of whether any of the engagement was undertaken specifically as part of the report preparation process). *Disclosing sustainability: methodological note* pages 13ff.; *Corporate identity* pages 74-77; *Relations with stakeholders* pages 85-90, 98, 99, 100, 103, 106, 107f., 109f., 121, 122, 124, 126, 129ff., 132ff., 141ff., 152ff., 156ff., 158f., 161ff., 164f., 166f., 169ff.; *Relations with the environment* page 182, 188.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-44 Key topics and concerns that have been raised through stakeholder engagement (including how the organization has responded to those key topics and concerns, including through its reporting, and the stakeholder groups etc.). *Disclosing sustainability: methodological note* pages 13ff.; *Corporate identity* pages 74-77; *Relations with stakeholders* pages 85-90, 89-90 table no. 12, 99, 100, 103, 106, 107f., 109f., 121, 122, 124, 126, 129ff., 132ff., 141ff., 152ff., 156ff., 158f., 161, 167, 169, 171f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	REPORTING PRACTICE	
	102-45 List of all entities included in the organization's consolidated financial statements. Specify whether any entity included in the organization's consolidated financial statements is not covered by the report. The indicator is also shown in the report each time the reference boundary of the disclosure changes. Such shift in some cases is simply to be correlated to the various business sectors (and related pertaining companies) accounted for, in others it must be related to the centralised management of some data which, by virtue of the activities managed under service, does not include the whole accounting scope. *Disclosing sustainability: methodological note*, pages 16 and table no. 2, 17 note 13; *Relations with stakeholders* pages 82, 138; *Relations with the environment* pages 183, 187, 190; *Sustainability Report* page 256.	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries

GRI 102: General Disclosures 2016	**102-46 Process for defining the report content and the topic Boundaries (including an explanation of how the organization has implemented the Reporting Principles for defining report content).** *Disclosing sustainability: methodological note* pages 13ff. and note 7, 15f., 18; *Corporate identity* pages 26-29, 35f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	102-47 List of the material topics identified in the process for defining report content. *Disclosing sustainability: methodological note*, pages 13ff., 15, table no. 1; GRI *Standards Content Index* pages 230ff.	**Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	102-48 Effect of any restatements of information given in previous reports, and the reasons for such restatements (mergers or acquisitions, change of base years or periods, nature of business, measurement methods). Any recalculations or aggregations implying changes respect to that published in 2017 are adequately marked and grounded in the report. *Disclosing sustainability: methodological note*, page 16; *Relations with stakeholders* pages 140 table no. 33, 141 table no. 34, 144 note 95; *Relations with the environment* page 203, 205 table no. 67.	**Art. 3 paragraph 3:** the information [...] is provided with a comparison in relation to those provided in previous years
	102-49 Significant changes from previous reporting periods in the list of material topics and topic Boundaries. No significant changes during the year.	**Art. 3 paragraph 3:** the information [...] is provided with a comparison in relation to those provided in previous years
	102-50 Reporting period for the information provided (for example, the fiscal or calendar year). *Disclosing sustainability: methodological note* page 12 and note 4.	**Art. 2, paragraph 1:** public interest entities draw up a declaration for each financial year **Art. 3 paragraph 3:** the information [...] is provided with a comparison in relation to those provided in previous years
	102-51 Date of the most recent previous report. *Disclosing sustainability: methodological note* page 12.	**n/a**
	102-52 Reporting cycle (for example, annual or biennial). *Disclosing sustainability: methodological note* page 12	**Art. 2, paragraph 1:** public interest entities draw up a declaration for each financial year
	102-53 Contact point for questions regarding the report or its contents. *Disclosing sustainability: methodological note* page 18.	**n/a**
	102-54 Claims of reporting in accordance with the GRI Standards (either: i. "This report has been prepared in accordance with the GRI Standards: Core option", ii. "This report has been prepared in accordance with the GRI Standards: Comprehensive option"). *Disclosing sustainability: methodological note* page 12; *GRI Standard Content Index Standard* pages 230ff.	**Art. 3 paragraph 3:** reporting standard used
	102-55 GRI content index, which specifies each of the GRI Standards used and lists all disclosures included in the report (for each disclosure, the content index shall include: the number of the disclosure, the page number(s) or URL(s) where the information can be found, if applicable, and where permitted, the reason(s) for omission when a required disclosure cannot be made, etc); include any additional material topics reported on which are not covered by the GRI Standards. *GRI Standard Content Index Standard* pages 230ff.	**Art. 3 paragraph 3:** reporting standard used
	102-56 External assurance (the reporting organization shall report a description of the organization's policy and current practice with regard to seeking external assurance for the report; a reference to the external assurance report; the relationship between the organization and the assurance provider; whether and how the highest governance body or senior executives are involved in seeking external assurance for the organization's sustainability report). *Disclosing sustainability: methodological note* page 12; *Opinion Letter* page 287.	**Art. 3 paragraph 10:** verification [...] of the report of a non-financial nature

