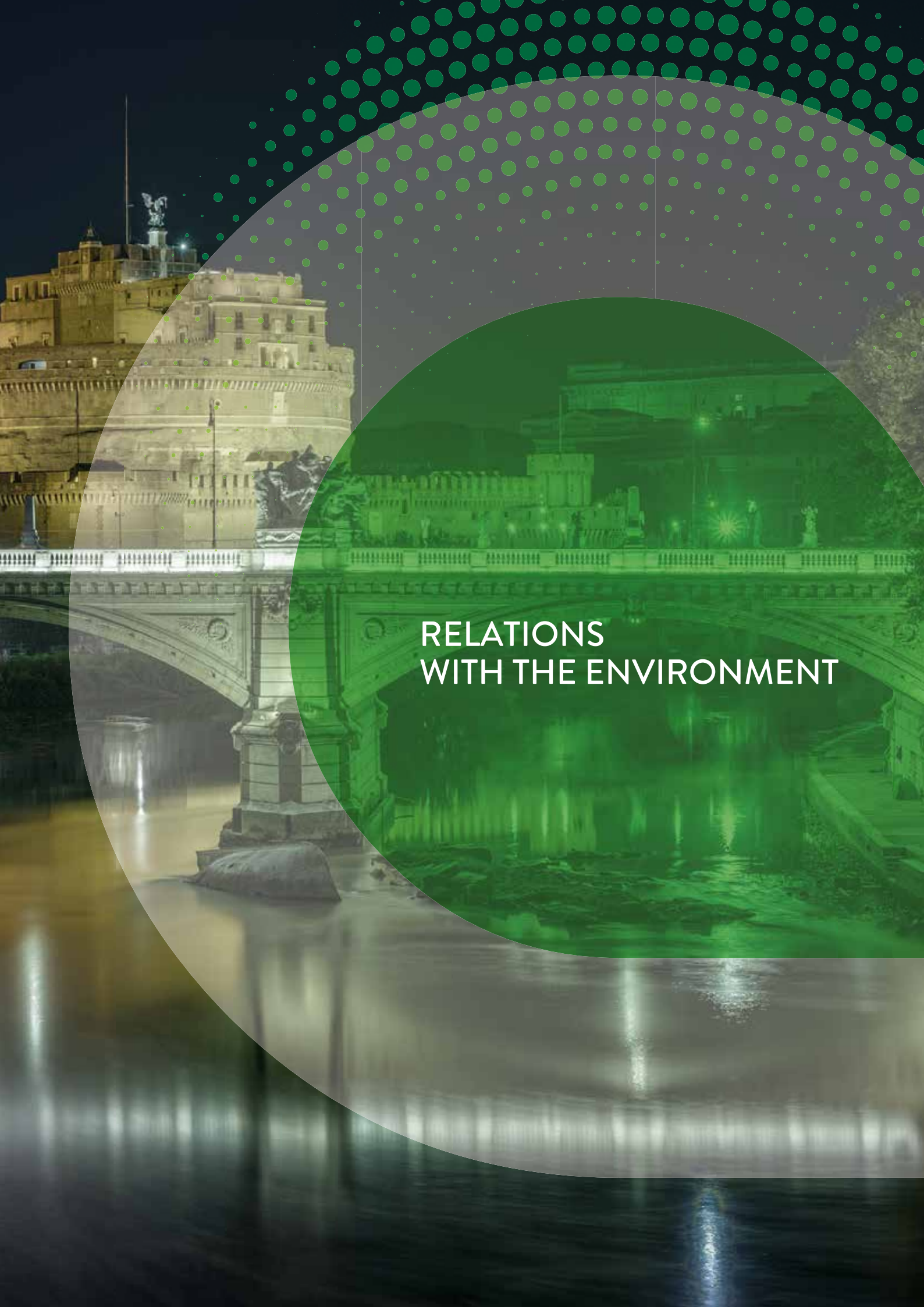


RELATIONS WITH THE ENVIRONMENT

ENVIRONMENTAL SUSTAINABILITY AND THE PRIMARY CHALLENGES

The main challenges for environmental sustainability dealt with by Acea during the year are included in the framework outlined in the 2030 Agenda and focus on a few key issues, including **climate, water resources, circular economy and technological innovation applied to infrastructure management.**

With regard to **climate change**, the Group is undertaking initiatives aimed on the one hand at the process of **adaptation** to these changes, for example, by making infrastructure more resilient and incorporating the analysis of critical scenarios into operations, and on the other hand at the **mitigation** process through the progressive reduction of climate-changing emissions. In 2019 it continued the path towards the implementation of a system consistent with the **UNI EN ISO 14064 standard** (on the inventory of greenhouse gases), which enables a more **accurate analysis and knowledge** of emissions generated by plants, and achieved positive results on the **CDP- Carbon Disclosure Project Questionnaire** for which Acea improved its score, obtaining an A- (see also the box in the *Corporate Identity* chapter *Strategy and sustainability*).

With regard to the **management of water**, in agreement with the institutions of reference Acea continued the actions necessary for the **construction** of the **new upper section of the Peschiera-Le Capore Aqueduct** to safeguard the water supply in Rome and the Province of Rome. In addition, the wastewater reuse project continues, important both for preserving water resources and for the circular economy. Acea has been investing in the **circular economy** for some years now, with the aim of both reducing waste of resources, for example by using process waste, and obtaining energy recovery. This commitment was reinforced by the signing of a **Memorandum of Understanding** with Enea for the **joint development of projects in the circular economy**, with regard to the sustainable waste cycle and water resource management (see also the chapter *Institutions and the company*).

Also this year Acea contributed to the pursuit of some of the objectives set by the four European Directives of the "Circular Economy Package". Indeed, at Ecomondo Acea Elabori, Acea Ambiente and Acea Ato 2 presented some **projects aimed at the development of diffused composting, the reuse of water, the recovery of matter in urban purification plants and the reduction of sludge** (see the box for details).

Promoting a circular economy also requires the best possible management of water including through the use of water kiosks, see in this regard the chapter *Customers and the community*.

With regard to **technological innovation** particular attention is paid to applications that concern the **management of networks and their evolution** (see also *Corporate Identity* and the *Institutions and the company* chapter).

ACEA AT ECOMONDO

Acea once again this year participated in Ecomondo, the **most important international trade show of sustainable development in the Euro-Mediterranean area** held in **Rimini** with an innovative format that brought together the sectors of the **circular economy referring to the recovery of matter and energy, and the sustainable management of water resources.** The topics covered during the event were "waste and resources", "circular bioeconomy", "reclamation and hydrogeological risk" and "water", with a focus on the most advanced and sustainable technological solutions for the correct management and leveraging of resources (types of waste, water, polluted marine sites and raw, second and renewable materials).

Acea presented some **projects** focused on the circular and green economy such as **Acea SmartComp** for local composting (for more information see also the box in the chapter *Environment – waste management*), **Sludge Mining** for the recovery of fertilizers and biofuels from sewerage sludge and Water Kiosks, and shared **, testimonies** shared in the topical seminars and **interviews** by project managers.

In addition, the Chairwoman of Acea addressed the international plenary session of the General Assembly of Ecomondo entitled "Climate and Green New Deal: a compact between companies and governments".

The **booth set up by Acea**, visited by many and also by the Minister of the Environment, proposed **several activities engaging visitors**, including an **educational presentation on the water cycle** for boys and girls of school age, **practical demonstrations on chemical analyses and water controls**, a social activation on the importance of the **reuse of objects** thanks to creative restyling. In addition, experts in the **scientific and environmental field** have **given advice on the conduct** needed in everyday life to help improve the quality of the environment, by recycling plastic or reducing its consumption.

Acea also presented the **AIRES network contract**: A network of companies, institutions and technology consortia engaged in the **development of a circular economy and environmental sustainability** (see also the chapter *Institutions and the company*).

ENVIRONMENTAL AND CLIMATE RISKS: IN-DEPTH ANALYSIS AND DISCLOSURE

CLIMATE RISKS

Climate change is one of the most important environmental and social challenges, both internationally – as evidenced by the Paris Climate Agreement and the long-term European strategy "for a prosperous, modern and climate-neutral economy by 2050 – A clean planet for all" and the recent Green Deal promoted by the European Commission – and nationally, as indicated in the Integrated Energy and Climate Plan (IECP), which shares the Community's orientation aimed at strengthening the commitment to decarbonisation of the economy.

In 2019, the **Climate Action Summit** was held in New York, an important event organized by the United Nations with the dual objective of stimulating countries to achieve the objectives of the Paris Agreement and encouraging concrete actions in support of these objectives in the real economy.

In this context, consistent with international, European and national orientations, **Acea** has strengthened **its mitigation and adaptation strategy with respect to climate change** with **concrete actions**, including energy efficiency for companies and, in the water sector, the reuse of purified wastewater in agriculture or the production of drinking water from the Tiber in cases of emergency (see the *2019-2022 Sustainability Plan and the operational objectives* in *Corporate Identity*).

Furthermore, in line with the provisions of the **Task Force on Climate-Related Financial Disclosures (TCFD)**, Acea assesses climate risks by breaking them down into physical and transition risks (see also *Corporate identity* chapter *Corporate Governance and Management Systems*) and reports them in the aforementioned CDP. Acea is increasingly working to align itself with the recommendations of the TCFD by progressively including the consideration of climate risks in economic and financial reporting.

Through targeted initiatives such as the increase in **production from renewable energy sources**[98], the **Group** has the dual objective of **achieving high efficiency both in internal energy end-uses** and in **process uses** and **reducing carbon intensity** (gCO_2/kWh produced). The results obtained to date are shown in table no. 59 on energy intensity indices and table no. 65 on emission intensity indices.

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*.

The commitment of the operating companies to keep 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 the main operating companies of the group received about 60 environmental fines, with the consequent payment of **about € 64,500**. An additional **144 environmental disputes** are currently being settled.

The Aprilia plant, seized in 2017 by the Latina Public Prosecutor's Office for aspects related to odorous emissions, in 2019 operated close to full capacity, although all activities were subject to daily control by a judicial custodian[99].

The majority of the water Companies of the Group – such as Acea Ato 2, Acea Ato 5, Gesesa – and the Companies of the Environment Segment) **receive environmental reports principally from the Control Bodies** or other Relevant Bodies, called upon by individual citizens. The Bodies, therefore, act autonomously with checks on site and, at times, they initiate proceedings and impose penalties, as mentioned above. Complaints/reports submitted by the Bodies on environmental issues of a certain importance are forwarded to the responsible office, which asks those involved to provide information on the problem that is the subject of the complaint in order to ascertain what has been reported and request the necessary action, as well as provide feedback to the Bodies concerned. Exceptionally, it may happen that the Company receives significant reports from individual persons; in this case they will be checked and, where needed, it will intervene to resolve them.

With respect to electricity distribution, Areti can receive observations 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[100]. The Assets and Special Projects Unit, which protects the company's assets, receives the notes of dispute from the owners of the immoveable properties that host **transformer substations** or are adjacent to power lines, and subsequently the **Occupational Safety Unit carries out the instrumental checks** in response to the disputes. During 2019 **6 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, in 2019 Areti continued its **experimentation with vegetable oil**, launched some years ago. Indeed, **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 is based on the use of an **insulating liquid of vegetable origin**

98 More specifically, in 2019 Acea Produzione purchased some photovoltaic systems for 26 MW of power.

99 The Aprilia plant was placed under seizure in 2017, for aspects related to odorous emissions. On 14 April 2018 the Public Prosecutor authorized the resumption of operations by removing the seals from the Aprilia plant, without prejudice to the seizure. In 2019 the plant operated close to full capacity, although all activities were subject to daily control by a judicial custodian.

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

(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 its 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).

PROTECTION OF THE TERRITORY

Acea pays attention to the **protection of the territory region** and the **safeguarding of biodiversity**. The protection of ecosystems 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. Moreover, as required by the Authorisations of existing plants and every time an Integrated Environmental Authorisation (IEA) is renewed for a plant, this is managed by protecting the flora and fauna and protecting the environment and the landscape in which the plant is located. The main activities of the Group Companies that may have an impact on biodiversity are primarily attributable to the management of water sources, the operation of electricity production systems (hydroelectric, thermoelectric and waste to energy), the distribution of electricity and the treatment of waste.
In 2019, in order to verify the presence of species listed in the red list (IUCN) and in the national lists of protected species in the areas of operation, Acea carried out a specific investigation that involved the verification of the location of the Group's main plants within the following types of protected areas: Sites of Community Interest (SCIs), Special Protection Areas (SPAs) covered by the Natura 2000 network and other areas of biodiversity value, such as protected parks. In addition to the progressive extension of the analyses to all Group companies, Acea intends to continue this investigation, verifying the presence of protected species in the areas of interest and the possible contact between them and the operations of the Companies. The surveys carried out in 2019 found **no Acea Ambiente plants** (thermal renewal and composting) or **Acea Produzione thermoelectric plants in protected areas**, while the analyses carried out on **Acea Ato 2** infrastructure found 7 plants in protected areas (SPAs, SCIs or regional parks)[101]. Built prior to the establishment of parks, protected areas and special conservation areas, the sites are considered to require absolute protection as they are close to springs are managed with the utmost attention to the conservation of existing ecosystems and the preservation of the water flow. In an area around the Acqua Vergine springs, for years Acea Ato 2 has monitored the presence of the Peregrine falcon, a **protected species** that, despite preferring open and wild areas, can nest 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).
Acea Ato 2 also monitors the **areas surrounding the largest treatment plants** in Rome. The results of the analyses carried out at the purification plant in Rome Nord have shown that the plant constitutes a synanthropic biodiversity hotspot, i.e. a place where species that coexist or are learning to coexist with humans through mechanisms of evolution and natural selection tend to form a rich and stable ecological community. Indeed, the specific ecological conditions combined with the low impact of man-made structures facilitates the presence of an extremely particular wildlife community.
Acea Produzione manages the water basins of hydroelectric plants and provides for the protection of the habitats of all species present in these areas in order to **mitigate the effect of the artificial barrier of the dams**, which interferes with the natural migration of fish and the gradual sedimentation of the riverbed, with consequent variation of the native flora of the banks. In addition, the Company's protection of the aforementioned basins ensures the living conditions of the "settled" and "migratory" birds, which use these sites for reproduction/feeding even during migration.
Finally, in order to limit the **potential impacts** of overhead infrastructure for the **distribution of HV and MV electricity on birds**, **Areti employs risk mitigation initiatives** in collaboration with the relevant authorities, making use of the best technological solutions for problems that are likely to occur in sensitive areas or areas of particular naturalistic value. In particular, through the Memorandum of Understanding for the rearrangement of the electricity grids signed by Areti, Terna and the Municipality of Roma Capitale in 2007, interventions have been planned to dismantle and demolish tens of kilometres of overhead power lines within very important areas subject to protection, such as: Veio Park, the Marcigliana Nature Reserve and, to the south of Rome, the Decima Malafe Nature Reserve and the Roman Coast Nature Reserve. For details of the interventions carried out in 2019, please refer to the *Memorandum of Understanding for the rearrangement of the electricity grids* in the section *Energy distribution*.

SPRINGS AND PROTECTED AREAS

Through the Companies **Acea Ato 2**, **Acea Ato 5, Gori and Gesesa**, the Group mainly uses springs located in uncontaminated areas for water supply. For example, Rome is one of the few metropolitan areas in the world 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 **OTA 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 about **10,400 km.** In addition to this priceless natural heritage, Lake Bracciano is a reserve to be used only in cases of emergency, after treatment. In 2019 Acea Ato 2 **completed the transformation of the "Grottarossa" water purification plant on the Tiber**, formerly a treatment plant for non-potable uses, which, once having obtained the necessary authorisations, will be ready to be used for water purification in the event of a water emergency.

[101] Specifically the Peschiera, Le Capore, Pertuso, Ceraso Doganella, Acqua Vergine, Lago di Bracciano and Sorgenti Simbrivio catchment facilities.

THE NEW SUSTAINABLE WORKS ON THE PESCHIERA – LE CAPORE E MARCIO AQUEDUCTS

In 2019, after the approval issued by the relevant Bodies, Acea Ato 2 **began the design of works on the Peschiera-Le Capore and Marcio aqueducts** aimed at ensuring the continuity and security of the supply to Roma Capitale and the territory of OTA 2. The design of the new works, carried out in compliance with current regulations, will be developed following the ***Envision*** protocol procedures, the first rating system that assesses the economic, environmental and social sustainability of infrastructure.

