3

RELATIONS WITH THE ENVIRONMENT

ENVIRONMENTAL SUSTAINABILITY AND THE PRIMARY CHALLENGES

In line with the **Green Deal** and the "Next Generation EU" recovery package, Italy has published the **National Recovery and Resilience Plan (NRRP)**, outlining the challenges in the short-term, also with regard to environmental sustainability, and the economic tools to achieve the established goals. The Plan sets out large investments in the **circular economy** and sustainable agriculture, in **renewable energy**, in the use of hydrogen and in the **national electricity grid supporting mobility**, in **energy efficiency**, and in the **protection of the land and water resources**, which will support the country in the **ecological transition**.
Although the health emergency continued in 2021, European guidelines were relaunched, with the goal of swiftly reaching climate neutrality by 2050, as established by the Paris Agreement and the Sustainable Development Goals, and supporting economic recovery of businesses across the area.
The pathway to 2050 involves intermediate targets for 2030, such as achieving a 40% quota of renewable energy (of total generation), as required by the Green Deal, halting deforestation and a minimum 30% reduction in methane emissions, defined by recent COP26 agreements (see info. box on *COP26 and 2021 climate change appeals*).
Acea has an important role to play in the achievement of these goals through development projects in the field of the **circular economy**, and in the context of **smart cities** through an **increase in renewables**, increased **resilience of electrical and water infrastructure**, a focus on safeguarding **water resources** and **technological innovation** for the management of infrastructure.

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.
Specifically, with regard to GHG emissions, again in 2021 Acea participated in the **CDP - Carbon Disclosure Project**, achieving a score of A-, confirming its *leadership* position (see *Corporate identity* info. box in the chapter *Strategy and sustainability*). Additionally, Acea was part of a working group together with A2A, Edison, Enel, the Hera Group, the Sofidel Group, Maire Tecnimont, Pirelli, Salvatore Ferragamo, Snam, Terna and VIU to develop the position paper ***Italian businesses moving towards decarbonisation: a fair and inclusive transition***. Officially presented on 19 January 2022 at the Italian Pavilion at the Dubai Expo the position paper had "the goal of demonstrating and developing the commitment of Italian companies that have signed the UN Global Compact on Decarbonisation, to play their role in achieving the objectives of the Paris Accords and the goals the European Union has set itself, to achieve climate neutrality by 2050"[113].
Meanwhile, with regard to a broader approach to climate change, Acea completed an important **project for alignment with the international recommendations of the Task Force on Climate-related Financial Disclosures-TCFD**, leading to the publication in 2022 of the company's first dedicated Report (see info. box for details in the section *Environmental and climate risks: in-depth analysis and disclosure*).

With regard to the **management of water**, in agreement with the relevant institutions, Acea continued preparatory actions for the **construction of the new upper section of the Peschiera-Le Capore Aqueduct** to safeguard the water supply in the city and province of Rome. Review of the project documentation has been launched and a report has been prepared aimed at defining the methodology for estimating CO_2 emissions generated by creation of the infrastructure (**project carbon-footprint**).
Acea has played a primary role with regard to the **circular economy**, for a number of years, with the aim of **reducing waste of resources**, for example by utilising process waste, and enabling **recovery of energy** and **secondary raw materials**. In this context, the Group has progressively expanded in the field of waste management (Environment Segment). With reference to financial year 2021, the companies Berg and Demap enter the scope of reporting, operating in the areas of storage, disposal and treatment of waste, as well as the construction of treatment plants, in the case of the former, and selection and packing of urban waste for consortia and other customers, in the case of the latter.
With regard to the circular economy, of particular interest there is also the innovative **BIOREF** research project, carried out by Acea Elabori in cooperation with IRSA-CNR, which is aimed at recovering products with high added value during transformation of the organic portion of urban waste and biological sludge. The project is the result of a partnership launched in 2020 with the signing of a **memorandum of understanding between CNR and Acea** for the technological development of waste-processing and treatment procedures (see also the chapter *Institutions and the company*).
During the **Ecomondo** trade fair, **Acea Ambiente** received a special mention from ISPRA for its **environmental declaration videos** and **efficient communicative use of the EMAS logo** (Eco-Management and Audit Scheme). Acea Ambiente was the only organisation in the waste sector recognised in this way. The videos, each around 15 minutes long, presented Acea Ambiente's commitment to safeguarding the environment and to the reduction of CO_2 emissions through the use of innovative technology, in line with the sustainability goals of the UN 2030 Agenda. The videos were shown at the Acea stand at Ecomondo and can also be watched online on the Group's website.

113 www.globalcompactnetwork.org/it/pubblicazioni-e-stampa-ita/pubblicazioni-gcni.html.