MATERIAL TOPIC-SPECIFIC STANDARDS		
GRI 200: ECONOMIC TOPICS 2016		
TOPIC	ECONOMIC PERFORMANCE	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 33ff., 35. **Topic Boundary: Acea Group**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 33ff., 35.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 33ff., 35.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 201: Economic Performance 2016	**201-1 Direct economic value generated and distributed (including revenues, operating costs, employee wages and benefits, payments to providers of capital, payments to government and community investments, economic value retained).** *Corporate identity* pages 34, table no. 7, 74-77, 78f.; *Relations with stakeholders* pages 150, 166, 168.	**Art. 3 paragraph 1, letter d):** social aspects and aspects relating to staff management
	201-2 Financial implications and other risks and opportunities due to climate change. *Corporate identity* pages 26-29, 34, 40-63, 71; *Relations with the environment* pages 180, 198.	**Art. 3 paragraph 1, letter c):** the impact [...] on the environment
	201-3 Defined benefit plan obligations and other retirement plans. *Relations with stakeholders* pages 150, 151, table no. 39.	**Art. 3 paragraph 1, letter d):** social aspects and aspects relating to staff management
	201-4 Financial assistance received from government. *Corporate identity* page 78 note 23.	**n/a**
TOPIC	INDIRECT ECONOMIC IMPACTS	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 74-77; *Relations with stakeholders* pages 91ff., 132ff., 137. **Topic Boundary: main Group companies; local community; suppliers.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 74-77; *Relations with stakeholders* pages 91ff., 132ff., 137.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 74-77; *Relations with stakeholders* pages 91ff., 137.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 203: Indirect Economic Impacts 2016	**203-1 Infrastructure investments and services supported (the organization shall report: the extent of development of significant infrastructure investments; current or expected impacts on communities, including positive and negative impacts where relevant; whether these investments and services are commercial, in-kind, or pro bono engagements, etc.).** *Corporate identity* pages 74-77ff.; *Relations with stakeholders* pages 91ff., 98, 99, 100, 101f., 103f., 105f., 107f., 110, 132ff., 172 chart no. 41.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment as well as on health and safety
	203-2 Significant indirect economic impacts (examples of significant identified indirect economic impacts of the organization, including positive and negative impacts, etc.). *Corporate identity* pages 74-77ff.; *Relations with stakeholders* pages 83, 91ff., 99, 100, 101f., 105f., 132ff., 136ff., 138f., 140 tables nos. 33 and 34; *Relations with the environment* page 198.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment as well as on health and safety

TOPIC	PROCUREMENT PRACTICES	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 72f.; *Relations with stakeholders* pages 136ff. **Topic Boundary: main Group companies; suppliers.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 72f.; *Relations with stakeholders* pages 136ff., 143.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 72f.; *Relations with stakeholders* pages 136ff.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 204: Procurement Practices 2016	**204-1 Proportion of spending on local suppliers.** No specific preferential strategy is foreseen for local suppliers, even though, particularly for provisioning works, the prevalence of local suppliers comes about naturally. *Relations with stakeholders* pages 137, 139, 140 table no. 34	**Art. 3 paragraph 1, letter b):** non-financial key performance indicators
TOPIC	ANTI-CORRUPTION	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 69f., 72f.; *Relations with stakeholders* pages 158f. **Topic Boundary: Acea Group**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 69f., 72f.; *Relations with stakeholders* pages 158f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 69f., 72f.; *Relations with stakeholders* pages 158f.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 205: Anti-corruption 2016	**205-1 Total number and percentage of operations assessed for risks related to corruption. Significant risks related to corruption identified through the risk assessment.** *Corporate identity* pages 69f.	**Art. 3, paragraph 1, letter c):** the main risks, generated or incurred **Art. 3, paragraph 2, letter f):** fight against both active and passive corruption
	205-2 Communication and training about anti-corruption policies and procedures (total number and percentage of employees that the organization's anti-corruption policies and procedures have been communicated to, etc.). *Relations with stakeholders* pages 158f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 2, letter f):** Fight against active and passive corruption
	205-3 Confirmed incidents of corruption and actions taken (total number and nature of confirmed incidents of corruption, etc.). No episodes of corruption were recorded.	**Art. 3, paragraph 2, letter f):** Fight against active and passive corruption
TOPIC	ANTI-COMPETITIVE BEHAVIOR	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 67f., 69; *Relations with stakeholders* pages 137, 158f., 168. **Topic Boundary: Acea Group**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced

GRI 103: Management approach 2016 (follow)	**103-2 The management approach and its components.** *Corporate identity* pages 67f., 69; *Relations with stakeholders* pages 137, 158f., 168.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 67f., 69; *Relations with stakeholders* pages 137, 158f., 168.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 206: Anti-competitive Behavior 2016	**206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices (Number of legal actions pending or completed including any decisions or judgments).** *Relations with stakeholders* page 168.	**Art. 3 paragraph 1, letter b):** non-financial key performance indicators
GRI 300: ENVIRONMENTAL TOPICS 2016		
TOPIC	MATERIALS	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 71, 72f.; *Environmental accounts* page 256 **Topic Boundary: main Group companies**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 71, 72f.; *Environmental accounts* page 256	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 71, 72f.; *Environmental accounts* page 256	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 301: Materials 2016	**301-1 Materials used by weight or volume (materials that are used to produce and package the organization's primary products and services, by non-renewable and renewable materials used).** *Relations with the environment* page 200 and table no. 63; *Environmental accounts* pages 256, 263f., 265.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment
	301-2 Percentage of recycled input materials used to manufacture the organization's primary products and services. **Non material**: in light of the materials used (301-1), which are mainly chemical, the indicator is not material.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment
	301-3 Percentage of reclaimed products and their packaging materials for each product category. Not applicable.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment
TOPIC	ENERGY	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 26-29, 35, 72f.; *Relations with stakeholders* page 158; *Relations with the environment* pages 178, 183. **Topic Boundary: main Group companies; suppliers.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 26-29, 35, 72f.; *Relations with stakeholders* page 158; *Relations with the environment* pages 178, 183.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 26-29, 35, 72f.; *Relations with stakeholders* page 158; *Relations with the environment* pages 178, 183.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them

GRI 302: Energy 2016	**302-1 Energy consumption within the organization.** *Relations with stakeholders* page 126; *Relations with the environment* page 197.	**Art. 3, paragraph 2, letter a):** the use of energy resources
	302-2 Energy consumption outside of the organization. *Relations with the environment* page 198.	**Art. 3, paragraph 2, letter a):** the use of energy resources
	302-3 Energy intensity. *Relations with the environment* pages 197, 198.	**Art. 3, paragraph 2, letter a):** the use of energy resources
	302-4 Reduction of energy consumption. *Relations with stakeholders* page 126; *Relations with the environment* pages 198, 199.	**Art. 3, paragraph 2, letter a):** the use of energy resources
	302-5 Reductions in energy requirements of products and services. **Non material**: The Group does not sell products or services for which the indicator could be considered as materials.	**Art. 3, paragraph 2, letter a):** the use of energy resources
TOPIC	WATER	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 26-29, 35, 71, 72f., *Relations with the environment* pages 178, 182, 191, 193, 200f. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 26-29, 35, 72f., *Relations with the environment* pages 178, 182, 191, 193, 200f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity pages* 26-29, 35, 72f., *Relations with the environment* pages 178, 182, 191, 200f.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 303: Water 2016	**303-1 Total volume of water withdrawn, with a breakdown by source.** The water consumed is all fresh water. *Relations with the environment* page 200 table no. 63; *Environmental accounts* pages 260, 260ff.	**Art. 3 paragraph 2, letter a):** the use of water resources
	303-2 Water sources significantly affected by withdrawal of water. *Relations with the environment* page 181.	**Art. 3 paragraph 2, letter a):** the use of water resources
	303-3 Percentage and total volume of water recycled and reused. *Relations with the environment* page 200 e table no. 63.	**Art. 3 paragraph 2, letter a):** the use of water resources
TOPIC	BIODIVERSITY	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 71, 72f.; *Relations with the environment* page 180f. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 72f.; *Relations with the environment* pages 180f., 194.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 72f.; *Relations with the environment* pages 180f.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 304: Biodiversity 2016	**304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.** *Relations with the environment* pages 180f.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment
	304-2 Significant impacts of activities, products, and services on biodiversity. *Relations with the environment* pages 180f., 182, 187.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment

GRI 304: Biodiversity 2016 (follow)	**304-3 Habitats protected or restored.** *Relations with the environment* pages 180f., 182.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment
	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk. *Relations with the environment* pages 180f.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment
TOPIC	EMISSIONS	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 26-29, 71, 72f., *Relations with the environment* pages 178, 179f., 202. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 26-29, 72f., *Relations with the environment* pages 178, 179f., 202	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 26-29, 72f., *Relations with the environment* pages 178, 179f., 202.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 305: Emissions 2016	**305-1 Direct (Scope 1) GHG emissions.** The CO2 biogenic was calculated for the Environment area and in 2018 it was equal to 368,089 tonnes. *Relations with the environment* pages 203, 204 table no. 67; *Environmental accounts* pages 266f., 268.	**Art. 3 paragraph 2, letter b):** greenhouse gas emissions
	305-2 Energy indirect (Scope 2) GHG emissions. *Relations with the environment* pages 203, 204 table no. 67; *Environmental accounts* pages 266f.	**Art. 3 paragraph 2, letter b):** greenhouse gas emissions
	305-3 Other indirect (Scope 3) GHG emissions. *Relations with the environment* pages 203, 204 table no. 67.	**Art. 3 paragraph 2, letter b):** greenhouse gas emissions
	305-4 GHG emissions intensity. *Relations with the environment* pages 203, 204 table no. 67.	**Art. 3 paragraph 2, letter b):** greenhouse gas emissions
	305-5 Reduction of GHG emissions as a direct result of reduction initiatives. *Relations with the environment* pages 187, 198, 199, 200 table no. 62, 204 table no. 67.	**Art. 3 paragraph 2, letter b):** greenhouse gas emissions
	305-6 Emissions of ozone-depleting substances (ODS). *Relations with the environment* page 204; *Environmental accounts* page 263.	**Art. 3 paragraph 2, letter b):** greenhouse gas emissions
	305-7 Nitrogen oxides (NO_x), sulfur oxides (SO_x), and other significant air emissions. *Relations with the environment* page 204 table no. 66; *Environmental accounts* pages 266f.	**Art. 3 paragraph 2, letter b):** pollutant emissions into the atmosphere
TOPIC	EFFLUENTS AND WASTE	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 71, 72f.; *Relations with the environment* page 194; *Environmental accounts* page 256. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 72f, *Relations with the environment* page 194; *Environmental accounts* page 256.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 72f, *Relations with the environment* page 194; *Environmental accounts* page 256.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them