New upper section of Peschiera-Le Capore

In July the specifications for the renewal of the concession for the derivation from the springs for Roma Capitale were signed, and consequently, due to the current management agreement, Acea Ato 2 was awarded the pro tempore concession of the integrated water service in the territory of OTA 2 Central Lazio – Rome. This important result, awaited for 23 years, is preparatory to the design and implementation of the aqueduct's safety works. The planned works, now in the final design stage, involve the construction of a second 27 km line of infrastructure that will connect the spring with the Salisano node, which represents the upper section of the Peschiera-Le Capore aqueduct system. The planned doubling will make the supply of the concession capacity to Rome and the other areas more secure and resilient, countering the risks associated with the ageing of the current infrastructure and the seismic nature of the territory. The size of the infrastructure and the duration to be guaranteed have dictated innovative design choices **inspired by the most modern execution techniques and monitoring technologies**, for the definition of which experts in different fields of engineering have been involved and consulting from universities and research institutes has been requested. In the coming months the design will also undergo numerical/physical modelling for the most important elements.

In 2019 the objectives of the works were identified, with the drafting of the Requirement Framework (QE), the design specifications were defined with the drafting of the Design Guidance Document (DIP) and the Feasibility Document of the Project Alternatives, the Technical-Economic Feasibility Project and the Final Project. The cost-benefit analysis prepared by the Department of Management and Law of the University of Rome "Tor Vergata" was used to choose the solution to be developed. In 2020 the authorisation phase will be carried out, preparatory for the call for tenders, which will also include an Environmental Impact Assessment (VIA).

New Marcio aqueduct

Two parallel aqueducts originate from the springs of Acqua Marcia, located in the valley of the Aniene river, namely the Marcio I and II aqueducts, which for more than 100 years have carried the water from the springs to Rome and the various municipalities along their path (for a total average flow of 3.5-5 m^3/s). The layout of the two aqueducts has some problems related to the ability to ensure adequate hygienic protection of the transported water. Moreover, given the age of the works and their limited management flexibility, works have been started to make the Marcio system reliable from the point of view of the quality and continuity of the resource and the flexibility of operations, benefiting the overall resilience of the capital's supply.

In 2019 the objectives of the works were identified with the drafting of the QE, the design specifications were defined with the drafting of the Design Guidance Document and the drafting of the Feasibility Document of the Project Alternatives was completed. After careful examination with the multicriteria analysis, from the many possible solutions four hypotheses were identified that will be assessed as part of the cost-benefit analysis performed by the Department of Management and Law of the University of Rome Tor Vergata.

The completion of the design process and the start of the authorisation process prior to the call for tenders are expected in 2020.

The **drinking water system** of the **OTA 5 Southern Lazio – Frosinone** region is constituted by installations and networks, for conveyance and distribution, which are in charge of **7 principal springs** from which **the same number of aqueduct systems** have their origin, for a total of 5,500 km of network[102]. In the region of the **Sarnese Vesuvian District**, the different springs and wells described in table no. 45 feed about 4,970 km of water network, of which 811 km of aqueducts and supply networks. Just as in the province of **Benevento** the plurality of springs feeds about 170 km of aqueducts and supply networks, with about 1,540 km of total distribution[103].

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.

Table no. 45 describes the location and surface areas in square metres of the areas **subject to absolute protection**[104] in the provinces of Rome, Frosinone and Benevento.

TABLE NO. 45 – THE PRINCIPAL SOURCES UNDER PROTECTION

sensitive area	municipality	surface (m^2)(*)
IN OTA 2 – CENTRAL LAZIO		
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
Pantano Borghese Acqua Felice springs	municipality of Zagarolo (Rome)	779,143
Simbrivio springs and wells	municipality of Vallepietra (Rome)	194,755

102 The Acea Ato 5 water network as a whole consists of 5,496 km, of which 1,208 km of aqueducts and supply networks.
103 2018 data.
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. 45 – THE PRINCIPAL SOURCES UNDER PROTECTION (cont.)

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
Laurentina wells	municipality of Ardea	13,661
Pescarella wells	municipality of Ardea	2,433
Lake of Bracciano	municipality of Rome	169,200
IN OTA 5 – SOUTHERN LAZIO (*)		
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
IN THE PROVINCE OF BENEVENTO – OTA – CALORE IRPINO		
12 wells	municipalities of Benevento, Telese Terme, Castelpagano, Vitulano, Melizzano, Sant'Agata de' Goti, Cautano and Forchia	9,110
Ciesco spring	Castelpoto	307
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
IN THE SARNESE VESUVIANO DISTRICT		
Vado spring	municipality of Bracigliano (Salerno)	1,338
Forma spring	municipality of Gragnano (Naples)	322
Imbuto spring	municipality of Gragnano (Naples)	187,159
S.M. Lavorate spring	municipality of Nocera Inferiore (Salerno)	5,971
spring and well field S.M La Foce	municipality of Sarno (Salerno)	60,202
Fontana grande spring	municipality of Castellammare di Stabia (Naples)	330
Murata, Pugliana, Casaliciello, Santa Lucia, Tartaglia complexes	municipalities of Cercola, Ercolano, Pollena Trocchia, Roccarainola, San Giorgio a Cremano (Naples)	15,473
Monte Taccaro complex, Angri well field	municipality of Angri (Salerno)	43,072
Suppezza, Gragnano, San Mauro Montalbino, Mercato Palazzo, Santa Lucia well field	municipality of Castellammare di Stabia, Gragnano, Nocera Inferiore, Sarno (Salerno)	46,610
Traiano, Stromboli-Vesuvio, Petraro wells	municipalities of Castel San Giorgio, Mercato San Severino, Nocera Superiore (Salerno)	7,203
21 wells in the province of Salerno	municipalities of Bracigliano, Castel San Giorgio, Corbara, Fisciano, Mercato San Severino, Nocera Inferiore, Nocera Superiore, Pagani, Siano (Salerno)	10,657
4 wells in the province of Naples	municipalities of Castellammare di Stabia, Palma Campania, Roccarainola, San Giorgio a Cremano (Naples)	1,529

(*) The surface area data is estimated.

For the **monitoring of the area** where the springs are located, Acea also uses **"satellite observation"**. Surveillance is concentrated in the places showing – 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. Acea Ato 2 directly verifies the actual existence of threats to the water, ensuring **precise monitoring**. In fact, in 2019, thanks to the use of a satellite to perform change detection and additional inspections carried out along the supply and capture network, **57 violations** were identified.

ENERGY SEGMENT

SCOPE OF REFERENCE

The Energy Segment chapter includes Areti, Acea Produzione, Acea Ambiente's plants and Ecogena's data, the latter in terms of energy produced and Energy Efficiency Certificates. The waste to energy activities are described in the chapter *Environment Segment – Waste Management*.

904 GWh TOTAL PRODUCED ENERGY:
70% FROM RENEWABLE SOURCES (**635 GWh**)

229,000 tonnes of CO_2 saved
THROUGH THE PRODUCTION OF ELECTRICITY FROM RENEWABLE SOURCES INSTEAD OF TRADITIONAL SOURCES

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 seeking to increase the share from renewable sources; 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 the chapters *Customers and the community* and *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 Refuse-Derived Fuel** – RDF, a primary energy source derived from waste, both with shares equal to about 50% of **biodegradable** material.
Generation from renewable sources (hydroelectric and photovoltaic, with the exception of waste-to-energy) and from fossil fuels (thermoelectric) – the latter mainly through the **high-efficiency cogeneration plant** – is entrusted to **Acea Produzione**.
The inventory of generators available to the Company consists of:

- **7 hydroelectric power stations** located in the Lazio and Abruzzo regions for a total of **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), for **97.3 MW_e total installed power available**;
- A **photovoltaic park**, for a total of **36.5 MW_p**, of which 28 MW acquired in the second part of the year.

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**.
In addition, Acea Ambiente produces electricity using biogas derived from the anaerobic digestion process.

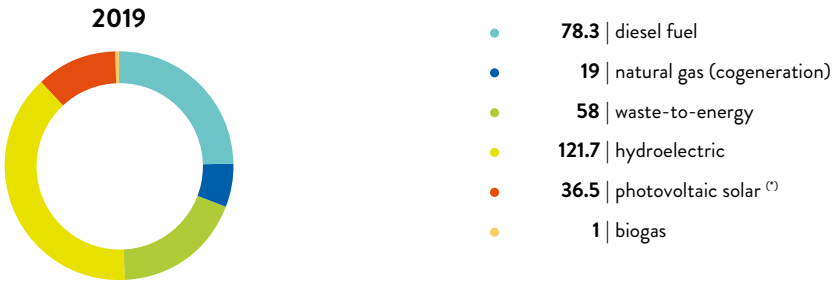
TABLE NO. 46 – INSTALLED POWER OF THE ELECTRIC POWER STATIONS OF ACEA PRODUZIONE

hydroelectric power stations	thermoelectric power stations
Castel Madama power plant (Rome) gross power **9.4 MW**	Tor di Valle power plant: 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 provides district heating service in the area south of Rome.

The installed capacities, which **overall amount to about 315 MW**[105], are represented in chart no. 45, distinguished by energy source.

CHART NO. 45 – INSTALLED ELECTRICAL POWER OF THE GROUP BROKEN DOWN BY ENERGY SOURCE (MW) (2019)



(*) Photovoltaic MW under the responsibility of Acea Produzione also include 28 MW acquired in the second half of 2019. The energy produced by the new plants will be reported from 2020.

ELECTRICITY PRODUCED

In 2019, the **total gross production of electricity** decreased to about **904 GWh**, -7% compared to 968 GWh last year due to the low rainfall, which reduced hydroelectric production, and some problems related to the line turbines of the waste-to-energy plant in San Vittore del Lazio which, in addition to the postponement of the plant's maintenance (due to the regional ordinances put in place to overcome the waste emergency in Rome), resulted in less positive energy performance than planned.
The share of electricity generated by **renewable sources**, about **635 GWh**, has proven to be **predominant** and equal to **about 70% of the total**, with the following contributions:

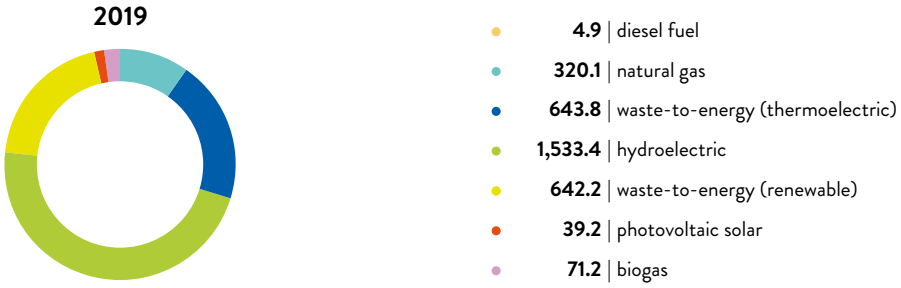
- 426 GWh from hydroelectric power,
- 178 GWh from waste-to-energy,
- 20 GWh from biogas (Orvieto plant),
- 11 GWh from solar panels (see chart no. 45 and table no. 47).

Acea Produzione has continued to **modernize and improve the efficiency of its hydroelectric plants**. After the works carried out in previous years at the Guglielmo Marconi, Salisano and Alessandro Volta power plants in 2019, **revamping** continued on the **Galileo Ferraris hydroelectric plant in Mandela**, also located in the province of Rome, which will end in January 2020, making it possible to **optimize the use of available water resources**, under the same conditions of installed and licensed power.

With regard to the **share of green energy from waste-to-energy**, **about 50%** 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** was equal to **51%** of the total of waste-to-energy, while **in the Terni plant** this share was around **47%**.

[105] 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.

CHART NO. 46 – ELECTRICITY PRODUCED SUBDIVIDED BY PRIMARY ENERGY SOURCE (TJ) (2019)



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

TABLE NO. 47 – ELECTRICITY PRODUCED (BY PRIMARY ENERGY SOURCE) (2017-2019)

	2017	2018	2019
PRIMARY ENERGY SOURCE		TJ (GWh) (*)	
diesel fuel	7.7 (2.2)	2.0 (0.6)	4.9 (1.4)
natural gas (cogeneration)	135.2 (37.6)	261.9 (72.8)	320.1 (88.9)
waste-to-energy (about 50% of the total)	682.9 (189.7)	718.4 (199.5)	643.8 (178.8)
total thermoelectric	**825.8 (229.4)**	**982.3 (272.9)**	**968.8 (269.1)**
hydroelectric	1,369.7 (380.5)	1,715.5 (476.5)	1,533.4 (426.0)
waste-to-energy (about 50% of the total)	700.2 (194.5)	684.6 (190.2)	642.2 (178.4)
biogas	78.7 (21.9)	67.1 (18.6)	71.2 (19.8)
photovoltaic solar (**)	41.7 (11.6)	36.7 (10.2)	39.2 (10.9)
total renewables	**2,190.4 (608.4)**	**2,503.9 (695.5)**	**2,286.0 (635.0)**
general total	**3,016.4 (837.9)**	**3,486.2 (968.4)**	**3,254.8 (904.1)**

(*) 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 2 GWh produced. The energy produced by the plants acquired in the second half of 2019 will be included in the next report.

The decrease in energy produced by hydroelectric power plants, equal to about 10.6% compared to 2018, is due to the lower rainfall recorded during the year.
With regard to thermoelectric energy, the increase in production is due to a greater availability of the Tor di Valle plant.

THERMAL ENERGY PRODUCED

In 2019 Acea Produzione continued the project of **extending the district heating network** of Mezzocammino district in the zone South of Rome.
The Tor di Valle thermoelectric power plant generated about **96 GWh of thermal energy**. The heat generated was used to serve **40,054 inhabitants in the zone south of Rome** (Mostacciano, Torrino and Mezzocammino) by means of a district heating network which sever a volume equal to 3,651,124 cubic metres[106].

In addition to the management described above, the Group operates Ecogena which, certified as an ESCo (Energy Services Company) in accordance with UNI CEI 11352:2014, develops the energy efficiency initiatives for the Group and reports their results to Gestore dei Servizi Energetici (GSE) for the awarding of Energy Efficiency Certificates (EEC).

The activities assigned to Ecogena include also the design and building of **trigeneration plants**[107] for the production, in combined mode, of **electrical, heat and cooling energy**.
In **2019 cogeneration plants were managed**, combined with **district heating networks for a total of 5 MW of electrical power**. The production of thermal and refrigeration energy is increasing compared to previous years, while there is a slight overall decrease in electricity production (see table no. 48).

106 The data is from August 2019.
107 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.

TABLE NO. 48 – THE PRODUCTION OF ENERGY BY ECOGENA PLANTS AND ENERGY EFFICIENCY CERTIFICATES EEC (2017-2019)

	2017	2018	2019
ENERGY PRODUCED		TJ (GWh)	
electricity	61.9 (17.2)	54.1 (15.0)	51.5 (14.3)
of which plants owned by Ecogena	*56.7 (15.7)*	*50.3 (14.0)*	*49.0 (13.6)*
of which plants owned by third parties	*5.1 (1.4)*	*3.9 1.1*	*2.7 (0.7)*
thermal energy	90.4 (25.1)	95.4 (26.5)	103.3 (28.7)
of which plants owned by Ecogena	*74.8 (20.8)*	*81.1 (22.5)*	*89.2 (24.8)*
of which plants owned by third parties	*15.7 (4.4)*	*14.3 (4.0)*	*14.0 (3.9)*
refrigeration energy (all owned plants)	17.0 (4.7)	34.5 (9.6)	37.6 (10.5)
		EECs	
Total EECs (all from plants owned by Ecogena)	1,039	1,359	954

NOTE The topic of EECs is dealt with in the *Energy savings* section of the chapter *The use of materials, energy and water*.

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

CONSTANT **territorial protection** (UNDERGROUND HV GRID/ TOTAL HV GRID): **46%**

Areti manages the **electricity distribution network** of Rome and Formello, extending over **about 31,000 km** and capable of supplying about **2.8 million resident inhabitants**. In terms of volumes of electricity distributed, about 9,830 GWh in 2019, Acea is the third largest Italian operator in the sector.
In table no. 49 the principal plant data of the Company are described, including the number of primary and secondary substations, the transformers[108] and the km of overhead and underground distribution lines.

The **environmental indicator** related to the **protection of the region**, calculated as a percentage share of the **underground high voltage grid** (**HV**) in relation to the **total of the HV lines in use** (overhead and underground), **has improved in recent years, and in 2019 was stable compared to the previous year**, equal to **46%** (44% in 2017). This also as a result of the ongoing **transformation and modernisation of the high and very high voltage electricity distribution grid**.