ACEA PROJECTS AT ECOMONDO 2021

Again in 2021, the Acea Group took part in **Ecomondo**, the most important trade fair for green and circular-economy sectors in the Euro-Mediterranean area, held in Rimini from 26 to 29 October. The event focuses on the chain of production and supply of the circular economy and offers a rich variety of initiatives and opportunities for dialogue every year. It supports international networking between companies targeted at development of an innovative and sustainable business ecosystem. Areas covered included energy, transport, and the recovery and exploitation of raw materials, with a focus on the European Green Deal and the Recovery Fund. The **Chief Executive Officer of Acea** spoke in the international plenary session on the Green Economy, dedicated to "Global challenges for businesses".
Acea had a 200 m^2 Group stand at the event, where it presented its most recent initiatives. These included a waste-management project called **SmartComp**, which enables on-site treatment of organic waste for the production of compost. **E-mobility** and the issue of sustainable management of water resources were featured with the new **Waidy Wow app**. The stand also presented the **Urbees** project for biomonitoring of air quality using bees, as well as the development of technologies for sustainable waste management, such as the new **Gasiforming** technology patented by Acea and developed in collaboration with the Politecnico di Milano university and the Inter-university Consortium for Materials Science and Technology (INSTM), to transform a mix of non-recyclable plastics into green fuels. Specifically, this project is aimed at exploiting *plasmix* (waste that cannot otherwise be separated from the mechanical sorting processes of plastics) through gasification for the production of syngas, a product forming the basis for the majority of organic composts sold by the basic chemicals industry. The zero-impact process enables reuse of all the different plastics currently used for waste-to-energy generation or that go to landfill.
During the event, a **memorandum of understanding was signed between Acea Innovation and Ancitel Energia e Ambiente**, aimed at the development of innovative projects on behalf of municipalities, public administrations and businesses. This strategic partnership is rooted in the creation of a specialised working group to identify regulatory instruments, opportunities for access to funding and planning actions based on the specific characteristics of local, infrastructural and economic contexts, with the goal of facilitating and accelerating the development of green-energy policies, energy-efficiency models, design of technology and implementation proposals aligned with circular-economy models and to promoted their rapid implementation.

Overall at Ecomondo, eight scientific projects were presented, three article were published — included in the documentation for conferences — two round tables were organised by Utilitalia and Enea/Italian Ministry of Economic Development, on the topics of "Laboratories and control of water quality: new challenges" and "Critical raw materials and the new european action Plan: strategies for more secure and sustainable supplies". In addition, two round tables were organised on research and relationships between businesses and the scientific community (research and technology hubs to face the challenges of the NRRP), with participation of several of the most prestigious Italian universities, and on the topic of delocalisation of waste treatment and the development outlook, with the participation of authoritative figures from the academic world.

ENVIRONMENTAL AND CLIMATE RISKS: IN-DEPTH ANALYSIS AND DISCLOSURE

CLIMATE RISKS

Climate change is one of the biggest environmental and social challenges of our times. Whilst the Covid-19 pandemic has been an emergency priority for the last two years, climate change continues to have grave impacts at a local and global level.
The United Nations Climate Change Conference held in Glasgow in November 2021 ended after two weeks of negotiations between the Parties to the United Nations Convention on Climate Change with significant progress made (see info. box for details). Nevertheless, the commitments made in Glasgow leave scope for further progress to be defined in the coming years, in order to reach the goal of containing the temperature increase to within 1.5°C.

COP26 AND 2021 CLIMATE CHANGE APPEALS

On 4 October 2021, shortly before COP26 in Glasgow, held from 31 October to 12 November, religious leaders representing leading world faiths united to request that the international community strengthen their ambition and intensify climate action. At the meeting Faith and Science: *Towards COP26*, promoted by the Holy See and the British and Italian Embassies to the Holy See, around 40 religious leaders **signed a joint appeal**, presented by Pope Francesco to the COP26 President-Designate, Alok Sharma, and the Italian Minister for Foreign Affairs, Luigi Di Maio, calling for the world to reach zero net carbon emissions as swiftly as possible and to limit the increase in average global temperature to 1.5°C above pre-industrial levels. At the Pre-COP26 event, organised in Milan from 30 September to 2 October, Italian Prime Minister Mario Draghi made a speech stressing the importance of taking swift action to attempt to overt the climate crisis and avoid paying "*a higher price for the climatic disaster that will occur*". The Prime Minister also reiterated the need for more ambitious targets and identified the pandemic as an opportunity to drive countries towards the right measures to fight climate change and support families in difficulty. At the end of the event, a document was presented by young environmental activists from all around the world containing proposals to invert current climate trends, including halting funding for the fossil-fuel industry, a transparent financial system for the climate and strengthening of adaptation measures.

COP26 ended with ratification of numerous agreements, one of the most important being the **Glasgow Climate Pact**, with which countries undertake to maintain the global temperature increase within 1.5°C compared to pre-industrial levels. Other important agreements include:

- **the agreement against deforestation**, signed by the leaders of more than 100 countries, who promise to halt it by 2030. The significance of this agreements lies in the fact that the signatory countries host 85% of the world's forests
- **renewed cooperation between the United States and China** in the climate battle. Both states declared that they would cooperate to achieve the goal of limiting global warming to below 1.5°C, as established in the Paris Agreement, by "taking more decisive and ambitious climate action in the next decade"
- **the Global Methane Pledge** officially launched by the European Union, this is an EU and USA joint initiative that has mobilised over 100 countries to reduce their collective emissions of methane by at least 30% by 2030, compared to 2020 levels.

In this context, **Acea** has continued its **climate-change mitigation and adaptation strategy** i) with an increase in the energy efficiency of Companies and, regarding water, with the reuse of purified wastewater in agriculture ii) implementing actions aimed at increasing the resilience of infrastructure, and iii) adopting a plan to **significantly increase generation from renewables**[114], and with the dual objective of achieving a **high level of efficiency for final domestic usage** and **usage in energy processes**, and **reducing carbon intensity** (gCO_2/kWh produced). The results obtained to date are shown in Table no. 62 on energy intensity indices and in Table no. 68 on emission intensity indices.