GRI 306: Effluents and Waste 2016	**306-1 Water discharge by quality and destination.** The water used by Acea structures for "civil/hot water" undergoes the same standard purification process to which all town waste water is submitted. The environmental impact produced on the receiving body of water from the discharge of purified water from all the plants is not significant. *Environmental accounts* page 262.	**Art. 3 paragraph 2, letter a):** the use of water resources
	306-2 Waste by type and disposal method. The total hazardous waste products is equal to 86,505.5 t; the total non-hazardous waste products is equal to 220,605.9 t (of which 159,478 is sludge, sand and gratings). The percentage of hazardous and non-hazardous waste sent for recovery is 42%. Differentiated collection obtained about 842 tonnes of paper in 2018 (-22% compared to 2017) and 485 tonnes of plastic (-24% compared 2017). There is no detailed information at this time regarding the type of disposal inasmuch as code R13 of the normative in force on waste (most used by disposal operators) does not permit the identification thereof. *Relations with the environment* page 190, *Environmental accounts* pages 266f., 267, 268.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment
	306-3 Total number and total volume of recorded significant spills. In 2018, there were no significant released into the environment of polluting substances such as mineral oil, fuels or chemical products.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment
	306-4 Transport of hazardous waste. This disclosure covers waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII. Total weight for each of the following: hazardous waste transported, imported, exported, treated, and percentage of hazardous waste shipped internationally. **Non-material**: the Aquaser company transports and delivers non-hazardous waste.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment
	306-5 Water bodies affected by water discharges and/or runoff, including information on the size of the water body and related habitat; whether the water body and related habitat is designated as a nationally or internationally protected area; the biodiversity value etc. No drain to report that significantly affects the habitats and biodiversity.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment
TOPIC	ENVIRONMENTAL COMPLIANCE	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 72f.; *Relations with stakeholders* page 158; *Relations with the environment* page 182. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity pages* 72f.; *Relations with stakeholders* page 158; *Relations with the environment* page 182.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 72f.; *Relations with stakeholders* page 158; *Relations with the environment* page 182.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 307: Environmental Compliance 2016	**307-1 Non-compliance with environmental laws and regulations. Total monetary value of significant fines; total number of non-monetary sanctions, etc.** *Relations with stakeholders* page 168; *Relations with the environment* page 182.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
TOPIC	SUPPLIER ENVIRONMENTAL ASSESSMENT	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 26-29, 72f.; *Relations with stakeholders* page 137. *Relations with the environment* pages 180, 198, 203. **Topic Boundary: main Group companies; suppliers.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced

GRI 103: Management approach 2016 (follow)	**103-2 The management approach and its components.** *Corporate identity* pages 26-29, 72f.; *Relations with stakeholders* page 141ff.; *Relations with the environment* pages 180, 198, 203.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 26-29, 72f.; *Relations with stakeholders* page 136f., 141ff.; *Relations with the environment* pages 180, 198, 203.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 308: Supplier Environmental Assessment 2016	**308-1 Percentage of new suppliers that were screened using environmental criteria.** *Relations with stakeholders* 137, 141ff.; *Relations with the environment* pages 180, 198.	**Art. 3 paragraph 1, letter c):** The main risks generated or suffered [...] deriving from the business, its products, services or commercial relations, including, where relevant, the supply and subcontracting chains
	308-2 Actual and potential negative environmental impacts in the supply chain and actions taken. *Relations with stakeholders* pages 141ff.; *Relations with the environment* pages 180, 198, 203.	**Art. 3 paragraph 1, letter c):** The main risks generated or suffered [...] deriving from the business, its products, services or commercial relations, including, where relevant, the supply and subcontracting chains **Art. 3 paragraph 2, letter c):** the impact [...] on the environment
GRI 400: SOCIAL TOPICS 2016		
TOPIC	EMPLOYMENT	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 72f.; *Relations with stakeholders* pages 144f., 157. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 72f.; *Relations with stakeholders* pages 144f., 157.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 72f.; *Relations with stakeholders* pages 144f., 157.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 401: Employment 2016	**401-1 New employee hires and employee turnover. Total number and rate, by age group, gender and region.** *Relations with stakeholders* pages 144f., 147 table no. 36, 148 table no. 37.	**Art. 3 paragraph 2, letter d):** aspects relating to staff management
	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees. *Relations with stakeholders* page 162.	**Art. 3 paragraph 2, letter d):** aspects relating to staff management
	401-3 Parental leave. Total number of employees that were entitled to parental leave, that took parental leave, that returned to work after parental leave ended, by gender, etc. Acea operates in compliance with the Consolidated Act on the protection and support of maternity and paternity (Italian Legislative Decree no. 151/2001 as subsequently amended and supplemented), which regulates leave, rest, permits and economic support to workers connected with the maternity and paternity of natural, adopted and fostered children. The legislation bans any discrimination for reasons based on gender, with specific regards to any less favourable treatment due to being pregnant, a mother or a father; it establishes compulsory maternity for a period running from two months before and three months after delivery and guarantees that the job will be kept during that period, laying down a ban on dismissal; it also establishes that the resource will be returned to the duties carried out prior to the leave or equivalent duties, envisaging sanctions for any employers breaching this law. Therefore, 100% of employees using this type of leave, maintain their job and return to work. 392 employees in 2018 made use of **parental leav**e, of whom 143 were men and 249 were women. At the end of the leave period, **everyone returned to work and are still active**.	**Art. 3 paragraph 2, letter d):** aspects relating to staff management **Art. 3, paragraph 2, letter e):** actions taken to prevent attitudes and conduct that are in any case discriminatory