TABLE NO. 49 – NUMBER OF OVERHEAD AND UNDERGROUND DISTRIBUTION LINES AND PLANTS (2017-2019)

Areti

SYSTEMS AND OUTPUT	m.u.	2017	2018	2019
High Voltage/High Voltage – High Voltage/Medium Voltage primary sub-stations	no.	71	70	70
High Voltage/High Voltage and High Voltage/Medium Voltage transformers	no.	169	166	170
transformation power	MVA	7,921	7,631	7,781
sub-stations in use	no.	13,159	13,211	13,238
Medium Voltage/Medium Voltage – Medium Voltage/Low Voltage transformers	no.	12,832	12,838	12,883
transformation power	MVA	6,203	6,236	6,282
OVERHEAD AND UNDERGROUND NETWORKS				
high voltage network – overhead lines	km	310	282	282
high voltage network – underground lines	km	243	243	243
medium voltage network – overhead lines	km	419	424	422
medium voltage network – underground lines	km	10,137	10,166	10,470
low voltage network – overhead lines	km	1,641	1,641	1,642
low voltage network – underground lines	km	18,147	18,306	18,417

[108] With regard to polychlorinated biphenyls (PCBs), pursuant to Legislative Decree no. 209/99 and Law no. 62/05, Acea disposed of transformers with PCBs above the 500 ppm threshold in 2009. In 2019, 194 transformers with PCBs above 50 ppm but below the 500 ppm threshold, including 93 for public lighting, were reported to Arpa, and 10 transformers were disposed of, for a total weight of 13,420 kg and a quantity of PCBs of 1,838 ppm.

With reference to the **electric and magnetic fields**, in particular related to the primary transformer substations, High and Medium Voltage overhead electricity lines and secondary transformer stations, 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

2019 saw the continuation of the **plan to modernize 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. In particular, during the following activies were carried out:

- continuation of the demolition of the 150 kV Flaminia 2 – East Sorting 2 line, for a length of 22.6 km and 74 supports;
- continuation of construction works for the 150 kV "Rome North-San Basilio" line, relative to the new section starting at 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 complete rearrangement of the grid, as envisaged in the Plan, will generate **significant environmental benefits** related to the **energy savings expected, amounting to about 58,000,000 kWh**, equivalent to the annual consumption of about 20,000 households.

The management of the electricity distribution network of Rome and Formello is characterized by the **continuous improvement of the performances**, with particular attention to energy efficiency.

Every year Areti implements **initiatives to reduce grid losses**, which include the reclassification of medium voltage levels from 8.4 kV to 20 kV and the installation of MV/LV transformers with very low losses. For further information see the *Energy savings* section in the chapter *The use of materials, energy and water*.

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 chapter *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% of the total transported**, a slight decrease compared to 2018.

ENVIRONMENT SEGMENT – WASTE MANAGEMENT

SCOPE OF REFERENCE

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

16,540 t
OF **quality compost**
PRODUCED
(**+40%** COMPARED TO 2018)

ABOUT **11,500 kNm³**
OF BIOGAS PRODUCED
AND, FROM THIS,
20 GWh OF ENERGY

357 GWH
OF ENERGY PRODUCED BY
waste-to-energy

WASTE-TO-ENERGY:
ABOUT **434,600 t**
OF WASTE INPUT AND
ABOUT **97,400 t**
OF WASTE OUTPUT:
22% (output/input)

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** for agriculture.

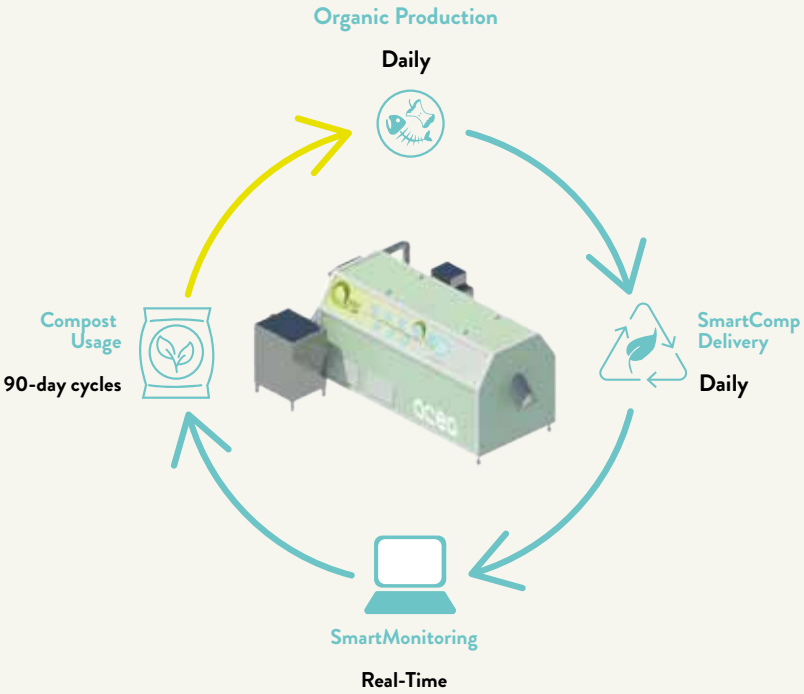
Of importance for the company is also the issue of **treatment and reuse of non-hazardous waste**, and in particular **hazardous waste** that presents the greatest problems for disposal, not only in environmental and social terms, but also in economic terms, given the high cost.

In 2019 Acea developed the widespread composting project called **Acea SmartComp** (see the box below and also *The commitment to research and innovation* in the chapter *Institutions and the company*)

[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".

ACEA SMARTCOMP

Acea SmartComp is an **innovative solution for the transformation of organic waste into a product (compost), directly at the site where the waste is produced.**
The project is inspired by the waste transition, a new model of zero km waste management based on a **widespread and distributed network of mini-processing plants for the organic fraction**.
Specifically, the composter is an accelerator of the aerobic degradation process of organic substances, and the compost produced, reduced in weight by up to 20% compared to the original treated waste, is a product that is naturally sanitized and ready for use as a soil conditioner. The innovation of the process lies in the smart operating logic based on advanced sensors – algorithms and dashboards, prepared jointly by ENEA and the University of Tuscia – and smart remote control of the process, with the optimisation of ageing times, product quality and environmental impacts.



The **advantages of the process** are both financial, with **reduction of waste collection and treatment costs**, and environmental, with **reduction of CO_2 emissions** associated with transport.
Strong interest has been expressed by large food distribution and by big companies for the use of the composter in company canteens, and commercial initiatives launched in 2019 have led to the signing of a commercial agreement with Fiera di Roma and contracts with other entities and distribution companies.
Acea installed the first SmartComp at the canteen in its own headquarters and uses the soil conditioner produced in its green spaces, thus reducing the use of other types of fertilizer.

The following paragraphs provide further information on the operating aspects of the activities already mentioned and carried out in terms of waste management. These are **modern plants**, that have recently been revamped or expanded to improve and renew the processes and recover matter and/or energy where possible, and the **use of advanced technologies** necessary to improve the efficiency of waste management.

WASTE MANAGEMENT: COMPOSTING, WASTE-TO-ENERGY AND RELATED SERVICES

INTEGRATED WASTE TREATMENT – 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, in particular the treatment of the integrated cycle of solid urban and assimilated waste produced in the area that includes all the municipalities of the province of Terni. The landfill is also authorized to receive special waste.
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 enable 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 *Management systems* in *Corporate identity*) 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 landfills**.
In 2019 the total waste entering the plant was **99,910 tonnes**. 57% (about 56,700 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*.
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:

- about **3.3 Mm³ of biogas** and **6.7 GWh of energy** were produced at the treatment plant in **2019**;
- **about 7.9 Mm³ of biogas** and **13.1 GWh of energy** were **produced at the landfill.**

Overall, **about 18.6 GWh** of electricity **was fed into the grid**.
The Orvieto hub **is also equipped with a photovoltaic plant** owned by Acea Produzione, which generated about 390 MWh in 2019, used to **cover part of the plant's consumption of electricity**.

QUALITY COMPOST PRODUCTION

In addition to the Orvieto site, Acea Ambiente has three other composting plants in Aprilia, Monterotondo Marittimo and Sabaudia.
The Aprilia plant, still under seizure, was the subject of an expansion which, once completed, **will enable the recovery of 120,000 tonnes of organic fraction per year**, **while the Monterotondo Marittimo plant**, which has undergone expansion and revamping in recent years, has a **recovery capacity of 70,000 tonnes/year for organic waste fraction, green fraction and sludge**. Both sites have also implemented a new **anaerobic digestion section**, which will allow the **recovery of electrical and thermal energy from 2020**[110].
At the Sabaudia plant, which has been undergoing revamping/maintenance since 2016, operations were resumed in August 2018 and again suspended on 31.10.2019 to allow further revamping[111]. The liquid waste treatment section is currently inactive. The plant has a treatment capacity of **20,000 tonnes of compostable waste per year and 30,000 tonnes of liquid waste per year**.

INTERMEDIATION AND TRANSPORT OF WASTE

In 2019, **Aquaser**, which **loads, transports, recovers and disposes of waste produced by purification plants**, managed a total of **580,000 tonnes** (570,000 tonnes in 2018).
With regard to **intermediation**, during the year Aquaser took charge of **approximately 207,000 tonnes of waste**, of which **184,000 tonnes** are attributable to the **Group's water companies**[112], and in particular approximately **130,000 tonnes to Acea Ato 2 and Acea Ato 5**.
The dried out and dehydrated sludge coming from these companies was sent to the following end destinations:

- 49.3% to material recovery operations (pretreatments aimed at agricultural use – conditioning, composting);
- 1.6% to recovery of energy (waste-to-energy).

The remaining 49.1% was disposed of. Also this year, due to regulatory constraints direct spreading was not used in agriculture.
Aquaser in particular **used its own means** to transport about **61,000 tonnes of non-hazardous waste**.

WASTE-TO-ENERGY

Energy recovery from waste is an important part of the Circular Economy[113] and, in addition to providing energy and economic advantages, it leads to a **notable volumetric reduction and the biological stabilisation of waste**, avoiding as far as possible the disposal of this waste in landfills 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: UNI EN ISO 14001:2015 certification and EMAS III European registration, extended to 2021. For additional information on these aspects see also the section on *Management systems* in *Corporate identity*.

WASTE RECOVERY TO IMPROVE RECYCLING AND THE CIRCULAR ECONOMY IN THE PAPER SECTOR

Working with Assocarta and Comieco, Acea Ambiente organized the conference "**Closing the Circle: Recovering waste to improve Recycling and the Circular Economy in the Paper sector**", held in Terni for the Paper and Cardboard Recycling Month. Designed to **take stock of the circular economy in the paper sector**, thanks to the large number of players involved in the supply chain the initiative provided an important opportunity for reflection to offer **significant insights into the recovery of waste and the improvement of recycling**. For example, Acea Ambiente's waste-to-energy plant in Terni uses pulper as its fuel, a waste of paper processing that is not recyclable and would therefore end up in a landfill. Treating almost 100,000 tonnes of waste per year, the plant is one of the top industrial entities on a national scale for the amount of pulper converted into electricity, on average 75,000-80,000 MWh/year, and the recovery chain is planned to be further extended through the **use of fly ash**, a volatile by-product generated by the combustion. The conference, which included presentations by the President of Acea's Industrial Environment Segment, the Head of the Research and Development Unit and the Operations Director of Acea Ambiente, highlighted **the sustainability aspects inherent in the sector**.

110 The anaerobic digestion plants were started in early 2020.
111 During 2020, it is hoped that the pending authorisation procedures will be concluded so that the tender procedure for the executive design and construction of the new composting plant can be published. The upgrading project will increase the treatment capacity to 60,000 t/year of incoming waste.
112 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, AdF, Umbra Acque, Publiacqua, Acque, Crea Gestioni, Umbria2SII.
113 The European Union's circular economy package has been in force since 04.07.2018.

The Plant of San Vittore del Lazio is composed of **three independent lines** of waste-to-energy designed to be fed with refuse-derived fuel (RDF), now called Solid Refuse Fuel (SRF), with these characteristics:

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

2019 was a year of normal operation. The plant's **actual available electric power was about 44 MW** and about **276 GWh** of electric power was produced. In 2019 energy from waste has been generated from about **340,500 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 advanced technologies used for its construction and for its considerable treatment potential[114].

TABLE NO. 50 – THE SAN VITTORE DEL LAZIO WASTE-TO-ENERGY PLANT: OPERATING DATA (2017-2019)

	m.u.	2017	2018	2019
incinerated fuel	t	345,639	357,174	340,531
gross electric power produced	GWh	301.15	306.731	276.270
conversion efficiency (*)	kWh/kg CSS	0.87	0.86	0.81

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

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

- 52 MW_t of thermal power installed;
- 12.33 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. 51 – TERNI WASTE-TO-ENERGY PLANT: OPERATING DATA (2017-2019)

	m.u.	2017	2018	2019
pulp incinerated	t	99,970	99,971	94,092
gross energy produced	GWh	83.10	82.41	80.93
conversion efficiency (*)	kWh/kg pulper	0.83	0.82	0.86

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

The plant of Terni **is also equipped with a photovoltaic plant**, which in 2019 has generated about 453 MWh of electricity, about 56% consumed on site and the rest 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.

WATER SEGMENT

SCOPE OF REFERENCE

The scope of reference includes the companies Acea Ato 2, Acea Ato 5, Gori and Gesesa.
Acque, AdF, 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 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*.

5.8 million
INHABITANTS SERVED AND
446 Mm^3 OF DRINKING WATER SUPPLIED BY ACEA ATO 2, ACEA ATO 5, GORI AND GESESA

APPROXIMATELY
24,200 km OF DRINKING WATER NETWORK MANAGED BY ACEA ATO 2, ACEA ATO 5, GORI AND GESESA

IMPLEMENTED THE FIRST
Water Safety Plan
(WSP) OF GROTTAROSSA IN ACEA ATO 2

607,309 analytic tests
ON DRINKING WATER (ACEA ATO 2, ACEA ATO 5, GORI AND GESESA)

[114] With reference to Decree Law 133/2014 (so-called "Sblocca Italia"), the plant has been defined as a strategic structure of primary national interest for the protection of health and the environment, as per Lazio Regional Decree no. 199 of 24/04/2016.

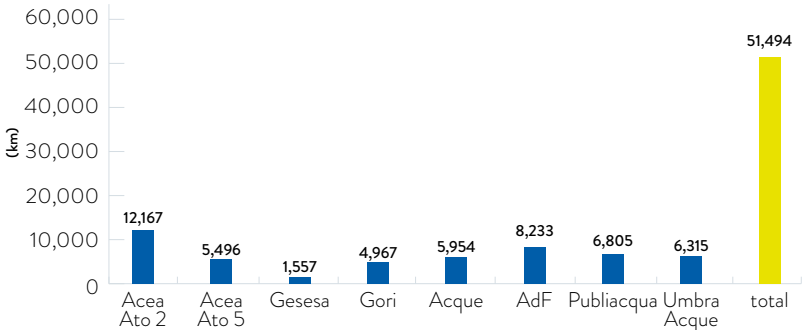
Of all the Group's core businesses, the **management of water** in all phases of the **integrated water service** is one of the **most important**. The activities are carried out with growing attention, in line with the greater attention to water resources at an international level. The protection of the resource is expressed in the priority of **recovering losses** (see the box in the paragraph *Attention to water consumption*), **circular economy**, activities to **combat climate change** and 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 2019 equal to about **1,370 million cubic metres**.

The **volumes of drinking water introduced by Acea Ato 2, Acea Ato 5 and Gesesa** amounted to **1,018 million cubic metres**, with a total supply[116] of 447 million cubic metres for **5.8 million inhabitants** served. For specific data on the three companies, see the *Environmental Accounts*.

In **OTA 2 – Central Lazio** alone, comprising the city of Rome and 111 other municipalities – of which 79[117] under management at 31 December 2019 – the **volume of water withdrawn and fed into the network** serving the approximately 3.7 million inhabitants was approximately **690 million cubic metres**[118].

CHART NO. 47 – THE WATER DISTRIBUTION NETWORK OF THE GROUP IN ITALY (2019)

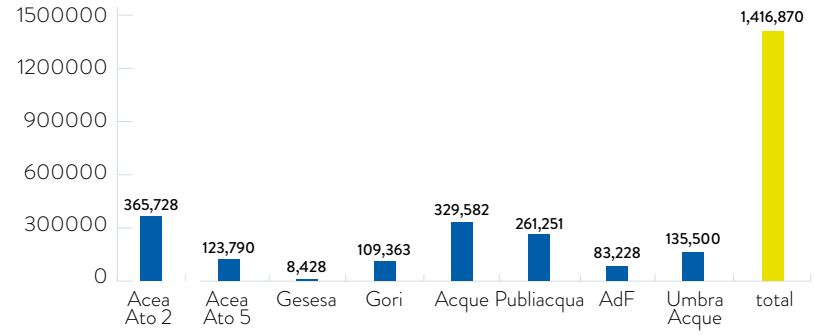


NOTE The kilometres of network include the aqueducts

WATER QUALITY

The **checks on the quality of the drinking water** supplied and of effluent returned to the environment, after 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 related effects. A summary of the work carried out in this area, by all the water companies, is shown in chart no. 48.

CHART NO. 48 – TESTS OF DRINKING WATER, TOTAL AND BY COMPANY (2019)



NOTE For Acea Ato 2 it should be noted that out of the total of 365,728 analyses, 320,801 were performed by Acea Elabori, and for Acea Ato 5, including in the analyses performed by the Company those done by Acea Elabori, there are 129,599.