Acea assesses **climate risks**, **classifying them into physical and transition risks**, in accordance with the CDP Questionnaire (see *Corporate identity* info. box in the chapter *Strategy and sustainability*). As noted, at the end of 2021, **in synergy with the main Group companies**, it completed the first project for alignment with the Recommendations of the **Task Force on Climate-related Financial Disclosures (TCFD)**, which will also continue in 2022, **broadening the analysis** of the different types of potential impacts generated by climate change on the businesses managed (see info. box for details).

ACEA'S CLIMATE REPORT FOR ALIGNMENT WITH INTERNATIONAL TCFD RECOMMENDATIONS

The **11 Recommendations** of the Task Force of the Financial Stability Board (**Task Force on Climate-related Financial Disclosures – TCFD**)**on Climate-Related Financial Disclosures** currently represent the benchmark model at international and EU level. They are **applicable to all organisations**, are **focused on risks** and **opportunities** connected to climate change and increasing the capacity for a panorama based **on precise analyses of scenarios**. In June 2019, the European Commission issued a Communication entitled "Guidelines on non-financial reporting: Supplement on reporting climate-related information", which, whilst not binding, "encourages companies" to adopt the recommendations of the TCFD.

Facing the global challenge of the fight against climate change, and on the basis of the experience it has gained in the CDP field, Acea decided to launch a project between 2020 and 2021 to improve management in this area, according to the TCFD approach, strengthening its expertise in the **application of international climate scenarios**.

Specifically, the project involved **Acea Ato 2**, the main Group Company operating in the water sector, **Acea Ambiente**, which runs plants for WtE, composting, treatment and recovery of waste, **Acea Produzione**, which manages power plants, **Areti**, the distributor of electricity, and certain **key functions of the Parent Company**. For this initial process of alignment, the Companies **identified priority physical and transition risks** for assessment, linking parameters related to these risks with scenario analyses.

Specifically, in terms of physical risks Acea Ato 2 verified the risk of drought and water stress, Acea Ambiente and Acea Produzione assessed the risk of lightning strikes, and Areti assessed the risk of flooding, while the most significant transition risk was that of carbon pricing.

The project was completed at the end of 2021, with **results that will be presented** in an independent **Climate Report** to be published in 2022. Continuation of analyses is planned, focused on further risk types.

114 More specifically, in 2021 Acea Produzione purchased/installed some photovoltaic systems for 20 MW of power, reaching a total of 72.5 MW.

ENVIRONMENTAL MANAGEMENT

The majority of Group Companies have implemented **Integrated Management Systems** certified in accordance with standard UNI EN ISO (see info. box *Corporate Identity* in the chapter *Corporate governance and management systems*). The Parent Company itself has an **Integrated Management System with Quality**, **Environment**, **Safety and Energy components** that facilitates environmental *compliance* and a **Management and sustainability systems Policy** that guides the Group's approach to respecting and protecting the environment, also in line with the principles in the *Code of Ethics*.
The commitment of the Operating Companies to maintaining the efficiency of the Management System for environmental matters does not entirely exclude situations, usually provoked by contingent circumstances, that generate **non-conformities** that may be challenged by the competent Control Bodies. During the year the main operating companies of the group received **around 200 environmental fines**, with the consequent payment of **approximately € 250,000**. An additional **80 environmental disputes** are currently being settled.
The actions taken, and specifically the complete closure of biofilters and creation of three chimneys for atmospheric emissions, the Aprilia plant was released on 18 March 2021. November 2021 saw issue of a preventive seizure order for assets owned by Gesesa, with a value of € 78 million, due to objections of an environmental nature pursuant to Italian Legislative Decree 231/2001. The order was appealed by the Company and the Judicial Review Court, having accepted the appeal, cancelled the order in December.
Environmental problems of greater significance are forwarded to the Units responsible, which establish the facts reported and request the necessary action, as well as providing feedback to the Bodies involved. 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 may 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 the Company 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[115]. 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 Areti Risk & Compliance and Safety Unit **carries out the instrumental checks** in response to the disputes. **In 2021 four complaints were processed**, which have not yet been closed as the counterparties have submitted appropriate appeals to the relevant Courts.

SAFEGUARDING OF LAND AND BIODIVERSITY

Areas connected to conservation and the promotion of biodiversity have an increasingly important role in the environmental agenda of leading international institutions. These are set out in the UN Sustainable Development Goals (Agenda 2030) and, in turn, with focus of the European Green Deal, concentrating on the main causes of this loss of biodiversity, including methods of land use and water basins, excessive exploitation of natural resources and pollution. The European Union, which in 2020 published *EU Biodiversity Strategy for 2030* (COM (2020) 380 final), is focused on defining binding targets to restore ecosystems that have been damaged, improve the health of habitats and species under protection, reduce pollution and re-green urban areas. Furthermore, Regulation 852/2020 (Taxonomy) includes the "protection and restoration of biodiversity and ecosystems" among the six environmental goals with which it is structured (see also *Disclosing sustainability: methodological note*).