TOPIC	LABOR/MANAGEMENT RELATIONS	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Relations with stakeholders* pages 152f. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Relations with stakeholders* pages 152f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Relations with stakeholders* pages 152f.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 402: Labor/Management Relations 2016	**402-1 Minimum notice periods regarding operational changes. Report whether the notice period and provisions for consultation and negotiation are specified in collective agreements.** *Relations with stakeholders* pages 152ff.	**Art. 3, paragraph 2, letter d):** method by which dialogue is carried out with the corporate parties
TOPIC	Occupational Health and Safety	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 26-29, 72f.; *Relations with stakeholders* pages 153, 155f., 158. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 26-29, 72f.; *Relations with stakeholders* pages 153, 155f., 158.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 26-29, 72f.; *Relations with stakeholders* pages 153, 155f., 158.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 403: Occupational Health and Safety 2016	**403-1 Workers representation in formal joint management–worker health and safety committees.** In Acea, the provisions are respected of Italian Legislative Decree no. 81/2008 on health and safety at work. 100% of workers are represented in formal health and safety commissions (made up of representatives of management and workers) through appointed figures. *Relations with stakeholders* pages 152, 154.	**Art. 3 paragraph 2, letter c):** the impact [...] on health and safety **Art. 3 paragraph 2, letter d):** aspects relating to staff management
	403-2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities, by gender and region. In 2018, the absenteeism rate is 3.8% (4.35% male absenteeism rate and 3.62% female absenteeism rate). *Relations with stakeholders* pages 143, 153, 154 chart no. 38, 155 table no. 40	**Art. 3 paragraph 2, letter c):** the impact [...] on health and safety **Art. 3 paragraph 2, letter d):** aspects relating to staff management
	403-3 Workers with high incidence or high risk of diseases related to their occupation. *Relations with stakeholders* page 156.	**Art. 3 paragraph 2, letter c):** the impact [...] on health and safety **Art. 3 paragraph 2, letter d):** aspects relating to staff management
	403-4 Health and safety topics covered in formal agreements with trade unions. *Relations with stakeholders* page 154.	**Art. 3 paragraph 2, letter c):** the impact [...] on health and safety **Art. 3 paragraph 2, letter d):** aspects relating to staff management [...] method by which dialogue is entertained with the corporate parties

TOPIC	TRAINING AND EDUCATION	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 72f.; *Relations with stakeholders* pages 156ff., 162. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 72f.; *Relations with stakeholders* pages 156ff., 162.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 72f.; *Relations with stakeholders* pages 156ff., 162.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 404: Training and Education 2016	**404-1 Average hours of training per year per employee; by gender and employee category.** *Relations with stakeholders* pages 159 chart no. 39, 160 table no. 41.	**Art. 3 paragraph 2, letter d):** aspects relating to staff management
	404-2 Programs for upgrading employee skills and transition assistance programs. *Relations with stakeholders* page 156ff.	**Art. 3 paragraph 2, letter d):** aspects relating to staff management
	404-3 Percentage of employees receiving regular performance and career development reviews. In 2018, under the scope of the current Staff Management System, all staff of the Group companies in the reporting period were assessed (100%). *Relations with stakeholders* pages 162f.	**Art. 3 paragraph 2, letter d):** aspects relating to staff management
TOPIC	DIVERSITY AND EQUAL OPPORTUNITY	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Relations with stakeholders* pages 150, 162, 164. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Relations with stakeholders* pages 150, 162, 164.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Relations with stakeholders* pages 150, 162, 164.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 405: Diversity and Equal Opportunity 2016	**405-1 Diversity of governance bodies and employees. Percentage of individuals within the organization's governance bodies, by gender, age group and other indicators of diversity. Percentage of employees per employee category, by gender, age group and other indicators of diversity.** The figure, relative to the governing bodies of all companies in the scope of the consolidated non-financial Statement, is presented in the Report, divided up by gender; data on age and other diversity indicators is not available. *Corporate identity* pages 64f.; *Relations with stakeholders* pages 147 and chart no. 35 and table no. 36, 149f. and table no. 38, 164f.	**Art. 3 paragraph 2, letter d):** social aspects and aspects relating to staff management
	405-2 Ratio of basic salary and remuneration of women to men for each employee category, by significant locations of operation. The collective national employment contract applied in Acea envisages equal remuneration for men and women of equal classification. *Relations with stakeholders* page 150 and chart no. 37.	**Art. 3 paragraph 2, letter d):** social aspects and aspects relating to staff management