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 collection points 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 carried out, 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.

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 This refers to the total amount of drinking water dispensed and billed in the network by the companies in the scope.

117 In 18 other municipalities the integrated water service was managed partially.

118 The items of the water balance of the past three years were calculated using the calculation criteria supplied by ARERA. See the Environmental Accounts for details.

Regular monitoring of the chemical/biological parameters of the water which circulates in the distribution network of the water system allows the quality safety level to be kept high. Altogether, during 2019, of the 365,728 analyses[119] in the territory of OTA 2, for a total of 12,482 samples in addition to those of the Health Authority, 320,801 were performed in the Grottarossa Laboratories, managed by Acea Elabori. The analytical checks on the water and the related 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 microbiological analyses in different substrates, including water (see table no. 52 for the analyses performed on Rome drinking water). Gesesa instead uses two outside laboratories (see the *Environmental Accounts* for aggregate and detailed data).

TABLE NO. 52 – ANALYSES IN ROME (2017-2019) AND MAIN QUALITY PARAMETERS OF THE DRINKING WATER DISTRIBUTED IN LAZIO AND CAMPANIA (2019)

ANALYSES PERFORMED BY ACEA ELABORI ON DRINKING WATER – ROME HISTORICAL NETWORK (2017-2019)

sampling area	no. of sampling points	no. of samples			no. of analyses		
	2019	2017	2018	2019	2017	2018	2019
collection	57	423	437	329	21,636	21,119	11,968
water system and water feed pipes	22	183	130	164	6,599	5,167	5,617
tanks/water centres	22	119	152	203	4,988	6,306	7,096
distribution networks	405	3,381	3,326	3,095	109,838	109,571	99,835
total	**506**	**4,106**	**4,045**	**3,791**	**143,061**	**142,163**	**124,516**

MAIN AVERAGE CHEMICAL AND MICROBIOLOGICAL CHARACTERISTICS OF THE DRINKING WATER DISTRIBUTED IN LAZIO AND CAMPANIA (2019)

parameters	measurement unit	average value – Acea Ato 2 (Rome)	average value – Acea Ato 5	average value – Gori	average value – Gesesa (Pezzapiana site)	parameter Legislative Decree no. 31/01
chlorides	mg/l Cl	9.4	6.8	62	47.4	<250
sulphates	mg/l SO_4	13.7	8.3	28	64.3	<250
calcium	mg/l Ca	82.9	87.9	126	exempt(*)	not required
magnesium	mg/l Mg	16.3	15.6	31	exempt(*)	not required
sodium	mg/l Na	9.1	4.7	38	40.3	<200
potassium	mg/l K	7.5	1.3	14	exempt (*)	not required
calculated fixed residue	mg/l	365.0	348.3	646	541.5	(**)
nitrates	mg/l NO_3	5.5	3.7	17	37.1	<50
fluorides	mg/l F	0.3	0.16	0.55	0.5	<1.50
bicarbonates	mg/l HCO_3	349.8	347.9	504	exempt(*)	not required

(*) In accordance with Legislative Decree no. 31/01 and in agreement with the health authority, Gesesa is exempted from supplying the parameter.
(**) Maximum value recommended: 1,500 mg/l.

WATER SAFETY PLANS (WSPS)

The implementation of a **Water Safety Plan** (WSP) is required for all water systems pursuant to 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 Organization (WHO). 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 (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 recognized methodologies developed by the WHO. In Italy, the Istituto Superiore di Sanità (ISS) has introduced WHO guidelines and will therefore have to approve WSPs.
Overall, the implementation of **Water Safety Plans** will concern the large aqueducts managed by Acea Ato 2 that supply the city of Rome, up to 90% of the population of OTA 2 and more than 200,000 inhabitants of the 45 municipalities of the Provinces of Rieti and Frosinone.

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

In **Acea Ato 2**, the **first WSP implemented in 2019** concerned the water system fed by the **new Grottarossa plant for the purification of water from the Tiber**, normally used to supply the network for watering green areas of the city of Rome and Vatican City but immediately available in case of emergency to supply the drinking water network at the service of 350,000 inhabitants of the central areas of Rome. In particular, during the year studies for the areas of protection and influence were presented to the Lazio Region as required under the new Regional Water Protection Plan (PTAR). The concession request was published but has not yet been released.
In the future the network for watering the green areas of the city of Rome and Vatican City will be supplied by the **water coming out of the COBIS purification plant**. For this purpose, in 2019 the plant underwent upgrading for the implementation of a specific purification treatment[120] (see also *Water distributed and returned to the environment* in the chapter *Customers and the community*).
Acea Ato 5 identified the first water source to be studied to draft the WSP, and continued the mandatory training organized by the Istituto Superiore di Sanità and the Ministry of Health for the staff who will draw up the Water Safety Plans (WSPs).
In Gori in 2019 the team was formed to prepare the WSPs, and the evaluation of the water system was started.
In 2019 Gesesa, like Acea Ato 5, trained personnel for the Water Safety Plans (WSPs), and started the acquisition of information on water collection sources.

WATER LOSSES

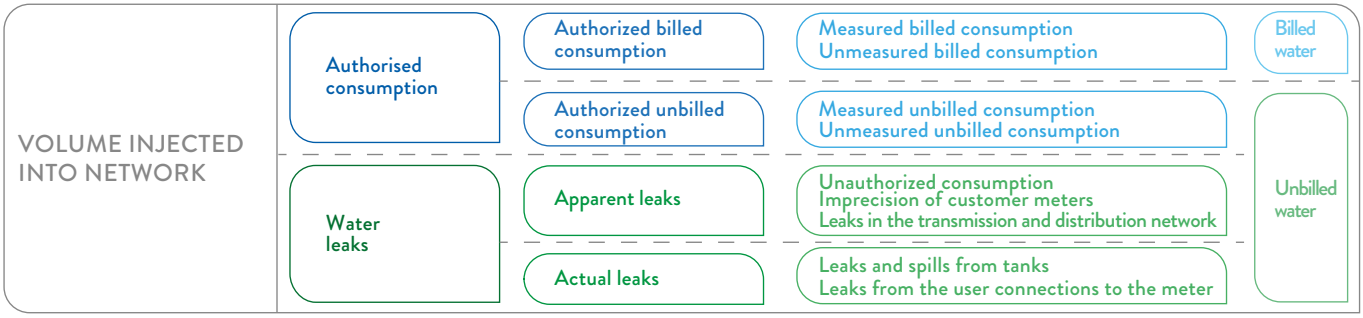
Sustainable water management includes the issue of **limiting leaks from distribution networks** (see also *Quality in the water segment* in the chapter *Customers and communities*). During 2019, as in the previous year, the water companies – in particular Acea Ato 2 – continued their intense search for leaks in order to recover as much water as possible (see the box for details). Furthermore, Acea Ato 2 established a unit dedicated to the protection of water resources and the implementation of initiatives aimed at reducing losses.
Together with the search for hidden leaks, Acea Ato 2 **continued to divide the network into districts** not connected to each other and with measured inputs, which enables the optimisation of their management, facilitating and making repairs more timely and reducing their frequency. Dividing the network into water districts makes it possible to optimize operating pressures with an immediate advantage in terms of reducing lost volumes, facilitating targeted searches for leaks in the most critical districts.
To date, **overall** approximately **6,200 km of distribution network have been studied** and **300 measurement districts** have been created. The activity consisted of 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.

THE DIVISION OF THE ACEA ATO 2 WATER NETWORK INTO DISTRICTS

As part of the work to divide the water network into districts, in 2019 approximately **520 flow and pressure meters were installed** by Acea Ato 2 technical personnel **in the water districts**, which will enable the timely monitoring of new and hidden leaks in Rome and in the 12 municipalities concerned, the optimisation of piezometric quotas and the consequent reduction of lost water volumes. The **district planning and installation of meters in the districts** will progressively involve the entire territory managed by Acea Ato 2.

In 2019 **Acea Ato 5** also developed the analysis of the water network (especially in the areas of Atina, Cassino, Castrocielo, Colfelice, Fiuggi, Frosinone, Morolo, Serrone, Sora, Strangolagalli, Roccasecca, Patrica, Sgurgola and Supino).).
In total, **148 districts** were created, involving approximately 1,190 km of water network. In addition, a total of 140 leaks – of which 40 hidden – were identified with leak searches, mainly using acoustic systems. The division of the network into districts and installation of pressure reduction devices has made it possible to reduce network input volume[121] by about 5%.
In the Sarnese-Vesuvian District, managed by **Gori**, numerous interventions were carried out to reduce water leaks, including the installation of pressure regulation valves, and several systematic leak search searches were performed along the water networks. Moreover, the reclamation projects carried out on 66 km of water networks, distributed over almost all the municipalities of the District, enabled recoveries estimated at about 193 l/s.
In 2019 **Gesesa** further developed the division of water networks into districts by extending the reduction of pressures and setting the goal of progressively intervening on the network of all the municipalities managed. Following an analysis of the water networks, **about 2 km** of infrastructure was reclaimed.

CHART NO. 49 – ACTUAL WATER LOSSES



NOTE The image refers to the model of the International Water Association.

120 A tertiary treatment of double-stage filtration and disinfection with UV rays.
121 The figure is not yet consolidated.

In recent years, **ARERA** has intervened with several resolutions, introducing progressive changes to the process of calculating the water balance[122]. The new data, illustrated in detail in the ***Environmental Accounts***[123], has been prepared according to the new ARERA calculation method (Resolution 917/2017/R/IDR), also recalculating the previous two-year period, in line with the model of the International Water Association (see chart no. 49), which requires the assessment of water losses on the entire scope of the aqueduct system (and not only on the distribution network), including apparent losses.
Thanks to efforts to improve the efficiency of metering and to combat illicit use, at **Acea Ato 2** the overall losses for the year fell to about 44% (they were equal to 47% in 2018). Furthermore, in line with the downward trend of the previous two years, the real losses of the "historical network" (Rome and Fiumicino) decreased to 31.9% (they were equal to 38% in 2018 and 41.5% in 2017), while the real losses on the distribution network of the entire OTA 2 decreased to 39.2% (they were equal to 44% in 2018 and 45.7% in 2017).
At **Acea Ato 5** the losses in 2019 amounted to approximately 76% of the amount fed into the aqueduct system. It is expected that there will be a reduction in these losses as a result of a search for illicit users and the division of the networks into districts. See the *Environmental Accounts* for details on individual water balances.
Following the actions described above, **Gori** saw a reduction in global losses from 53.8% to 52.6%.
At **Gesesa**[124] the losses of the year amounted to approximately 56% of the total fed into the aqueduct system.

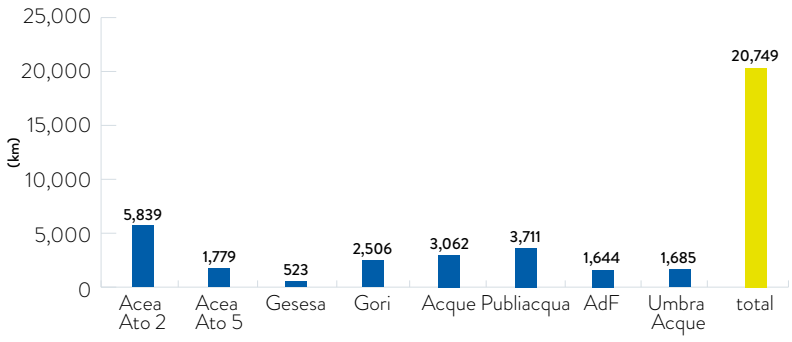
SEWERAGE SERVICE AND TREATMENT SYSTEM

ABOUT **127,750 tonnes** OF SLUDGE PRODUCED BY ACEA ATO 2, ACEA ATO 5, GORI AND GESESA, OF WHICH **34%** RECOVERED

APPROXIMATELY **8,650 km** OF SEWERAGE NETWORK AND **338 treatment plants** MANAGED BY ACEA ATO 2, ACEA ATO 5, GORI AND GESESA, FOR **666 Mm³** OF TREATED WATER

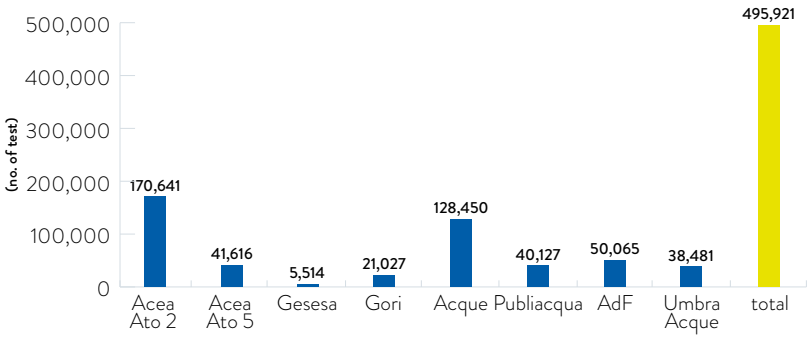
The integrated water service (IWS) includes the management of the sewerage and treatment system. The water resource, after uses for the various civil purposes, is **collected through the sewer pipes** and **sent to the purifiers**. There pollutants are **removed via physical processes** (filtering, sedimentation, flocculation) **and biological ones** (aerobic and/or anaerobic decomposition of the organic substance with bacteria).
Thanks to approximately **896** treatment plants (of which **338** managed by Acea Ato 2, Acea Ato 5, Gori and Gesesa), the total volumes of water treated by the Group[125] in 2019 were approximately **855 million cubic metres**, of which 666 million cubic metres by Acea Ato 2, Acea Ato 5 and Gori[126]. **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 receiving 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 about **20,750 km**, of which 10,647 km relate to the four Companies cited.

CHART NO. 50 – SEWER NETWORKS OF THE GROUP IN ITALY (2019)



122 The loss assessment was carried out this year for the three-year period 2017-2019, according to Resolution ARERA 917/17 R/IDR. Until last year the losses were calculated according to the model specified in Ministerial Decree 99/97.
123 The water reports of the Companies active in Umbria and Tuscany, with consolidated net worth, can be examined in the chapter Water company data sheets and overseas activities.
124 Calculations of previous years according to the Arera provisions were not yet available for comparison at the time of publication.
125 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.
126 At the moment Gesesa does not have the flow meters so it is not possible to measure the quantities of wastewater treated in its purification plants.

CHART NO. 51 – ANALYTICAL CHECKS ON WASTEWATER, TOTAL AND BY COMPANY (2019)



For Acea Ato 2, Acea Ato 5, Gori and Gesesa, the percentage coverage of the sewerage and purification services, out of the total users served by the water service, and the volumes of effluent treated are given in tables nos. 53 and 54.
In particular, for **Acea Ato 2**, the **good abatement performance** achieved in the **purification process**, which allowed approximately 600 million cubic metres of sewage to be made compatible with the receiving ecosystem, were confirmed by the over **170,600 calculations** performed.

TABLE NO. 53 – PERCENTAGE COVERAGE OF THE SEWER AND PURIFICATION SERVICES OVER THE TOTAL UTILITIES OF THE WATER COMPANIES OPERATING IN LAZIO AND CAMPANIA (2017-2019)

Company	2017		2018		2019	
	sewer	purification	sewer	purification	sewer	purification
Acea Ato 2	91.7%	88.0%	91.6%	88.2%	91.5%	88.1%
Acea Ato 5	67.7%	56.5%	66.9%	56.1%	66.5%	55.9%
Gori	79.9%	57.3%	82.2%	65.7%	82.3%	66.0%
Gesesa	81.2%	26.1%	80.2%	27.3%	80.3%	30.4%

TABLE NO. 54 – VOLUMES OF EFFLUENT TREATED BY WATER COMPANIES OPERATING IN LAZIO AND AT BENEVENTO (2017-2019) (*) (Mm^3)

Company	2017	2018	2019
Acea Ato 2	553.6	582.7	599.8
Acea Ato 5	21.1	21.2	21.3
Gori	9.0	7.7	45.2

(*) For the time being there are no flow meters at the entry of the purification plants managed by Gesesa.

THE NEW LABORATORIES AT THE MAIN PURIFICATION PLANTS IN ROME

In 2019, the renovation of 4 of the 6 laboratories owned by Acea Ato 2 was completed. The first to be inaugurated, in July, was the new **laboratory of the purification plant in North Rome**, followed by the other three inaugurations of the new laboratories located at the purification plants in South Rome, Ostia and COBIS.
The laboratories carry out activities to support the control of the operation and functionality of the systems, ensuring rapid responses according to management needs.
The Analytical Control Unit of Acea Ato 2 manages these infrastructures and for each treatment plant prepares a programme for the control of the management and quality parameters of the treated waste. In 2019 the following were analysed by the personnel in the laboratories:

- **31,336 samples**, 13,874 on the water line and 17,462 on the sludge line;
- **135,940 parameters**, of which 92,825 for the water line and 43,115 for the sludge line.