POLICIES AND TOOLS TO PROTECT BIODIVERSITY

The topic of biodiversity is at the heart of the **Conference of the Parties (COP15)**, aimed at evaluating the successes and failures of the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets[116] and drafting a global agreement to halt and turn around the decline in biodiversity. Negotiations between the parties, launched in 2019 to define a global agreement along the lines of the Paris Climate Agreement, generated **an initial draft document in 2021**, defining **four goals for 2050**: **to enhance the integrity of all ecosystems**, reduce the rate of extinctions and **guarantee the genetic diversity** of species; **value nature's contributions to people**, promoting their maintenance and enhancement, and supporting the **global development agenda for the benefit of all**; closing the **gap between financial and other means of implementation** currently available and necessary to achieve the goals set.
The challenges recognised at the international level have prompted some important organisations to launch initiatives to support achievement of the goals. These include the **TNFD (Taskforce on Nature-related Financial Disclosures)**, created through a partnership of Global Canopy, United Nations Development Programme (UNDP), the United Nations Environment – Finance Initiative (UNEP FI) and the World Wide Fund for Nature (WWF), with the aim of providing businesses with a framework to assess, manage and refer in relation to their dependence and impacts on nature, and the connected risks and financial flows. Better information will enable companies to incorporate the risks and opportunities linked to nature into their strategic planning, risk management and asset-allocation decisions.

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

116 The Conference of the Parties in Nagoya in 2010 defined the Global Strategic Plan for Biodiversity 2011-2020 and new targets, the 20 "Aichi Biodiversity Targets", to be achieved by 2020. These targets aimed to highlight the causes underlying biodiversity loss, to reduce the pressure on biodiversity and promote sustainable development, to improve the status of biodiversity at all levels, to promote the benefits deriving from biodiversity and ecosystem services, and to support the development of expertise and capabilities to reduce biodiversity loss and to conserve resources in the period 2011-2020, through programmes of engagement.

In Europe, the ***EU Biodiversity Strategy for 2030*** represents an ambitious, long-term plan to protect nature, halting the current process of ecosystem degradation. This includes four specific actions: i) establishing a **larger** EU-wide **network of protected areas on land and at sea** ii) launching an **EU nature restoration plan** focused on how to manage them sustainably, addressing the key drivers of biodiversity loss iii) introducing **measures** to enable the necessary transformative change in awareness and iv) introducing **tools** to tackle the **global biodiversity challenge**. The approach also includes availability of funding to support actions and definition of a **new European legal and governance framework**. The Commission will propose binding targets for the restoration of ecosystems, will include a mechanism for review and tracking involving clear indicators to assess the progress of strategy implementation, and will establish any corrective actions to be taken.
In Italy, for adoption of the European policy, **in 2021** the **Ministry for Ecological Transition** launched a pathway for the definition of the **National Biodiversity Strategy for 2030**, through which it intends to contribute to the international goal of guaranteeing that by 2050 all ecosystems on the planet **are restored**, **resilient and adequately protected**.
Furthermore, the Ministry has published the ***IV Report on the state of natural capital in Italy*** (2021), which provides an update on the situation in Italy, with a particular focus on biophysical and economic assessment of ecosystem services and gives a panorama of strategies and actions to achieve the proposed goals.