TOPIC	LOCAL COMMUNITIES	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 72f., 74-77; *Relations with stakeholders* pages 85-90, 91ff., 99, 103, 106, 107f., 109f., 129, 167f., 169f. **Topic Boundary: main Group companies and various stakeholders.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 72f., 74-77; *Relations with stakeholders* pages 85-90, 91ff., 99, 103f., 106, 107f., 109f., 129, 167f., 169f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 72f., 74-77; *Relations with stakeholders* pages 85-90, 91ff., 99, 103f., 129, 167f., 169f.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 413: Local Communities 2016	**413-1 Operations with local community engagement, impact assessments, and development programs.** 100% of the main Group companies implement initiatives to involve stakeholders. *Disclosing sustainability: methodological note* pages 13ff.; *Corporate identity* pages 72f. and table no. 8, 74-77; *Relations with stakeholders* pages 85-90, 98, 99, 103f., 106, 107f., 109f., 126, 129ff., 132ff., 136ff., 141ff., 172; *Relations with the environment* pages 182, 188.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment and on health and safety
	413-2 Operations with significant actual and potential negative impacts on local communities. *Corporate identity* pages 74-77; *Relations with stakeholders* page 169; *Relations with the environment* page 183.	**Art. 3 paragraph 2, letter c):** the impact [...] on the environment and on health and safety
TOPIC	SUPPLIER SOCIAL ASSESSMENT	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 26-29, 72f. **Topic Boundary: main Group companies; suppliers.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 26-29, 72f.; *Relations with stakeholders* pages 141ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 26-29, 72f.; *Relations with stakeholders* pages 136f., 141ff.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 414: Supplier Social Assessment 2016	**414-1 Percentage of new suppliers that were screened using social criteria.** *Relations with stakeholders* pages 137, 141ff.	**Art. 3, paragraph 1, letter c)** The main risks generated or suffered [...] deriving from the business, its products, services or commercial relations, including, where relevant, the supply and subcontracting chains **Art. 3 paragraph 2, letter c):** t he impact [...] on health and safety
	414-2 Negative social impacts in the supply chain and actions taken. *Relations with stakeholders* pages 141ff.	**Art. 3 paragraph 2, letter c):** the impact [...] on health and safety

TOPIC	PUBLIC POLICY	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Relations with stakeholders* pages 167f. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Relations with stakeholders* pages 167f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Relations with stakeholders* pages 167f.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 415: Public Policy 2016	**415-1 Political contributions. Total monetary value of financial and in-kind political contributions made directly and indirectly by the organization by Country and recipient/beneficiary.** *Relations with stakeholders* page 168.	**Art. 3, paragraph 2, letter f):** fight against active and passive corruption
TOPIC	CUSTOMER HEALTH AND SAFETY	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 72f.; *Relations with stakeholders* pages 106, 107, 109ff., 169; *Relations with the environment* pages 187, 191. **Topic Boundary: main Group companies; customers; community.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 72f.; *Relations with stakeholders* pages 106, 107, 109ff., 169; *Relations with the environment* pages 187, 191.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 72f.; *Relations with stakeholders* pages 106, 107, 109ff., 169; *Relations with the environment* pages 187, 191.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 416: Customer Health and Safety 2016	**416-1 Assessment of the health and safety impacts of product and service categories.** *Corporate identity* pages 72f. and table no. 8; *Relations with stakeholders* pages 105f., 107f., 109ff.; *Relations with the environment* pages 187, 191.	**Art. 3 paragraph 2, letter c):** the impact [...] on health and safety
	416-2 Incidents of non-compliance concerning the health and safety impacts of products and services. *Relations with the environment* pages 172, 182.	**Art. 3 paragraph 2, letter c):** the impact [...] on health and safety
TOPIC	MARKETING AND LABELING	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Relations with stakeholders* pages 85-90, 91ff, 94ff., 100, 103, 121, 123f., 125, 126, 143, 168. **Topic Boundary: main Group companies; customers.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Relations with stakeholders* pages 91ff. 94ff, 95 table 13, 97 table 14, 100, 103, 111ff., 121, 122, 123f., 125, 126, 143, 168.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Relations with stakeholders* pages 91ff. 94ff., 100, 103, 121, 123f., 125, 126, 143, 168.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them