In the "historic" area managed by Acea Ato 2, which includes **Rome and Fiumicino**, the **main purification plants treated in 2019 approximately 514 million of cubic metres of wastewater**, a figure that has increased (490 million cubic metres in 2018). Considering also the smaller purifiers and the plants of the municipalities acquired in OTA 2 (a total of 169) a **total volume of approximately 600 million cubic metres of wastewater treated**, a very slight increase compared to 2018. Table no. 55 shows the details of the main parameters from the main treatment plants of Acea Ato 2, Acea Ato 5, Gori and Gesesa. Other indicators of the efficiency of purification are described in the section *Key environmental performance indicators – Water Segment* of the *Environmental Accounts*.

TABLE NO. 55 – OUTPUT PARAMETERS OF THE MAIN PURIFIERS MANAGED BY ACEA ATO 2, ACEA ATO 5, GORI AND GESESA (2019)

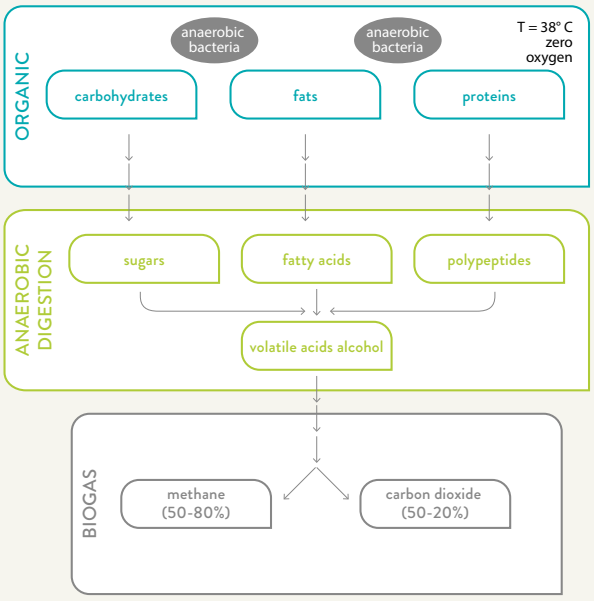
	Acea Ato 2	Acea Ato 5	Gori	Gesesa (Benevento)	concentration limits in surface waters Legislative Decree no. 152/06
parameter		**average values (mg/l)**			
BOD_5	4	4	11	11	≤ 25
COD	25	20	27	40	≤ 125
SST	11	6	14	29	≤ 35
nitrogen (ammoniac, nitric and nitrous)	6	6	7	1	-
fosforo	2	1	1	2	-
		output quantity (t)			
COD	19,587	1,099	1,203	n.a.(*)	-
SST	10,267	424	661	n.a.(*)	-

(*) For the time being Gesesa has not installed flow meters so the data are not available.

The sludge produced during the purification process i**s mostly** sent for **recovery of material** (see in *Environment Segment*, the paragraph *Intermediation and transport of waste*).
Numerous actions were carried out in 2019 to reduce the **amount of sludge produced by the purification plants** managed by the Group's companies. In particular, Acea Ato 2 developed several experiments together with Acea Elabori, including the commissioning of the ozonolysis plant in Ostia, the dryer of the purification plant in North Rome and the initiation of anaerobic digestion at the purification plant in South Rome (see the box for details and also *The commitment to research and innovation* in the chapter *Institutions and the company*).

BIOMETHANE AS AN OPPORTUNITY FOR INTEGRATED WATER SERVICE OPERATORS

One of the most established methods of achieving sludge reduction is **anaerobic digestion**: at a temperature of about 38 °C and in the absence of oxygen, a bacterial strain is naturally selected from the sludge mass consisting of anaerobic micro-organisms capable of transforming the starting organic substance (carbohydrates, fats and proteins) into a mixture of methane (CH_4) and carbon dioxide (CO_2), called biogas.



The process results in a reduction of about 30-35% of the total sludge mass entering the treatment, enabling an easier and less expensive management of the sludge to be disposed of, and a production of about 35 Sm^3 of methane for each tonne of sludge, with a consequent energy benefit.
Recently, a significant financial benefit was added linked to an **incentive**[127] that rewards the **transformation of biogas into biomethane** and its subsequent use in **motor vehicles**, in compliance with strict sustainability constraints that must be **certified by a third party**.
The process of transforming biogas into biomethane is called **upgrading**, at the end of which the product obtained is almost completely free of substances other than methane (CH_4 at about 98%), in particular carbon dioxide, present in the biogas of origin. It is eliminated along with other undesirable substances by filtration through special **selective membranes**.
The biomethane is suitable to be injected into the natural gas distribution network.
Acea Ato 2 is about to start the production of biomethane for upgrading biogas already available in the treatment plants in East Rome and North Rome, with a **total annual production of about 2.5 million Sm^3** and a corresponding **abatement of about 25,000 tonnes/year of sludge**.
In this perspective, the **executive design phase of the two upgrading plants has already been completed**, allowing the start of the qualification process at Gestore Servizi Energetici (GSE), the Public Body responsible for the proper management of the incentive, and the **publishing of calls for tenders for the construction of technological works**, including those necessary for the interconnection of the biomethane produced with the natural gas distribution network.

Among the many actions carried out by Acea Ato 2 aimed at mitigating the effects of parasitic waters[128] in the sewerage system and improving the resilience of the systems to exceptional weather events, in 2019, **16 studies** were completed that involved the **verification of about 800 km of sewerage** system present in the managed territory.

[127] With Ministerial Decree of 2 March 2018, which encourages the production of biomethane from the treatment of waste materials (sewerage sludge but also the organic fraction of municipal waste), Italy aligned itself with the requirements of the objective of the European directive called RED II – i.e. the Renewables Directive 2018/2001/EU repealing Directive 2009/28 – RED I: achieve a share of gross final energy consumption in the transport sector covered by RES of at least 14% (of which advanced biofuels > 0.2% by 2022, > 1% by 2025, at least 3.5% by 2030).

[128] Parasitic waters are those that can enter the sewerage system and represent a component that does not conform – in terms of quality and/or quantity – to the size of the sewerage system. They can be from weather, surface water, groundwater, man-made (aqueduct losses, illicit connections, etc.).

THE USE OF MATERIALS, ENERGY AND WATER

ENERGY EFFICIENCY ENHANCEMENT: IN ARETI ABOUT **1.4 GWh** OF SAVINGS PER YEAR AND **500 t** OF CO_2 NOT EMITTED, IN ACEA ATO 2 ABOUT **4 GWh** OF SAVINGS PER YEAR AND **1,400 t** OF CO_2 NOT EMITTED

APPROXIMATELY **424 GWh of electrical consumption** OF THE COMPANIES OF THE GROUP FROM G.O.-CERTIFIED **renewable energy**

CONSUMPTION OF MATERIALS

Table no. 56 shows the main materials used in the different production processes by the Companies of the Group. For **companies in the Environment segment**, the most important resources are **incoming waste for the production of compost and electricity** (pulper and SRF waste-to-energy). In **Acea Produzione**, thermoelectric plants use **combustible fossil fuels (natural gas and diesel) for the production of electrical energy**. For **Areti**, **sulphur hexafluoride (SF_6) is a primary component** of the electricity distribution process, as it is used in medium and high voltage transformers for its insulating, electrical and thermal power.

The **Water Companies**, on the other hand, use **chemical products** in their activities, such as reagents for the purification, disinfection and purification of waste water. Please refer to the environmental accounts for further information on the resources used for each area of reference. Finally, **Acea Energia** and the water companies responsible for the management of commercial aspects use **paper** for billing customers.

TABLE NO. 56 – CONSUMPTION OF MATERIALS BY THE MAIN COMPANIES IN THE GROUP (2017-2019)

materials	m.u.	2017	2018	2019
incoming waste	t	144,747	119,857	153,330
pulper	t	99,970	99,971	94,092
SRF	t	45,639	357,174	340,531
methane	Sm^3 x 1,000	15,965.6	21,420.2	23,703.0
diesel fuel	l	864,520	230,350	574,405
SF_6	t	29.8	21.7	21.9
miscellaneous chemicals	t	10,746	10,782	14,581
paper	t	n.a.	319	342

NOTE Data on incoming waste includes waste sent for anaerobic and aerobic treatment at the Orvieto landfill and waste processed for the production of compost (sludge, green, OFMSW and other agri-food waste). Pulper and SRF for waste-to-energy are resources with a renewable component linked to the biodegradable fraction of the waste. In 2019 the share of renewable and biodegradable pulper was about 47%, while that of SRF was about 51%. The increase in the use of water resources is mainly due to extraordinary maintenance planned on the purification areas. The data for paper are related to the billing of the Companies Acea Energia, Acea Ato 2, Acea Ato 5, Gori, Gesesa.

ENERGY CONSUMPTION

THE GROUP'S ENERGY CONSUMPTION

Total **direct and indirect** energy **consumption** amounted to about **12,000 TJ,** a slight decrease of 5% compared to 2018, mainly due to the decrease in direct consumption at San Vittore del Lazio (see table no. 57). Indirect consumption, on the other hand, increased by 5%, in consideration of the consumption associated with the plants acquired by Gori, previously managed by the Campania Region. The data shown in table no. 59 show the slight reduction of the losses of the electricity distribution grid, attributable to the transformation and transport phases of energy, and the contraction in consumption for public lighting, equal to 17%, related to the replacement of traditional lamps with LED systems.

It should also be pointed out that, for the third year running, the **electricity consumption of the main companies**, 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 424 GWh, was certified as coming from renewable sources** (certification by means of the Guarantees of Origin – GOs) (table no. 58).

Trends in **energy consumption intensity indices** are shown in table no. 59.

TABLE NO. 57 – DIRECT ENERGY CONSUMPTION OF THE MAIN COMPANIES IN THE GROUP (2017-2019)

	2017	2018	2019
ENERGY PER SOURCE		TJ (GWh)	
RDF/SSF and pulper (waste-to-energy) – renewable share(*)	3,638.0 (1,010.6)	3,665.5 (1,018.2)	3,283.0 (911.9)
biogas (100% renewable – waste management and water segment)(**)	207.2 (57.6)	206.3 (57.3)	243.9 (67.7)
RDF/SSF and pulper (waste-to-energy) – non-renewable share (*)	3,584.6 (995.7)	3,857.6 (1,076.6)	3,280.8 (911.3)
methane (for electricity generation, district heating, water area dryers and heating for offices(***)	732.0 (203.3)	965.6 (268.2)	1,077.0 (299.2)
PG (heating)	0.8 (0.2)	0.2 (0.1)	0.7 (0.2)
diesel (for electricity generation and other uses, composting plants)	48.4 (13.4)	22.8 (6.3)	38.1 (10.6)
petrol (road haulage)	3.0 (0.8)	3.5 (1.0)	3.8 (1.1)
diesel (road haulage)	129.6 (36.0)	124.4 (34.6)	109.1 (30.3)
total	**8,343.5 (2,317.7)**	**8,863.9 (2,462.2)**	**8,036.4 (2,232.3)**

(*) The figures for 2018 were adjusted due to a mistake in the calculations.
(**) The figures for 2018 were adjusted to also include biogas produced and consumed at the anaerobic digesters of Acea Ato 2 and Gori.
(***) The figures for 2018 have been restated to include Gori's consumption.
NOTE The energy produced by the Group plants and fed into the network is illustrated in the Environmental Accounts (Products – Energy Segment).

TABLE NO. 58 – INDIRECT ENERGY CONSUMPTION OF THE MAIN COMPANIES IN THE GROUP (2017-2019)

	2017	2018	2019
TYPES OF INDIRECT CONSUMPTION		TJ (GWh)	
electrical energy losses on the distribution networks and transport	1,244.9 (345.8)	1,204.6 (334.6)	1,188.4 (330.1)
losses and self-consumption in the production of electrical energy(*)	232.5 (64.6)	245.5 (68.2)	233.1 (64.8)
losses of heat in the district heating network	72.5 (20.1)	104.1 (28.9)	109.7 (30.5)
consumption for public lighting	416.3 (115.6)	302.3 (84.0)	252.3 (70.1)
electrical consumption for waste management plants(**)	27.5 (7.7)	28.5 (7.9)	31.2 (8.7)
electricity consumption for distribution of drinking water(*) (***)	1,252.2 (347.8)	1,161.7 (322.7)	1,356.1 (376.7)
electricity consumption for effluent purification(*) (***)	712.8 (198.0)	751.0 (208.6)	817.4 (227.1)
consumption of electrical energy for the offices(**)	36.1 (10.0)	34.8 (9.7)	32.4 (9.0)
total indirect energy consumption	**3,994.9 (1,109.6)**	**3,832.6 (896.6)**	**4,020.6 (1,117.0)**

(*) The figures for the two-year period 2017-2018 have been restated to include those of Gori to make them comparable.
(**) Energy with GO certification (Guarantee of Origin).
(***) 68% of the energy used is GO-certified. (Guarantee of Origin).

TABLE NO. 59 – ENERGY INTENSITY INDICES (2017-2019)

ENERGY CONSUMPTION INTENSITY INDEX	m.u.	2017	2018	2019
electrical energy consumed for public lighting per lamp (*)	TJ/lamp	0.0019	0.0013	0.0011
total electrical energy consumed by Acea Ato 2, Acea Ato 5, Gori and Gesesa for water supplied (**)	TJ/Mm^3	4.3783	4.3124	4.8639
electrical energy consumed by Acea Ato 2, Acea Ato 5, Gori and Gesesa for sewer service per km of sewer network	TJ/km	0.0144	0.0168	0.0148

(*) The decrease in the intensity index is due to the 17% decrease in consumption for public lighting, thanks to the completion of the replacement of lamps with LED lamps.
(**) The increase in electricity consumption for water delivered in 2019 compared to the previous two years is mainly due to the increases in electricity consumption in Gori, since in 2019 it acquired the management of several plants previously owned by the Campania Region.

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 2019 the questionnaire was sent to 117 suppliers, the most representative in relation to the orders value for the year. Thanks to the results from 40 of those contacted (equal to 32% of the total Acea expenditure for the procurement of goods/services and works), their total energy consumption was estimated at approximately 298,043 GJ.

ENERGY SAVING

As noted, **Ecogena** is 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).
As at 31.12.2019, the plants managed by Ecogena received 7,591 TEEs under the Ministerial Decree of 5 September 2011, of which 954 related to 2018 production (and finalized in 2019) (see table no. 48).
To make it possible for **Areti** to achieve its **energy savings goal**, the actions of the year were focused on the purchase of EECs on the market managed by the electricity market operator (EMA) equal to **122,369 EECs**, to which is added the residual portion of the 2018 obligation equal to 89,073 EECs with respect to the initial 111,348 EECs, and the residual portion relating to the 2017 obligation equal to 14,132 EECs.

ENERGY EFFICIENCY ACTIONS

Acea, during the year in question, carried out various **schemes for**

the recovery of energy efficiency in the managed processes, in particular in the **Companies engaged in the Water, Energy Infrastructure and Environment segments**.
In 2019, for the **Water industrial segment**, despite the numerous efficiency initiatives described below, there was an **increase in electricity consumption** equal to **13%** compared to 2018, mainly due to the new acquisitions of plants by Gori[129] and the launch of other infrastructure by Acea Ato 2, including: the Grottarossa drinking water plant[130], the new departments in the Roma Nord treatment plant (such as anaerobic digestion and thermal drying of sludge) and the ozonolysis of sludge at the Ostia treatment plant. The **energy efficiency measures** carried out by the Companies on ordinary activities **partly offset the overall increase in consumption**.
In this regard, **Acea Ato 2** achieved a **total savings of 9.3 TJ** (2.59 GWh) in 2019, against an expected annual energy savings target of 4.7 TJ (1.3 GWh). More specifically, with regard to the **water sector, through significant interventions aimed at the recovery of the resource, about 2 TJ (0.56 GWh) of electricity was saved** thanks to efficiency works on five valves of a pumping group of the Ceraso plant, **while with regard to the purification sector there was an energy efficiency of about 3.4 TJ** (0.93 GWh) through interventions to optimize the oxidation sector of the Fregene, Palmarola and other minor plants (purification plants of: Reotula, Montelungo, Vignacce, Grottoni and Santa Severa). Regarding the **efficiency improvements related to the consumption of electricity avoided for water loss recovery, a value of 3.9 TJ (1.09 GWh) was quantified**, referring to the area of Rome.
In **Acea Ato 5 the efficiency improvements** equal to about **2.4 TJ** (0.68 GWh) were related to the installation of pressure meters, inverters and level probes.
Gori carried out **efficiency** projects mainly related to the division of the water network into districts and the installation of inverters, for a total of **2 TJ** (0.6 GWh) saved.
Gesesa's consumption, in absolute value, **decreased by about 3.6 TJ** (1 GWh) compared to 2018. Moreover, **increased efficiency** and revamping initiatives are under way for the plants, with the installation of more energy-efficient equipment also from an energy point of view.