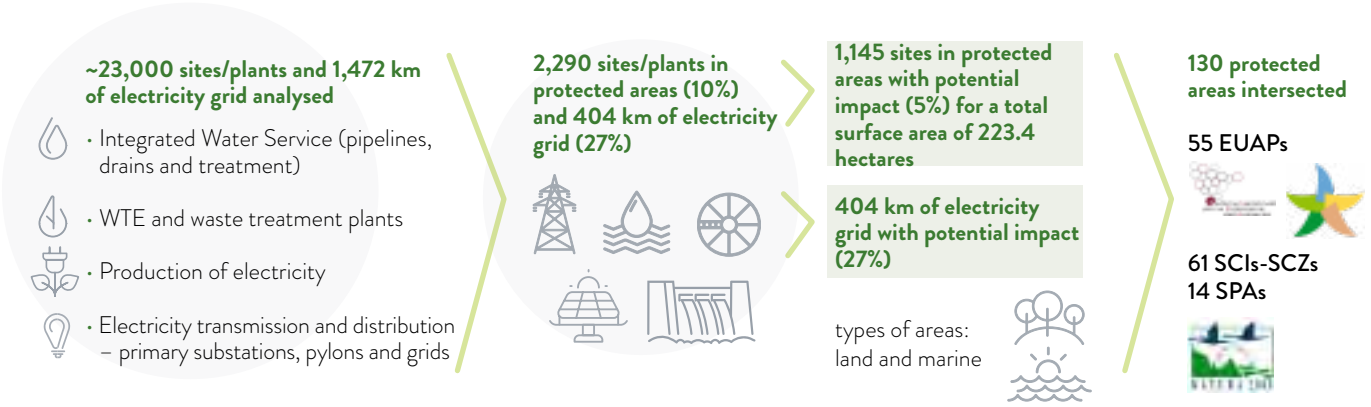
Acea Group Companies conduct activities that could **potentially** have **impacts on biodiversity**, such as processing waste, operation of power generation plants, management of water sources and treatment plants and the distribution of electricity. On this basis, Acea **focuses closely on safeguarding the ecosystems in areas where it operates**, as defined in the procedures of the **Environmental Management Systems**, which pursue continuous improvement with a view to reducing environmental impacts, in the context of assessments for the **planning and creation of plants**, as well as **management** of operational areas. The Companies manage processes in compliance with the environmental authorisations issued to each plant. The environmental provisions contained in the authorisations issued by the competent administrative authority are established on the basis of technical and environmental assessments considering the area surrounding each plant, to **safeguard the flora and fauna** present and protect the natural environment.
Specifically, the activities involved in the **Integrated Water Service** are aimed at the **maintenance of optimal environmental conditions** and sites where water is drawn, near to springs, are managed with attention to the **conservation of existing ecosystems and the preservation of the water flow**.
Likewise, with **treatment activities**, the primary goal is that **discharges**, after appropriate treatment, comply with the limits established by regulations in the sector and are therefore **compatible with the natural habitats of the receiving bodies of water**. In implementation of this commitment, targets have been established for **improved treatment efficiency** for certain Water Companies (see the paragraph *Strategy and sustainability, The 2020-2024 Sustainability Plan and operational goals*).
For **hydroelectric power stations**, **Acea Produzione** manages withdrawals and inputs of water in compliance with the Concessions issued by the competent authorities and with applicable regulations. **Management Projects** have been prepared for all reservoirs (pursuant to Italian Decree of the Ministry for the Environment of 30 June 2004), with relevant impact studies for those in protected areas. The company provides for the **protection of the habitats of all species present** 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 changes in the native flora of the banks. In addition, protection of the aforementioned basins ensures the living conditions of the "resident" and "migratory" birds, which use these sites for reproduction/feeding even during migration.
Other plants in the **energy segment**, active in the generation of electricity using fossil fuels and waste-to-energy, are incompatible with protected areas and therefore do not fall within them.
Acea has **identified those of its sites/plants located in areas with a high level of biodiversity or Protected Natural Areas (EUAP) recognised nationally and sites of the Natura 2000 Network** (SCIs, SCZs and SPAs) [117] established at European level, through **mapping of the infrastructure of the main operating companies** (Acea Ato 2, Acea Ato 5, GORI, Gesesa, AdF, Acea Ambiente, Acea Produzione and Areti)[118]. Analysis **conducted on over 23,000 sites/plants**, including pylons but excluding underground electricity grids and pipelines, has shown that **2,290 sites**, corresponding to **approximately 10%**, **represent potential interference with the system of protected areas**. Plants of the Environment Segment, carrying out waste-processing activity, are not located in protected areas.
Considering, instead, **only the sites which could have a more significant impact on biodiversity**, **the number drops to 1,145** and the total percentage to **5%**.
Significant impacts have been estimated taking into consideration the **design**, **implementation and management phases of plants**, and therefore exclude sites/plants with minimal impacts, such as the Water Kiosks of Acea Ato 2, the secondary substations of Areti and the photovoltaic plants included considered as residential plants of Acea Produzione.
The analyses conducted on the **overhead electricity distribution network (1,472 km analysed)** showed interference with protected areas for approximately **27%**, corresponding to **404 km of network**.
The **total number of natural areas intersected by sites/plants/networks with a significant impact total 130** (55 EUAP Protected Natural Areas, 61 Sites of Community Interest (SCIs)/Special Conservation Zones (SCZs) and 14 Special Protection Areas (SPAs)[119] for a **total area of 223.4 hectares**.

117 The Protected Natural Areas (EUAP) at national level are those areas recognised officially by the State pursuant to Framework Law 394/91. The Natura 2000 Network, established pursuant to "Habitat" Directive 92/43/EEC, is the main policy instrument of the European Union for the conservation of biodiversity. It is composed of Sites of Community Interest (SCIs) which are then designated as Special Conservation Zones (SCZs) and also includes the Special Protection Areas (SPAs) established by "Birds" Directive 2009/147/EC on the conservation of wild birds. The areas composing the Natura 2000 network are not reserves where human activities are excluded: the Directives intend to guarantee the protection of nature whilst also taking "account of economic, social and cultural requirements and regional and local characteristics".

118 Areas were mapped using QGIS, an open-source GIS application that enables viewing, organisation, analysis and presentation of spatial data, processing each layer of the sites/plants belonging to the Companies.

119 Where SCIs/SCZs and SPAs coincide, the areas are counted once amongst SCIs/SCZs. The figure for areas intersected was revised compared to that published last year, after verification.

Chart no. 49 – Acea sites/plants analysed, with potential impacts on biodiversity and protected areas intersected



NOTE: where SCIs/SCZs and SPAs coincide, they are only considered once under SCIs/SCZs.

In the areas affected, there are many **animal and plant species**, including some on the **International Union for Conservation of Nature (IUCN) Red List of Threatened Species** (in the categories "vulnerable", "endangered" and "critically endangered")[120], i.e. at risk of extinction in the short or medium term. These species therefore represent a conservation priority.

A total of 45 species are potentially affected. Specifically, there are **3 plant species** (1 critically endangered and 2 endangered) and **42 animal species**, of which 7 are critically endangered, 9 are endangered and 26 are considered vulnerable (see Chart no. 50 for details).

Chart no. 50 – Number of species listed in the IUCN Red List with habitat in the protected areas intersected