GRI 417: Marketing and Labeling 2016	**417-1 Requirements for product and service information and labeling.** The international indicator GRI, by virtue of the reference made to "services" as well as to products, is reported, adjusting it to the national context and the operations of a multiutility, both in respect of parameters relating to the quality of water distributed and in respect of the quality performance of the services managed (commercial, contractual and technical - of continuity), in the water area and energy area, subject to regulation by the sector authority, monitored by corporate procedures and communicated. *Relations with stakeholders* pages 91ff., 94ff., 95 table no. 13, 97 table nos. 14 and 15, 100 and table no. 19, 103, 105, 106 table no. 21, 109ff., 109 and table no. 24, 112f, and table no. 28, 115 table no. 29, 117 table no. 30, 120, 125, 126, 127 table no. 32; *Relations with the environment* page 191.	**Art. 3 paragraph 1, letter b):** non-financial key performance indicators
	417-2 Total number of incidents of non-compliance with regulations and/or voluntary codes concerning product and service information and labeling. *Relations with stakeholders* pages 91ff., 94ff., 95 table no. 13, 97 table nos. 14,and 15, 100 and table no. 19, 109ff., 112f. and table no. 28, 115 table no. 29, 117 table no. 30, 121, 125, 126, 127 table no. 32, 168.	**Art. 3 paragraph 1, letter b):** non-financial key performance indicators
	417-3 Total number of incidents of non-compliance with regulations and/or voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship. *Relations with stakeholders* pages 143, 168.	**Art. 3 paragraph 1, letter b):** non-financial key performance indicators
TOPIC	CUSTOMER PRIVACY	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 67f., 69, 72f.; *Relations with stakeholders* pages 123, 158f. **Topic Boundary: main Group companies; customers.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 67f., 69, 72f.; *Relations with stakeholders* pages 123, 158f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 67f., 69, 72f.; *Relations with stakeholders* pages 123, 158f.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them
GRI 418: Customer Privacy 2016	**418-1 Substantiated complaints (received from outside parties and/or received from regulatory bodies) concerning breaches of customer privacy and losses of customer.** Since the entry into force of Regulation EU 679/2016 on the protection of personal data, 39 relevant requests (requests for updating, cancellation, modification, refusal of consent, etc.) have been received through the dedicated channel for the exercise of data subjects' rights. Three of these have led to the initiation of investigations by the Privacy Authority. To date, 2 out of 3 have been closed.	**Art. 3 paragraph 1, letter b):** non-financial key performance indicators
TOPIC	SOCIO ECONOMIC COMPLIANCE	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 72f.; *Relations with stakeholders* pages 94ff., 100, 111ff., 168. **Topic Boundary: main Group companies.**	**Art. 4, paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries **Art. 4 paragraph 1:** measure necessary to ensure the understanding of the group business, its performance, results and the impact it produced
	103-2 The management approach and its components. *Corporate identity* pages 72f.; *Relations with stakeholders* pages 94ff., 100, 111ff., 121, 122, 126, 131, 168. *Relations with the environment* page 182.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 3, paragraph 1, letter b):** the policies applied by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 72f.; *Relations with stakeholders* pages 94ff., 100, 126, 111ff., 126, 168.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them

GRI 419: Socio Economic Compliance 2016	**419-1 Non-compliance with laws and regulations in the social and economic area (total monetary value of significant fines; total number of non-monetary sanctions etc.).** *Relations with stakeholders* pages 100 note 50, 122, 168; *Relations with the environment* page 182.	**Art. 3, paragraph 1, letter b):** the policies applied by the company [...] and the results achieved through them

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