In the **Energy Infrastructure** segment, during the year **Areti** continued several **efficiency improvement projects** on the managed electricity distribution grid:

- the use of **344 MV/LV transformers with very low losses**, which allowed a reduction in electricity consumption of 404 MWh;
- other **interventions on the HV/MV/LV distribution network** aimed at optimising the structure of the MV network and other adjustments for the HV and LV lines, for 946 MWh saved.

Table no. 60 shows the type of work and the related energy savings of Areti for the last three years. These efficiencies have led **in 2019** to overall **energy savings** of about **5 TJ** (1.4 GWh) and about **500 tonnes of CO_2 avoided**.

TABLE NO. 60 – ENERGY EFFICIENCY IN ARETI (2017-2019)

ENERGY SAVINGS ACHIEVED (GJ)

action	2017	2018	2019
reduction in losses from the grid	24,959	25,200(*)	4,860(**)
of which reduction in losses through the purchase of new transformers	*662*	*1,112*	*1,454*
transformation of air conditioning and domestic hot water production system into heat pumps	-	47	94

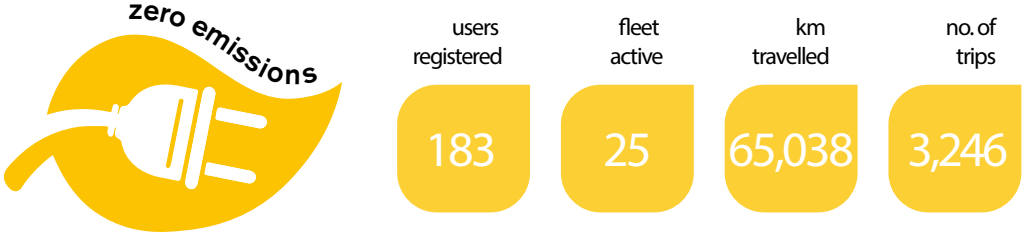
(*) Value measured after a detailed study of the grid.
(**) Value estimated while awaiting the detailed study of the grid.

In 2019 **consumption for public lighting fell to about 70 GWh** (252 TJ) (115.6 GWh and 416.2 TJ in 2018), mainly due to the installation of **LED technology lamps**: from 172,971 in 2017 to 205,670 in 2019, out of a total of 225,730 lamps.

A further positive contribution was provided by the **25 electric vehicles** in use and shared by the Company's staff.

Areti monitors the average and maximum travel of vehicles on a daily basis, the specific consumption in km/kWh, the battery use and the amount of CO_2 not emitted. The monitoring activity has found: a total of about 65,000 km of travel corresponding to electricity consumption of about 10,000 kWh and savings of about 6,200 kg of CO_2, net of emissions from the energy consumed.

CHART NO. 52 – CAR SHARING DATA (2019)



[129] Since February 2019 Gori has acquired the management of: a well field in Angri, regional plants in the Sarnese area including the large plants of Santa Maria La Foce and Santa Marina di Lavorate (Sarno); regional plants in the Monti Lattari and Sorrento Peninsula area including the Sepolcri Water Plant (Gragnano). Also acquired during the year were the purification plant in Bosco Fangone (Nola) and the related supply lifts and the purification plant in Nocera (Nocera).
[130] In addition to the start of the new Grottarossa drinking water plant, the Cecchina Bis plant was used on an ordinary basis. Until 2018 it was used occasionally as a reserve, then from the end of 2018 on an ordinary basis to no longer use the previous reserve of Lake Bracciano.

Finally, in the **Environment** segment, in 2019 some energy **efficiency improvements** continued at the **San Vittore del Lazio plant**, which were launched in 2018. In particular, in 2019 the project consisted in creating a new "configuration" for the $DeNO_x$ plant[131] of line 3, with the reprogramming of the quantities of natural gas (and ammonia solution) necessary to reduce nitrogen oxides, both with positive repercussions on consumption[132].

ATTENTION TO WATER CONSUMPTION

For Acea, the rational use of water is a fundamental prerequisite in the conduct of its business, therefore all **Companies are committed to optimising its use and seeking recovery and recycling solutions**, with a view to circular economy and resource protection. The main water consumption is related to production processes, such as the production of thermal energy at the Tor di Valle plant, that of electrical energy at the waste-to-energy plants and the production of compost. Furthermore, water is also used in laboratory activities, albeit in small quantities. Finally, water is an integral part of purification activities, in particular in plants equipped with anaerobic digesters.

The **Companies in the Environment segment** limit the consumption of drinking water, mainly using **water from wells** (including for civil uses, after sanitisation). In addition, **rainwater recovery systems** are active at the **San Vittore del Lazio, Orvieto, Aprilia** and **Terni** plants, and **since 2019 the latter has two rainwater collection tanks** equipped with a filtration system and storage tanks. **Aprilia's composting plant** has a **system for the treatment of residual water from waste awaiting processing** for reuse in production processes, and at the **San Vittore del Lazio waste-to-energy plant** rainwater is used in the production of demineralized water, after treatment in a specific chemical-physical plant. Finally, the **Orvieto plant hub collects rainwater** through the roofs of some buildings, **keeps it in underground storage tanks** and then **uses it in the compost maturation and storage phases**. Thanks to the presence of these solutions at the plants, the volume of water recovered from the Environment Segment was around 27,000 m^3.

In order to promote the reuse of purified wastewater, **Acea Ato 2** completed the revamping of the COBIS plant during the year and began work to modernize the industrial network (non-potable water) connected to the purification plant in South Rome.

The **water consumption of the Group**, illustrated in table no. 61, refers both to **industrial processes** and **civil uses**[133]. The increase in consumption in 2019 is particularly attributable to the users of the purification plants in South Rome and East Rome. In fact, at the purification plant in South Rome the startup of a new digestion department for the processing of organic sludge and the treatment systems of the emission points led to an increase in the use of the resource. At the purification plant in East Rome, on the other hand, due to critical issues related to the industrial network it was necessary to increase the use of water from the aqueduct. In this case as well in 2019 interventions for the renovation of the network were identified and planned.

TABLE NO. 61 – WATER CONSUMPTION OF THE GROUP'S MAIN COMPANIES (2017-2019)

	2017 (*)	2018 (*)	2019
TYPE OF CONSUMPTION		(Mm^3)	
industrial processes (district heating, thermoelectric generation, Acea Ambiente plants, Water companies)	**0.967**	**0.324**	**0.334**
of which aqueduct (**)	*0.896*	*0.243*	*0.236*
of which well	*0.060*	*0.053*	*0.067*
of which river water (***)	*0.003*	*0.003*	*0.003*
of which recovered water	*0.005*	*0.025*	*0.027*
water consumption for civil use (****)	**1.434**	**1.723**	**2.059**
total water consumption	**2.401**	**2.046**	**2.393**

(*) The volumes for 2017 and 2018 were restated and also include the figures for the Gori Company, which entered the scope in 2019.
(**) The item includes the water brought to the Aprilia plant through tankers (about 465 cubic meters in 2019).
(***) Consumption refers exclusively to the withdrawal from the Paglia river near the Orvieto composting plant.
(****) Civil consumption derives from: aqueduct (99.9%), well, tankers.

131 The DeNOx system is the system for the reduction of nitrogen oxides (NOx) that uses a conversion reaction with ammonia, generating nitrogen.
132 In 2019, the savings of methane thanks to these interventions were more than 700,000 Sm^3.
133 Civil uses for the two-year period 2018-2019 also include the consumption of Acea Ato 2, which uses water in some water service management and purification activities. At the moment it is not possible to estimate purely industrial and civil uses.

EMISSIONS

CONTINUOUS ANALYSIS OF EMISSIONS FROM WASTE-TO-ENERGY PLANTS:
values OF POLLUTING AGENTS **markedly lower than legal limits**

emissions intensity index (SCOPE 2) FROM NETWORK LEAKS OUT OF THE TOTAL DISTRIBUTED ELECTRICAL POWER IMPROVED:
0.0112 t/MWh

AIR EMISSIONS

Atmospheric emissions from Acea plants are constantly monitored. In particular, in the **waste-to-energy plants** it 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. Again in 2019, the **values of the main pollutants** were also **significantly below the legal limits** (see table no. 62). The **principle of precaution** still applies, as well as seeking out technological solutions with increasing performance from the emission quality viewpoint. The waste-to-energy plants, managed according to the UNI EN ISO 14001 and OHSAS 1800:2007 standards, are registered according to the European EMAS III scheme, extended until 2021. In particular, at the **San Vittore del Lazio plant** persistent pollutant monitoring (POP) was conducted in 2019 to verify the current state of soil contamination levels. Other actions carried out include surveys of odorous emissions, the monitoring of diffuse and fugitive emissions, an assessment of external noise impacts and an **epidemiological study on the population concerned** aimed at detecting possible effects on public health. No critical issues were identified.

TABLE NO. 62 – AIR EMISSIONS FROM THE SAN VITTORE DEL LAZIO AND TERNI WASTE-TO-ENERGY PLANTS (2017-2019)

		San Vittore del Lazio plant(*)				Terni plant(*)			
pollutant	**m.u.**	**benchmark(**)**	**2017**	**2018**	**2019**	**benchmark(**)**	**2017**	**2018**	**2019**
HCl	mg/Nm^3	8	0.053	0.184	0.151	8	4.002	4.499	3.580
NO_x	mg/Nm^3	70	18.089	28.273	29.652	180	134.274	140.157	128.650
SO_2	mg/Nm^3	40	0.014	0.006	0.003	25	0.490	0.194	0.430
HF	mg/Nm^3	1	0.011	0.021	0.023	1	0.122	0.084	0.080
CO	mg/Nm^3	40	1.447	1.320	0.803	25	1.018	1.084	1.140
total particles (particulate matter)	mg/Nm^3	3	0.006	0.006	0.007	25	0.678	0.705	0.790
PAH (polycyclic aromatic hydrocarbons)	mg/Nm^3	0.01	0.00001	0.00002	0.00001	0.01	0.0001	0.0001	0.0000
dioxins and furans (PCDD +PCDF)	ng/Nm^3	0.1	0.0047	0.0065	0.0074	0.1	0.0173	< 0.001	0.0087
heavy metals (Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V)	mg/Nm^3	0.5	0.0262	0.0253	0.0387	0.3	0.109	0.204	0.033

(*) 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.
NOTE For San Vittore del Lazio, over the years the recorded concentrations of the parameters HCl, SO_2, dust and HF were close to the instrument's detection limit. Therefore, in these measurement areas deviations are to be considered insignificant for absolute changes in concentrations and masses.

GREENHOUSE GAS EMISSIONS

The international document Greenhouse Gas Protocol (or GHG Protocol) classifies greenhouse gas emissions into 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[134]. Indeed, as mentioned above, it participates in the annual completion of the international questionnaire on carbon dioxide emissions, the so-called "CDP".
Direct Scope 1 emissions **mainly come from the Group's energy**

134 See www.ghgprotocol.org for more information.

plants and thermoelectric power plants. They also include emissions from the heating process, dryers, certain processes in composting plants, vehicles in the 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 figure for CO_2 emitted by the waste-to-energy plants in 2019 decreased, mainly due to lower production at San Vittore del Lazio related to maintenance delays.
Scope 2 greenhouse gas emissions are **indirect**, deriving from the consumption of electricity and also kept under control. In 2019 the increases mainly depended on Gori's acquisition of the plants previously managed by the Campania Region.
Finally, **Scope 3** greenhouse gas emissions are **other indirect emissions** deriving from the sale of gas, the purchase of goods, services and works, from employee travel for work and commuting by employees are reported (see table no. 65 below).
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**. In particular, Acea distributes a questionnaire to know **emissions along the supply chain**. In 2019 the questionnaire **was administered to 117 suppliers**[135] divided between suppliers of "goods", "services and works". Quantitative **environmental information** requested refers to: fuels consumed for any ordinary processes and uses, energy consumed in offices, fuels consumed for transport and any consumption of refrigerant gases (see the sections on *Energy consumption outside the Group* and *Greenhouse gas emissions* and also the chapter on *Suppliers*). This year, 40 suppliers responded with environmental data, including 12 for "goods" and 28 for "services and works".

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 compared to the actual emissions registered in the three-year period 2017-2019, are shown in table no. 63.

TABLE NO. 63 – CO_2 EMISSION ALLOWANCES AS PER THE NATIONAL ALLOCATION PLAN (NAP) AND ACTUAL EMISSIONS BY PLANT (2017-2019)

	2017		2018		2019	
system	(t)					
	assigned by NAP	actual	assigned by NAP	actual	assigned by NAP	actual
Tor di Valle(*)	6,869	33,507	5,805	42,281	4,775	46,617(**)
Montemartini	0	2,278	0	607	0	1,514
Terni waste-to-energy plant	0	118,653	0	114,093	0	109,369 (**)

(*) As with previous years, in 2019 the applicable legislative framework allowed the Tor di Valle plant to benefit from free of charge emission allowances (4,775 t) as it serves a remote heating network. The 2018 figure for actual emissions has been adjusted with the certified figure.
(**) 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. 65) concerns **Scope 2 carbon dioxide emissions, deriving from leaks** in the electricity distribution network, in **respect to the total electricity distributed**. This index has **improved further**, changing from 0.0113 t/MWh in 2018 to **0.0112 t/MWh** in 2019, 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 Acea Ambiente and Acea Produzione plants, see the summary data in table no. 64. They show a substantial decrease after 2017 in NO_x (nitrogen oxide) thanks to the transformation of the Tor Di Valle plant from a combined cycle to a high-efficiency plant (CAR). The other data is in line with the previous values and continues to be monitored.

TABLE NO. 64 – ENVIRONMENTAL INDICATORS: CO_2 EMISSIONS, GREENHOUSE GAS INTENSITY INDICES AND VEHICLE EMISSIONS (2017-2019)

	2017	2018	2019
EMISSIONS	(t)		
CO	6.81	6.38	7.02
NO_x	198.20	189.40	188.19
SO_x	0.42	0.16	0.33
particles (particulate matter)	0.55	0.50	0.60

NOTE The emissions refer to the following companies.

Monitoring carried out on installations at risk[136] has shown **the absence of emissions** in significant quantities **of substances responsible for reducing the ozone layer** (for consumption see the *Environmental accounts*, *Resources used*).

[135] 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 in the past three years, among the most relevant in terms of turnover.
[136] This is primarily air conditioning equipment using refrigerant gases subject to the 1987 Montreal protocol, particularly chlorofluorocarbons.

TABLE NO. 65 – ENVIRONMENTAL INDICATORS: CO_2 EMISSIONS, GREENHOUSE GAS INTENSITY INDICES AND VEHICLE EMISSIONS (2017-2019)

CO_2 EMISSIONS				
SCOPE 1 EMISSIONS				
FROM ENERGY PRODUCTION PLANTS				
	m.u.	**2017**	**2018**	**2019**
CO_2 emissions from Acea Produzione thermoelectric plants	t	33,507	42,888	48,131
CO_2 emissions from Acea Ambiente waste-to-energy plants(*)	t	375,159	307,395	290,591
FROM WASTE MANAGEMENT, ENERGY DISTRIBUTION, HEATING PLANTS AND VEHICLE FLEET				
CO_2 emissions from waste management plants(**)	t	932	1,076	1,282
CO_2 emissions from water plant dryers(***)	t	2,901	3,958	5,620
CO_2 emissions from heating(***)	t	1,008	764	840
CO_2 emissions from vehicle fleet	t	9,753	9,407	8,314
CO_2 emissions from Areti plants (from SF_6)(****)	t	14,100	11,233	9,682
CO_2 emissions from refrigerants (HCFCs)(*****)	t	-	46	0
TOTAL SCOPE 1 EMISSIONS(******)	**t**	**437,360**	**376,767**	**364,460**
SCOPE 2 EMISSIONS				
CO_2 emissions from location based consumption of electricity consumption (market based)(*******)	t	363,678 (214,869)	337,858 (203,841)	354,811 (228,590)
SCOPE 3 EMISSIONS				
CO_2 emissions deriving from the purchase of goods/services and works(********)	t	24,134	22,805	22,303
CO_2 emissions from commuting	t	3,286	4,088	7,060
CO_2 emissions from business travel	t	152	160	288
CO_2 emissions from volumes of gas sold	t	203,085	252,987	275,580
INTENSITY INDICES FOR GREENHOUSE GAS EMISSIONS				
intensity indices of the GHG emissions	**m.u.**	**2017**	**2018**	**2019**
CO_2 emissions (Scope 1 + Scope 2)/Acea Group added value	(t/k€)	0.809	0.666	0.598
Scope 1 CO_2 emissions/gross production(*********)	(g/kWh)	487.7	361.7	374.6
Scope 2 CO_2 emissions deriving from losses on the electrical energy distribution network/distributed GWh(**********)	(t/MWh)	0.0115	0.0113	0.0112

(*) The 2018 figure for Terni was corrected after the ETS certification, while the 2019 figure is estimated pending certification by a third-party body.
(**) The figure includes the emissions of the ancillary services of the waste-to-energy plants, not strictly related to the production of electricity, and since 2018 non-biogenic emissions from the combustion of locally produced biogas.
(***) The figures for 2017 and 2018 have been restated to include Gori and to align the figures with the items in the Environmental Accounts.
(****) 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).
(*****) In 2019 the replenishment of HCFC fluids in the Group's plants was so small that it did not lead to significant CO_2 emissions.
(******) Considering the entire Group, the total scope 1 emissions for the three-year period are as follows: 439,353 t, 378,671 t and 366,371 t.
(*******) The indirect emissions (scope 2) include all the Companies within the NFS scope. The figures for 2017 and 2018 have been restated to include Gori. 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 (2018 data). For the calculation of Scope 2 emissions using the Market-Based method, the Residual Mix coefficients are respectively for 2017, 2018 and 2019: 0.465 t/MWh, 0.476 t/MWh and 0.487 (Source: AIB document "European Residual Mixes 2018"). Considering the whole Group, including the companies Umbra Acque, AdF, Publiacqua e Acque (outside the NFS scope), for the sole proprietary quota part of Acea, for the three-year period 2017-2019, di Location based CO_2 emissions are equal to 415,853 t, 390,552 t and 407,086 t respectively, whereas for the Market-based emissions they are equal to 282,262 t, 272,502 t and 298,856 t.
(********) This value, estimated, refers to suppliers of goods, services and works. The figure for 2018 was corrected. The 2019 figure is broken down as follows: 19,050 tonnes of CO_2 for suppliers of services and works and 3,253 tonnes of CO_2 for suppliers of goods.
(*********) Since 2018, the emissions of scope 1 included in this index have been emissions from power generation plants.
(**********) Network losses considered for Score 2 emissions and for calculating the indicator regarding the three-year period 2017-2019, are as follows: 124,479 t, 120,450 t and 118,824 t (due to the technical leakage of electricity from the network). The trend has decreased, albeit minimally, thanks to the reduction of network losses, the result of interventions, measures and efficiency improvements.