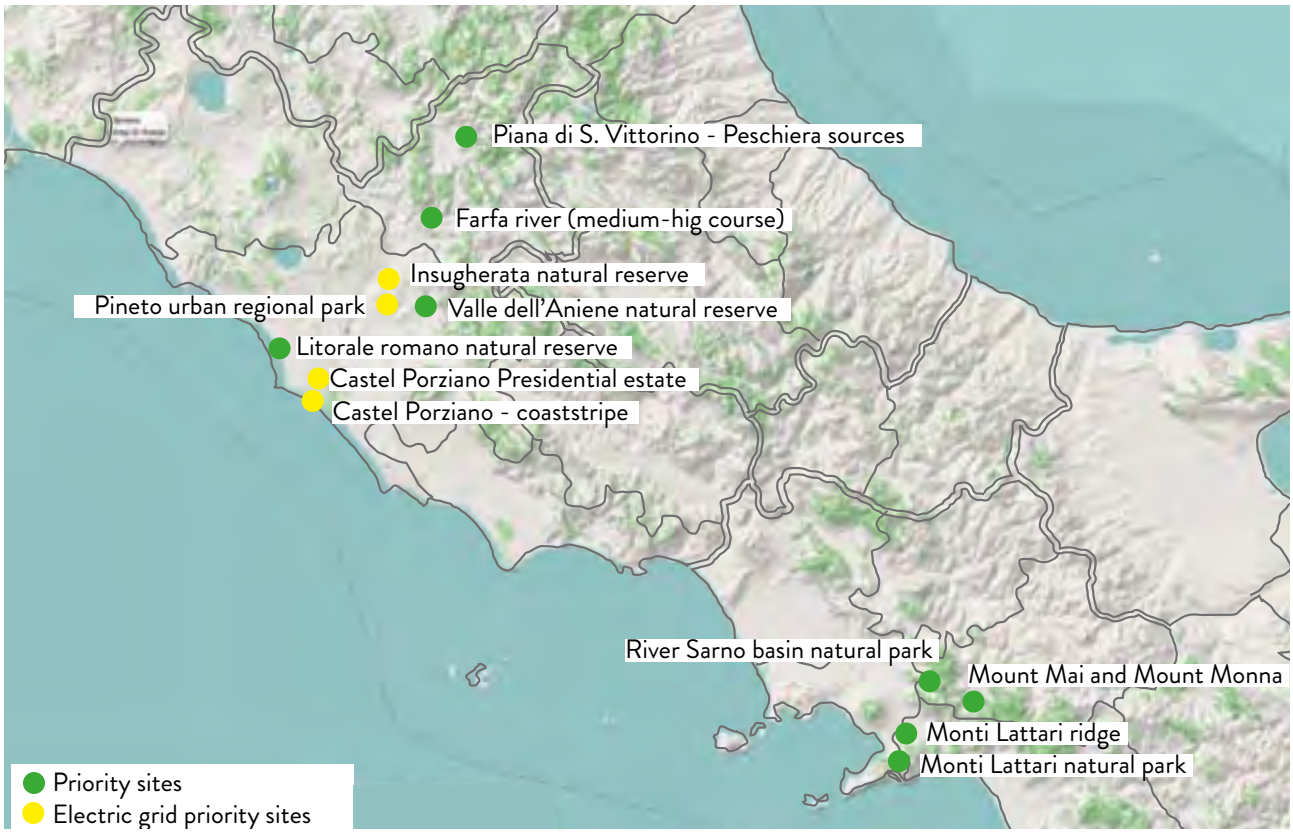
In 2021, Acea carried out **further detailed analysis** of potential impacts on biodiversity, with the aim of **identifying "priority" areas with high levels of biodiversity** in which sites/plants/networks of Group Companies are located, i.e. the most fragile habitats or those most greatly impacted by external factors. For this purpose, data for the protected areas intersected was supplemented with information provided by the ***Carta della Natura***, a national IT system created by ISPRA (Italian Institute for Environmental Protection and Research), which is a cartographic and evaluation tool used to **identify the distribution of Italian ecosystems across the country** and analyse them based on their current state, considering physical, biotic and human factors.

Based on this information, it was possible to internally prepare an **Environmental fragility index (EFI)**, aimed at evaluating the different habitats present and the portion of land occupied, the fragility of the habitat and the type of sites/plants present, for each protected area intersected by the activities of the main Group Companies[121]. This enables identification of **areas with high levels of biodiversity**,

120 There are 11 risk categories, from Extinct (EX), applied to species for which there is definitive evidence that the last individual example has died, and Extinct in the Wild (EW), assigned to species for which there are no longer natural populations but only individuals in captivity, through to the category Least Concern (LC), applied for species that are not at risk of extinction in the short or medium term. Between the categories of Extinct and Least Concern, there are the threatened categories, which identify species at progressive risk of extinction in the short or medium term: Vulnerable (VU), Endangered (EN) and Critically Endangered (CR).

121 For preparation of the EFI, the initial step was calculation of the relationship between the area of each habitat and that of the protected area containing it, generating a value for the portion of the protected site occupied by each habitat. This value was then multiplied by the fragility of the habitat as defined by ISPRA (Italian Institute for Environmental Protection and Research). Following this, all of the environmental fragility values of the habitats present in each protected area were added together. Having defined the EFI for each protected area intersected, this information was then cross-referenced with the individual Group plants with significant impacts located in the protected areas (plants identified as sites with potential impacts, from "low-medium to "high"). Finally, to identify the "priority" areas with high levels of biodiversity, the IFA was multiplied by the area intersected by the plants. The higher the value for the index, the higher the "priority" of the area.

to be considered as **priority areas**, due to their greater "vulnerability". In detail, **there are 12 of these areas**: in **eight** of these — Parco regionale dei Monti Lattari, Dorsale dei Monti Lattari, Piana di S. Vittorino - Sorgenti del Peschiera, Riserva naturale Valle dell'Aniene, Fiume Farfa (medium-high course), Parco regionale Bacino Fiume Sarno, Monte Mai e Monte Monna, Riserva naturale Litorale romano — **sites/plants** have potential impacts, on **four** there may be interference from **electricity distribution networks** (Parco Regionale urbano Pineto, Castel Porziano — fascia costiera, Castel Porziano Tenuta presidenziale, Riserva naturale dell'Insugherata).



Awareness of potential interference enables optimisation of operations and the Companies have planned and/or implemented **various actions to safeguard biodiversity**, some in "priority" areas with a high level of biodiversity, as summarised in the info box.

THE MAIN PROJECTS IN "PRIORITY" AREAS WITH A HIGH LEVEL OF BIODIVERSITY

"PRIORITY" AREAS WITH A HIGH LEVEL OF BIODIVERSITY	ACTIONS
Piana di S. Vittorino - Peschiera sources **River Farfa (medium-high course)**	The two areas are affected by the **Peschiera-Le Capore aqueduct system managed by Acea Ato 2** on which works are in progress to double the upper section of the aqueduct. The project meets the requirements of the **Envision protocol**, the first rating system for sustainable infrastructure, which evaluates the economic, environmental and social sustainability of infrastructure and includes specific evaluation criteria linked to biodiversity such as preservation of sites of high ecological value. In the river Farfa area, the Company has engaged the University of Naples Federico II for preparation of a technical and scientific study into the natural characteristics of the Farfa river that includes the collection site of the Le Capore spring. The study highlighted how the release of water downstream of the Le Capore springs has benefits on the ecosystem, supporting restoration of the natural river environment with its rich diversity of animal and plant species. For further information on the Peschiera project, see the info. box *works on strategic infrastructure, Peschiera-Le Capore and Marcio aqueducts: safety works and authorisations*.

River Sarno basin natural park	**GORI** is working on **important works to resolve pollution of the river Sarno hydrographic basin** through completion of the sewerage system and consequent collection and treatment. The project, carried out in synergy with various local players, also involves **the Marevivo Onlus environmental association** and will have significant impacts on recovery of the river ecosystem and, consequently on the entire Gulf of Naples. For further details, see the section Sustainability Plan and the info. box *Energy for the Sarno* in the section *Quality in the water area*, in the chapter *Customers*).
Valle dell'Aniene natural reserve	To check for any critical issues in the habitats surrounding the **major treatment plants** in Rome, **Acea Ato 2** has conducted special monitoring of **areas it is responsible for and the surroundings**. The studies conducted look at the treatment plants of Roma Nord, Roma Sud, CoBIS and in 2021 that of Ostia, the latter being located in the Riserva naturale Litorale romano area. The results achieved so far have demonstrated that the plants analysed, in particular those of Roma Nord and Roma Sud, **have a positive effect** on the ecosystem, constituting **synanthropic biodiversity hotspots**, i.e. places where species that coexist or are learning to co-exist with humans, tending to form a rich and stable ecological community. Indeed, the specific environmental conditions and the low impact of man-made structures facilitates the presence of an extremely particular wildlife community. Similar monitoring is planned for 2022 at the Roma Est treatment plant located in the **Valle dell'Aniene natural reserve area**.
Litorale romano natural reserve	In the **Litorale romano natural reserve** area, **Areti** is carrying out a programme of **decommissioning and demolition of overhead power lines and pylons**.

The initiatives launched by the Companies also involved other others, again of particular natural interest, although not classified as "priority" areas.
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. Specifically, in compliance with the *Memorandum of Understanding for restructuring of the electricity grid*, works continue for the **decommissioning and demolition of overhead power lines** within **important areas subject to protection**, including Parco di Veio, Riserva Naturale della Marcigliana and, south of Rome, Riserva Naturale Decima Malafede and Riserva Naturale del Litorale romano. For details of the works performed in 2021, see the section *Energy distribution* in the chapter *Energy Segment*. Furthermore, Areti and the Park Authority of **Parco naturale di Veio signed a pledge of commitment** with which the Company guarantees financial and operational support to launch **a plan** for the **monitoring of birdlife** with installation of **bird-deterrent devices** on earth cables of overhead lines, composed of plastic spirals that make the cables more visible, significantly reducing the risk of bird collision. Areti's commitment included the printing of two illustrated volumes providing information on nesting and wintering birds, a study on fatality rates of birdlife along high-voltage and medium-voltage power lines, updating and reprinting of the tourist map of the Veio Park with addition of the paths of power lines involved in the work.
For a number of years, on the SCI/SCZ sites of **Villa Borghese and Villa Pamphili**, **Acea Ato 2** has also been monitoring the presence of **Peregrine Falcons** in part of the **Acqua Vergine springs** area, a **species** which despite preferring open, wild areas, can nest in artificial structures, such as towers and bell towers in heavily built-up areas. 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). 2021 saw an excellent breeding result for the nest on the piezometer of the Salone water centre, with the hatching and growth of three peregrine falcons. The Company also has operations in the Castelli Romani area, where the **Parco regionale dei Castelli Romani**, is located. This regional park is characterised by its volcanic nature, which influences the chemical and physical properties of the water, and by limited water resources and a prevalence of wells. Here, in collaboration with the Municipality of Rocca Priora and the Park Authority, the Company has established **a project**, currently under analysis and evaluation by local authorities, for **redevelopment and restoration of the Pantano della Doganella marsh**, which has dried up over time, with the aim of recreating the conditions for **natural filling of the basin** with precipitation.
In the context of the project for development of the Water Safety Plan for the water systems fed by the waters of the Santa Fiora springs (see also the sub-section *Water Safety Plans*), **AdF** launched a **scientific partnership agreement with the Institute of Geoscience and Georesources of the CNR** (National Research Council) of Pisa, also aimed at assessing the vulnerability of the aquifer as a scientific knowledge base for definition of appropriate protection areas by the competent Authorities. In addition, in 2021 the Company supported **local authorities and associations** for projects to **protect local flora and fauna**, **combating the effects of climate change**, **habitat loss and/or the loss of specific pollinators**. These include support for the Research Centre into Biotechnical Tools in the Farming and Forestry Sectors (CRISBA) for the conservation of local flora (dunal plants and wild orchids) and the Posidonia Association for the development of a protocol for the proper conservation of the species, currently under series threat of extinction.
In 2020, as a tool to monitor **ecosystem quality** in areas where its plants are located, at the San Vittore del Lazio (Frosinone) waste-to-energy plant **Acea Ambiente** launched the project "**UrBees**", in collaboration with bee-keeping experts and the Sacro Cuore Catholic University, aimed at environmental monitoring by observing the **behaviour of bees**, **as bioindicator insects**. Biomonitoring is an innovative tool for environmental control that allows the **effects of pollution to be identified**, observing living organisms and their biological parameters through the study of ecological changes due to the effects of one or more polluting substances present in the biosphere.