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

WATER COMPANIES DATA SHEETS AND OVERSEAS ACTIVITIES

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

WATER ACTIVITIES IN UMBRIA AND TUSCANY

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

UMBRA ACQUE

Umbra Acque SpA is a company with predominantly public capital, 40% owned by Acea SpA, which since 2003 has managed the integrated water service in the area of Optimal Territorial Conference – Umbria 1 consisting of 38 municipalities, of which 37 in the province of Perugia and 1 in the province of Terni, with a total population of over 500,000 inhabitants.

HUMAN RESOURCES IN FIGURES

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

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

UMBRA ACQUE EMPLOYEES: CONTRACT TYPE (2018-2019)

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

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

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

(*) The data have been estimated.

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

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

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

TRAINED EMPLOYEES (2018-2019)

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

NETWORK AND PLANT CONSISTENCY

WATER SYSTEM MANAGED BY UMBRA ACQUE (2017-2019)

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

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

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

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

CERTIFICATIONS

Umbra Acque has an **Integrated Quality, Environment and Safety Management System** (QAS) in compliance with the **UNI ISO 9001:2015, UNI ISO 14001:2015 and BS OHSAS 18001:2007** standards , **SOA certification** for the OG6 (in class II) and OS22 (in class III) categories and **qualification for design and construction** (up to the 8th classification).

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

ENVIRONMENTAL ACCOUNTS

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

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

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

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

(*) Data are estimated.

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

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

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

TOTAL COD IN INPUT AND OUTPUT (2017-2019)

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

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

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

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

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

PUBLIACQUA

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

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

HUMAN RESOURCES IN FIGURES

PUBLIACQUA EMPLOYEES: STAFF BREAKDOWN (2018-2019)

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

PUBLIACQUA EMPLOYEES: CONTRACT TYPE (2018-2019)

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

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

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

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

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

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

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

TRAINED EMPLOYEES (2018-2019)

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

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

NETWORK AND PLANT CONSISTENCY

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

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

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

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

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

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

CERTIFICATIONS

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

ENVIRONMENTAL ACCOUNTS

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

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

(*) The value of the water losses coincides with the "total lost volume (WLtot)" and includes the unmeasured treatment losses, the supply losses and the total distribution water losses.
(**) The figures for 2018 have been restated compared to what was previously published.
(***) Analysis of crude surface water (untreated).

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

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

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

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

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

ENERGY EFFICIENCY PUBLIACQUA (2017-2019)

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

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

TOTAL COD IN INPUT AND OUTPUT (2017-2019)

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

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

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

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

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

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

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

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

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

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

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

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

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

ADF

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

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

HUMAN RESOURCES IN FIGURES

ADF EMPLOYEES: STAFF BREAKDOWN (2018-2019)

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

ADF EMPLOYEES: CONTRACT TYPE (2018-2019)

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

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

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

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

TRAINING COURSES AND COSTS IN ADF (2018-2019)

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

TRAINED EMPLOYEES (2018-2019)

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

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

NETWORK AND PLANT CONSISTENCY

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

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

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

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

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

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

CERTIFICATIONS

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

ENVIRONMENTAL ACCOUNTS

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

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

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

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

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

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

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

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

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

ADF ENERGY EFFICIENCY (2017-2019)

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

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

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

TOTAL COD IN INPUT AND OUTPUT (2017-2019)

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

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

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

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

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

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

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

ACQUE

Acque SpA manages the integrated water service in the area of Optimal Territorial Conference 2 Lower Valdarno on the basis of the concession agreement issued by the Autorità Idrica Toscana (AIT), consisting of 53 municipalities in the provinces of Pisa, Lucca, Florence, Pistoia and Siena, with a total population of 740,000 inhabitants equal to approximately 328,000 user accounts.
The water and sewerage networks cover about 5,950 km and 3,000 km, respectively.

HUMAN RESOURCES IN FIGURES

ACQUE EMPLOYEES: STAFF BREAKDOWN (2018-2019)

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

ACQUE EMPLOYEES: CONTRACT TYPE (2018-2019)

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

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

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

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

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

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

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

TRAINED EMPLOYEES (2018-2019)(*)

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

(*) The figures are higher than the number of employees as they include employees of other companies, posted workers and workers who provided services only for a few months of the year.
(**) The figures for 2018 have been restated compared to last year's publication, adding the final figures as at 31.12.

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

NETWORK AND PLANT CONSISTENCY

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

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

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

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

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

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

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

CERTIFICATIONS

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

ENVIRONMENTAL ACCOUNTS

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

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

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

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

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

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

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

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

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

ENERGY EFFICIENCY OF ACQUE (2017-2019)

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

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

TOTAL COD IN INPUT AND OUTPUT (2017-2019)

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

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

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

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

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

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

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

OVERSEAS ACTIVITIES

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

CONSORCIO AGUA AZUL SA

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

CONSORCIO AGUA AZUL SA – MAIN CORPORATE AND OPERATIONAL DATA

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

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

CONSORCIO SERVICIO SUR

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

CONSORCIO SERVICIO SUR – MAIN CORPORATE AND OPERATING DATA

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

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

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

CONSORCIO SERVICIO NORTE

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

CONSORCIO SERVICIO NORTE – MAIN CORPORATE AND OPERATING DATA

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

AGUAS DE SAN PEDRO

Aguas de San Pedro ASP is the holder of a 30-year contract for the management of the integrated water service in the city of San Pedro Sula in Honduras, and during the year it continued with the projects for the **expansion, treatment and improvement of the water service and sewerage network** in the city. The Company has a **Quality Management System** certified according to the **UNI ISO 9001:2008** standard and the laboratories are accredited according to the **UNI ISO/IEC 17025:2005 standard.**

AGUAS DE SAN PEDRO SA – MAIN COMPANY AND OPERATING DATA

country (area)	Honduras (San Pedro Sula)
inhabitants served	755,000
customer	municipal administration
sources of financing	equity capital and loans from commercial banks
duration of the contract	01.02.2001 – 01.02.2031
purpose of the project	concession of the integrated water service for the town of San Pedro de Sula
shareholders	Acea SpA 60.65%, Ireti SpA 39.35%
no. of employees	411
turnover (in € thousand)	36,787

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

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

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

ACEA DOMINICANA SA

Acea Dominicana deals with the commercial management of the water service in the **northern and eastern areas of Santo Domingo** in the **Dominican Republic**. The activities include the management of customer relations, the billing cycle and cost estimates, the installation of new meters and directing the works for new connections.
The framework of a contractual addendum already signed by Acea Dominicana and Corporacion del Acueducto y Alcantarillado De Santo Domingo (CAASD), which extended the contract duration until 2023, also includes the financing, supply and installation of 30,000 meters for new users and the replacement of 10,000 meters for existing users.

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

ACEA DOMINICANA SA – MAIN CORPORATE AND OPERATING DATA

country (area)	Dominican Republic (north and east Santo Domingo)
inhabitants served	1,500,000
customers	Corporación del Acueducto y Alcantarillado de Santo Domingo (CAASD) and Corporación de Acueducto y Alcantarillado de Boca chica (CORAABO)
duration of the contract	01.10.2003 – 30.09.2023
purpose of the project	commercial management of the water service
shareholders	Acea SpA 100%
no. of employees	161
turnover (in € thousand)	4,143

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

INDEX OF GRI CONTENTS: REPORTING PRINCIPLES, UNIVERSAL STANDARDS AND SPECIFIC MATERIAL STANDARDS

The Sustainability Report was prepared in accordance with **GRI Standards (ed. 2016): Comprehensive option**[139]. The GRI Content Index includes Universal Standards (100 series) and Material Specific Standards (200, 300, 400 series).
In particular, the index contains:

- reference to **Reporting Principles** (GRI 101 – Reporting principles 2016);
- the definition of **56 general information** standards (GRI 102 – General Information 2016) and **26 topics deemed material** among the **specific Standards** (GRI 200-Economic, GRI 300-Environmental, GRI 400-Social series) 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-applicability" of certain indicators included in material topics;
- the scope of each topic (among the specific material 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.

GRI CONTENT INDEX		
GRI STANDARDS	**definition of GRI standards notes (responses or reporting of omissions or non-applicability) sections and reference pages**	**Compliance with Legislative Decree no. 254/2016**
UNIVERSAL STANDARDS		
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 26.*	**Art. 3 paragraph 1, letter a)**: the corporate management and organisation model
	102-2 Activities, brands, products, and services. *Corporate identity* pages 26, 27, 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* page 26.	**Art. 3 paragraph 1, letter a)**: the corporate management and organisation model
	102-5 Ownership and legal form. *Corporate identity* page 33.	**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 26f., 34; *Relations with stakeholders* pages 88, 90 table no. 15, 106f.	**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 27, table no 6, 34 table no. 7; *Relations with stakeholders* pages 143 table no. 36, 160.	**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 141f., 143ff., 145-146 table no. 37	**Art. 3 paragraph 2, letter d)**: social aspects and aspects related to staff management
	102-9 Description of the organization's supply chain. *Corporate identity* pages 28-33; *Relations with stakeholders* pages 137f.	**Art. 3 paragraph 1, letter a)**: the corporate management and organisation model

[139] 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	**102-10 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* page 33; *Relations with stakeholders* page 138.	**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 71, 77, 78 table no. 12; *Relations with stakeholders* pages 152f., 167; *Relations with the environment* page 195.	**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 21-23; *Corporate identity* pages 36, 38, 78 table no. 8; *Relations with stakeholders* pages 136, 151, 165ff.; *Relations with the environment* pages 172f.	**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* pages 165f.	**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 35-39; *Relations with stakeholders* pages 132, 165f.	**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. 28-33, 35-39, 70, 73, 74 table no. 10, 76ff.; *Relations with stakeholders* pages 111, 163f., 167; *Relations with the environment* pages 186f., 190.	**Art. 3 paragraph 1, letter c):** the main risks, generated or incurred; **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 36, 38, 68, 73, 83; *Relations with stakeholders* pages 135f.	**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 68 chart no. 10, 73.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **paragraph 2, letter e)**: respect for human rights, the measures adopted to prevent violations, as well as the actions taken to prevent discriminatory attitudes and actions
	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 68 and chart no. 10, 69 and table no. 8.	**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. Worthy of note is 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 36, 68, 70; *Relations with stakeholders* pages 160f.	**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 68, 69 table no. 8.	**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 68, 69 table no. 8.	**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 independent Directors, 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 selection processes and in compliance with the recommendations of the Corporate 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 Board of Directors. *Corporate identity* page 68.	**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 68f.	**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 15; *Corporate identity* pages 36, 38, 68f, 77.	**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 15; *Corporate identity* pages 36, 39, 68 and chart no. 10.	**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 68 and chart no. 10, 69f., 78; *Relations with stakeholders* page 157.	**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 15; *Corporate identity* pages 38ff., 68f., 71, 77.	**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. **environmental and social)**. *Disclosing sustainability: methodological note* page 15; *Corporate identity* pages 40, 68 and chart no.10, 69, 71.	**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 15; *Corporate identity* pages 38, 40, 68 chart no. 10.	**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 15; *Corporate identity* page 69.	**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 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 70, 73f. and table no. 10, 78.	**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 73f. and table no. 10, 78.	**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. The current LTIP – Long Term Incentive Plan is linked solely to economic and financial objectives. The short-term incentive system (MBO), on the other hand, is linked to both objectives of an economic/financial nature and to environmental objectives having an impact on sustainability. In 2019, much of the Managing Director's first line was assigned at least one goal with an impact on sustainability to demonstrate how sustainability is increasingly important and relevant in the company culture. *Corporate identity* pages 68 and chart no. 10, 70; *Relations with stakeholders* page 157.	**Art. 3 paragraph 1, letter a)**: the corporate management and organisation model

	102-36 Process for determining remuneration; whether remuneration consultants are involved in determining remuneration and whether they are independent of management. During 2019, the Appointments and Remuneration Committee contracted a consulting company to issue an independent opinion on remuneration. *Corporate identity* pages 68, 70.	**Art. 3 paragraph 1, letter a)**: the corporate management and organisation model
	102-37 Stakeholders' involvement in remuneration. *Corporate identity* page 70.	**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 2019 is given by retributive multiple 15.42, which is compared to a mean value of 20.27 of peer companies. See also the 2019 Remuneration Report available on the Acea Group website (www.gruppo.acea.it). *Corporate identity* page 70.	**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.	**Art. 3 paragraph 1, letter a)**: the corporate management and organisation model
	STAKEHOLDER ENGAGEMENT	
GRI 102: General Disclosures 2016	**102-40 List of stakeholder groups engaged by the organization.** *Disclosing sustainability: methodological note* pages 15-17; *Corporate identity* pages 79-83; *Relations with stakeholders* pages 91-97, 99, 107f., 110, 112f., 120-122, 124, 128-134, 136, 140ff., 149ff., 152ff., 156f., 161, 162, 164ff.; *Relations with the environment* page 172.	**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 150.	**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 15-17; *Corporate identity* pages 79-83; *Relations with stakeholders* pages 91-97, 112f., 120-122, 124, 128-134, 136, 140ff., 149ff., 152ff., 156f., 159, 161, 162, 165f.	**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 15-17; *Corporate identity* pages 79-83; *Relations with stakeholders* pages 91-97, 99, 107f., 112f., 120-122, 124, 128-134, 136, 140ff., 149ff., 152ff., 154, 156f., 158ff., 161, 162, 164ff.; *Relations with the environment* page 172.	**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 15-17; *Corporate identity* pages 79-83; *Relations with stakeholders* pages 91-97, 95-97 table no. 16, 112f., 120-122, 124, 132-134, 136, 140ff., 149ff., 152, 156f., 161, 162, 163, 165ff., 167.	**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 18 and table no. 2, 19 note 16; *Relations with stakeholders* pages 88, 136 note 82, 137; *Relations with the environment* pages 177, 181, 184.	**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 15-17, 18, 20; *Corporate identity* pages 28-33, 35-39; *GRI Content Index* pages 218ff.	**Art. 3 paragraph 1, letter a)**: the corporate management and organisation model **Art. 4 paragraph 1:** in the 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 15-17 and table no. 1; *GRI Content Index* pages 218ff.	**Art. 4 paragraph 1:** in the 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 2018 are adequately marked and grounded in the report. *Disclosing sustainability: methodological note*, page 18; *Relations with stakeholders* pages 143, 140 table no. 33; *Relations with the environment* pages 196, 197 table no. 65; *Environment accounts* pages 247ff.	**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. *Disclosing sustainability: methodological note* pages 17, table no. 1, 18, 19 table no. 3; *Relations with stakeholders* pages 106f., 123 and chart no. 26; *Environmental accounts* pages 243, 247f.	**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 14.	**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 14.	**n.a.**
	102-52 Reporting cycle (for example, annual or biennial). *Disclosing sustainability: methodological note* page 14.	**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 20.	**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 14; *GRI Content Index* pages 218ff.	**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). *GRI Content Index* pages 218ff.	**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 15; *Opinion Letter* page 274.	**Art. 3 paragraph 10:** verification... of the non-financial statement

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 33, 35, 36ff., **Topic Boundary: Acea Group**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 33, 35, 36ff.,	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 33, 35, 36ff.,	**Art. 3 paragraph 1, letter b)**: the policies implemented 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, 79-83, 84; *Relations with stakeholders* pages 148, 162.	**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 28-33, 34 38, 75; *Relations with stakeholders* page 160; *Relations with the environment* pages 173, 192f.	**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 148, 149, table no. 40.	**Art. 3 paragraph 1, letter d):** social aspects and aspects relating to staff management
	201-4 Financial assistance received from government. *Corporate identity* page 84 note 24.	**n.a.**
TOPIC	INDIRECT ECONOMIC IMPACTS	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 36ff., 79-83; *Relations with stakeholders* pages 97-118, 132-134, 136. **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. ...in the 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 36ff., 79-83; *Relations with stakeholders* pages 97-118, 132-134, 136.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff., 79-83; *Relations with stakeholders* pages 97-118, 136.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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 79-83; *Relations with stakeholders* pages 97-118, 98-99 table no. 17, 107 table no. 24, 132-134, 166 and chart no. 44; *Relations with the environment* page 175.	**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 79-83; *Relations with stakeholders* pages 89, 97-118, 98-99 table no. 17, 130, 132-134, 135f., 137f., 138-139 tables no. 34 and 35; *Relations with the environment* page 179.	**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 28-33, 36ff.; *Relations with stakeholders* pages 135f. **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. ...in the 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 28-33, 36ff.; *Relations with stakeholders* pages 135f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 135f.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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 138, 139 table no. 35.	**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 36ff., 73. **Topic Boundary: Acea Group**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 36ff., 73; *Relations with stakeholders* page 155.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 The management approach and its components. *Corporate identity* pages 36ff., 73f.; *Relations with stakeholders* page 155.	**Art. 3 paragraph 1, letter b):** the policies implemented 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* page 73.	**Art. 3 paragraph 1, letter c):** the main risks, generated or incurred **paragraph 2, letter f):** fight against 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* page 155.	**Art. 3 paragraph 1, letter a)**: the corporate management and organisation model: **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 36ff., 71f.; *Relations with stakeholders* pages 135, 162. **Topic Boundary: Acea Group**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 36ff., 71f.; *Relations with stakeholders* pages 135, 155, 162.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff., 71f.; *Relations with stakeholders* pages 135, 155, 162.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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* pages 162f.	**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 36ff., 76; *Relations with the environment* pages 173f., 191; *Environmental accounts* page 243. **Topic Boundary: main Group companies**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 36ff.; *Relations with the environment* pages 173f., 191; *Environmental accounts* page 243.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 The management approach and its components. *Corporate identity* pages 36ff.; *Relations with the environment* pages 173f., 191; *Environmental accounts* page 243.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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* pages 191 and table no. 56, 194 and table no. 61; *Environmental accounts* pages 243, 250ff., 254.	**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. *Relations with the environment* page 191 and table no. 56.	**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 28-33, 35, 36ff., 76; *Relations with the environment* pages 173f., 177, 191f. **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. ...in the 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 28-33, 35, 36ff.; *Relations with stakeholders* page 155; *Relations with the environment* pages 173f., 177, 191f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 35, 36ff.; *Relations with stakeholders* page 155; *Relations with the environment* pages 173f., 177, 191f.	**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 the environment* pages 191, 192 table nos. 57 and 58.	**Art. 3 paragraph 2, letter a):** the use of energy resources
	302-2 Energy consumption outside of the organization. *Corporate identity* page 26; *Relations with the environment* page 192.	**Art. 3 paragraph 2, letter a):** the use of energy resources
	302-3 Energy intensity. *Relations with the environment* pages 191, 192 table no. 59, 192f.	**Art. 3 paragraph 2, letter a):** the use of energy resources
	302-4 Reduction of energy consumption. *Relations with the environment* pages 192f.	**Art. 3 paragraph 2, letter a):** the use of energy resources
	302-5 Reductions in energy requirements of products and services. **Not applicable:** The Group does not sell products or services for which the indicator could be considered applicable.	**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 28-33, 35, 36ff., 76; *Relations with stakeholders* pages 109f., 111-113; *Relations with the environment* pages 173f, 174ff., 185, 186f. **Topic Boundary: main Group companies.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 28-33, 35, 36ff.; *Relations with stakeholders* page 109f., 111-113, 128, 163; *Relations with the environment* pages 173f., 174ff., 185, 186f., 194.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 35, 36ff; *Relations with stakeholders* pages 109f., 111-113; *Relations with the environment* pages 173f, 174ff., 185, 186f., 194.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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.** *Relations with the environment* page 194 table no. 61; *Environmental accounts* page 247.	**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 194.	**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 194 and table no. 61.	**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 28-33, 36ff., 76; *Relations with the environment* pages 173f. **Topic Boundary: main Group companies.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 28-33, 36ff.; *Relations with the environment* pages 173f., 188.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff; *Relations with the environment* pages 173f.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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 174-177.	**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 174-177, 181.	**Art. 3 paragraph 2, letter c)**: the impact...on the environment
	304-3 Habitats protected or restored. *Relations with the environment* pages 174-177.	**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 174-177.	**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 28-33, 36ff., 76; *Relations with stakeholders* page 130; *Relations with the environment* pages 173f., 195f. **Topic Boundary: main Group companies.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 28-33 36ff.; *Relations with stakeholders* pages 129f.; *Relations with the environment* pages 173f, 195f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* page 130; *Relations with the environment* pages 173f, 195f.	**Art. 3 paragraph 1, letter b)**: the policies implemented by the company...and the results achieved through them
GRI 305: Emissions 2016	**305-1 Direct (Scope 1) GHG emissions.** Biogenic CO_2 was calculated for the Environment and Water segments and in 2019 was equal to 364,887 tonnes. *Relations with the environment* pages 195, 197 table no. 65; *Environmental accounts* pages 253f., 255.	**Art. 3 paragraph 2, letter b)**: greenhouse gas emissions
	305-2 Energy indirect (Scope 2) GHG emissions. *Relations with the environment* pages 196, 197 table no. 65; *Environmental accounts* pages 253f.,	**Art. 3 paragraph 2, letter b)**: greenhouse gas emissions
	305-3 Other indirect (Scope 3) GHG emissions. *Relations with the environment* pages 197 table no. 65.	**Art. 3 paragraph 2, letter b)**: greenhouse gas emissions
	305-4 GHG emissions intensity. *Relations with the environment* pages 196, 197 table no. 65.	**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 181, 192f., 193 table no. 60, 197 table no. 65.	**Art. 3 paragraph 2, letter b)**: greenhouse gas emissions
	305-6 Emissions of ozone-depleting substances (ODS). *Relations with the environment* page 196; *Environmental accounts* pages 250, 252.	**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 196 table no. 64; *Environmental accounts* pages 253f.	**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 28-33, 35, 36ff., 76; *Relations with the environment* pages 173f., 181, 188; *Environmental accounts* page 243. **Topic Boundary: main Group companies.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 28-33, 35, 36ff.; *Relations with the environment* pages 173f., 181, 188; *Environmental accounts* page 243.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 35, 36ff.; *Relations with the environment* pages 173f., 181, 188; *Environmental accounts* page 243.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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. *Relations with the environment* page 188; *Environmental accounts* page 249.	**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 74,591 t; the total non-hazardous waste products is equal to 207,893 t (of which 137,729 is sludge, sand and gratings). The percentage of hazardous and non-hazardous waste sent for recovery is 36%. Differentiated collection obtained about 916 tonnes of paper in 2019 (+9% compared to 2018) and 622 tonnes of plastic (+28% compared to 2018). There is no detailed information 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. *Environmental accounts* pages 253f., 255.	**Art. 3 paragraph 2, letter c)**: the impact...on the environment
	306-3 Total number and total volume of recorded significant spills. In 2019, 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. *Relations with the environment* page 183.	**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 36ff; *Relations with the environment* pages 173f. **Topic Boundary: main Group companies.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 36ff.; *Relations with stakeholders* page 155; *Relations with the environment* pages 173f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* page 155; *Relations with the environment* pages 173f.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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* pages 162f.; *Relations with the environment* page 173.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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 28-33, 36ff.; *Relations with stakeholders* pages 135f.; *Relations with the environment* pages 192, 196. **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. ...in the 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 28-33, 36ff.; *Relations with stakeholders* pages 135f., 140f.; *Relations with the environment* pages 192, 196.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 135s., 141; *Relations with the environment* pages 192, 196.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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* pages 136, 140f.; *Relations with the environment* pages 192.	**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 140f.; *Relations with the environment* pages 192, 196.	**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; **paragraph 2, letter c):** 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 28-33, 36ff.; *Relations with stakeholders* pages 135f., 143, 154-156. **Topic Boundary: main Group companies.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 28-33, 36ff.; *Relations with stakeholders* pages 135f., 140f., 143, 147f., 153, 154-156, 157, 160.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 135f., 143, 147f., 153, 157, 160.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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 143ff., 146-147 table no. 38	**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 158.	**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 of five months 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. 336 employees in 2019 made use of parental leave, of whom 123 were men and 213 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; **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.** *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 149ff. **Topic Boundary: main Group companies.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 36ff.; *Relations with stakeholders* pages 149ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 149ff.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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* page 150.	**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 28-33, 36ff.; *Relations with stakeholders* pages 151, 153. **Topic Boundary: main Group companies.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 28-33, 36ff.; *Relations with stakeholders* pages 141f., 151, 153, 155.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 141f., 151, 153, 155.	**Art. 3 paragraph 1, letter b):** the policies implemented 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 150f.	**Art. 3 paragraph 2, letter c):** the impact...on health and safety; **letter d):** aspects related to personnel 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 2019, the absenteeism rate is 3.58% (3.51% male absenteeism rate and 3.78% female absenteeism rate). *Relations with stakeholders* pages 142, 151-152 and chart no. 42, 152-153 table no. 41.	**Art. 3 paragraph 2, letter c):** the impact...on health and safety; **letter d):** aspects related to personnel management
	403-3 Workers with high incidence or high risk of diseases related to their occupation. *Relations with stakeholders* page 153.	**Art. 3 paragraph 2, letter c):** the impact...on health and safety; **letter d):** aspects related to personnel management
	403-4 Health and safety topics covered in formal agreements with trade unions. *Relations with stakeholders* page 151.	**Art. 3 paragraph 2, letter c):** the impact...on health and safety; **letter d):** aspects related to personnel management...the ways in which the dialogue with the social partners is carried out

TOPIC	TRAINING AND EDUCATION	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 28-33, 36ff.; *Relations with stakeholders* pages 153f., 154-156, 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. ...in the 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 28-33, 36ff.; *Relations with stakeholders* pages 153f., 154-156, 158.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 153f., 158.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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 155-156 and table no. 42	**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* pages 152ff., 154-156, 157.	**Art. 3 paragraph 2, letter d)**: aspects relating to staff management
	404-3 Percentage of employees receiving regular performance and career development reviews. In 2019, 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* page 157.	**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.** *Corporate identity* pages 28-33, 36ff.; *Relations with stakeholders* pages 148, 159. **Topic Boundary: main Group companies.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 28-33, 36ff.; *Relations with stakeholders* pages 148, 159.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 148, 159.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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.** Regarding the representation of the age groups of the members of the governing bodies, considering as such the Board of Directors, Board of Statutory Auditors and SB, it should be noted that 1% are up to 30 years old; 47% are in the 30-50 age group; 52% are over 50 years old. *Corporate identity* page 68; *Relations with stakeholders* pages 145-146 and table no. 37, 147 table no. 39, 159.	**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 148.	**Art. 3 paragraph 2, letter d)**: social aspects and aspects relating to staff management

TOPIC	NON DISCRIMINATION	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 36ff., 73; *Relations with stakeholders* page 159. **Topic Boundary: main Group companies.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 36ff., 73; *Relations with stakeholders* page 159.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff., 73; *Relations with stakeholders* page 159.	**Art. 3 paragraph 1, letter b)**: the policies implemented by the company...and the results achieved through them
GRI 406: Non discrimination 2016	**406-1 Incidents of discrimination and corrective actions taken.** *Corporate identity* page 73; *Relations with stakeholders* page 159.	**Art. 3 paragraph 2, letter d):** social aspects relating to staff management; **letter e):** actions taken to prevent attitudes and conduct that are in any case discriminatory
TOPIC	LOCAL COMMUNITIES	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its Boundary.** *Corporate identity* pages 36ff., 79-83; *Relations with stakeholders* pages 91-97, 97-118, 128-132, 162, 163f. **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. ...in the 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 36ff., 79-83; *Relations with stakeholders* pages 91-97, 97-118, 128-132, 162, 163f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff., 79-83; *Relations with stakeholders* pages 91-97, 97-118, 128-132, 162, 163f.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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 15-17; *Corporate identity* pages 76ff. and table no. 12, 79-83; *Relations with stakeholders* pages 91-97, 99, 109f., 113, 124, 128-134, 135f., 140f.; *Relations with the environment* page 172.	**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 79-83; *Relations with stakeholders* pages 163f.; *Relations with the environment* page 173.	**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 28-33, 36ff.; *Relations with stakeholders* pages 135f. **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. ...in the 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 28-33, 36ff.; *Relations with stakeholders* pages 135f., 140ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 153f., 141ff.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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 136, 140f.	**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; **paragraph 2, letter c):** impact...on health and safety
	414-2 Negative social impacts in the supply chain and actions taken. *Relations with stakeholders* pages 136, 140ff.	**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.** *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 162ff. **Topic Boundary: Acea Group.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 36ff.; *Relations with stakeholders* pages 162ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 162ff.	**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 162.	**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 36ff.; *Relations with stakeholders* pages 113, 163f.; *Relations with the environment* pages 181, 185-187. **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. ...in the 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 36ff.; *Relations with stakeholders* pages 111-113, 163f.; *Relations with the environment* pages 181, 185-187.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 113, 163f.; *Relations with the environment* pages 181, 185-187.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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 76ff. and table no. 12; *Relations with stakeholders* pages 108-109 table no. 25, 111-113; *Relations with the environment* pages 181, 185-187.	**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* page 173.	**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.** *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 91-97, 97-118, 120, 122ff., 142, 162. **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. ...in the 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 36ff.; *Relations with stakeholders* pages 91-97, 97-118, 104-105 table no. 21, 105 table no. 22, 120, 122ff., 142, 162.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff.; *Relations with stakeholders* pages 91-97, 97-118, 120, 122ff., 142, 162.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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 the main parameters relating to the quality of water distributed and in respect of the commercial, contractual and technical quality performance of the services managed in the water and energy sectors, subject to regulation by the national sector authority (ARERA). *Relations with stakeholders* pages 97-118, 101 table 20, 104-105 table no. 21, 105 table no. 22, 106 table no. 23, 111 table no. 26, 114-115 table no. 27, 115-116 table no. 28, 116 table no. 29, 118 table no. 30, 119, 122-127; *Relations with the environment* pages 185-187.	**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 97-118, 101 table 20, 104-105 table no. 21, 105 table no. 22, 106 table no. 23, 114-115 table no. 27, 115-116 table no. 28, 116 table no. 29, 118 table no. 30, 120f., 123f., 162f.	**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 142, 162f.	**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 36ff., 71f.; *Relations with stakeholders* pages 122. **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. ...in the 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 36ff., 71f.; *Relations with stakeholders* pages 122, 155.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff., 71f.; *Relations with stakeholders* pages 122, 155.	**Art. 3 paragraph 1, letter b)**: the policies implemented 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.** During the year, 118 relevant requests were received for the exercise of the rights referred to in art. 15-22 of Regulation EU 679/2016 – GDPR (requests for updating, cancellation, modification, refusal of consent, etc.). An investigation was performed for all of them and there is no evidence of the initiation of proceedings by the Privacy Authority in this respect.	**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 36ff; *Relations with stakeholders* pages 113-118, 162. **Explanation of the material topic and its Boundary.**	**Art. 4 paragraph 1**: the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. ...in the 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 36ff.; *Relations with stakeholders* pages 113-118, 120f., 124, 132, 162.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b)**: the policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate identity* pages 36ff; *Relations with stakeholders* pages 113-118, 124, 162.	**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 101 note 38, 121, 162f.; *Relations with the environment* page 173.	**Art. 3 paragraph 1, letter b)**: the policies implemented by the company...and the results achieved through them

INDEX OF CHARTS AND TABLES

CHARTS

TABLES