Honeybees, in particular, are one of the best "sentinel species". They support plant biodiversity and enable determination of **qualitative and quantitative data regarding the health or lack thereof of a specific ecosystem**, **along with mapping of an area's biodiversity**. The observations made have highlighted **the overall good health of the bees and the absence of instances of unexpected illnesses or depopulation**. Thanks to the busy flight of the bees, 2021 saw production of "39-flower honey", in May, and "26-flower honey", in June, from a blend of 39 and 26 botanical species, respectively[122]. The area of the plant which houses the beehives has also been re-greened with species of plants recommended for bee-keeping (oleanders, laurel and boxwood). Finally, at other Acea Ambiente sites, green areas are created with **planting of native tree species** aimed at reducing the visual impact of installations and increasing the variety of plant and animal species in surrounding areas.

MANAGEMENT OF WATER RESOURCES, 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.

The supply system of the area managed by Acea Ato 2 is composed of **seven large aqueduct systems** that transport water 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, more than **13,600 km**[123]. In addition to this priceless natural resource, following upgrading works on the Grottarossa drinking water plant, Lake Bracciano, and the river Tiber also represent water reserves, after appropriate treatment, to be used only in the event of water emergencies.

EVALUATION OF GROUNDWATER AVAILABILITY

In accordance with that established by the criteria of the Water Framework Directive (WFD, 2000/60/CE), investigation of the availability, in quantitative terms, of potential groundwater resources and the possible impacts associated with the withdrawal of water resources from springs can be performed by monitoring certain variables through implementation of appropriate interpretive models.
The main aspects to monitor can be identified as precipitation (rain and snow), evapotranspiration, surface run-off and therefore infiltration into the soil in the area where the balance is assessed. For the refilling areas representative of the aquifers managed by **Acea Ato 2**, a continuous calculation methodology was implemented (from 1990 to today), for quantification of the components of the hydrological balance at a daily level. This methodology, re-proposed by Acea Ato 2 in accordance with national guidelines (Technical criteria for analysis of quantitative status and monitoring of groundwater stores. ISPRA 157/2017), whilst it is **still in the experimental phase**, can already be considered **a valid tool for monitoring the quantitative status of groundwater stores**.
Acea Ato 5 has continued a study on water availability performed on certain important sources. Analysis of precipitation and withdrawals has been performed for the years 2017-2021. Specifically, in 2021 a net **increase in precipitation** was recorded due to abundant rainfall in January and February, followed by a slight reduction until the summer. Rainfall patterns are therefore a primary factor in refilling springs. This information and the study methodology have enabled forecasting of low availability.
At AdF, in order to monitor the impacts of water withdrawals on sources used, an initial report was prepared on sources, which, on a monthly basis, allows assessment of significant changes in methods of utilising wells and significant reductions in the available resources from the source. A second phase involved creation of **dashboards dedicated to real-time evaluation of the quantitative and qualitative characteristics of sources**, on the basis of the information gathered from remote monitoring by the company and regional meteorological and hydrogeological data. Also on the basis of this monitoring, three-monthly updating is carried out on a document shared with the Tuscan Water Authority regarding possible water-emergency status, with indication of critical issues involving "drought" (lack of resources) and management or infrastructural actions planned to handle such issues.

In the Municipalities that fall within OTA 5 Lazio Meridionale - Frosinone, **Acea Ato 5** manages **80 sources**, **74 of which are active**, with 39 wells/well fields and 35 springs. In addition to these sources, the Company purchases/sells water through exchange points with other operators and with a Municipality in a neighbouring area. From the sources, the water is transported to the Municipalities through a supply network, which follows a complex distribution network beginning with tanks and dividing elements before reaching all users served, and totalling **6,027 km**.
Gesesa, which operates in district 1 "Calore Irpino" in the Campania Region, for the supply of drinking water, manages approximately **2,060 km** of network, springs, primarily seasonal, and collects the majority of the water utilizing groundwater wells. There are three large collection systems: the Benevento plain, constituted of two well fields Pezzapiana and Campomazzoni, a well located at the aquifers of Monte Taburno and a well located near to the Grassano spring.
AdF, which operates in Optimal Territorial Conference no. 6 "Ombrone" (ex OTA 6), manages the drinking water system through a network that stretches approximately **8,330 km**. Almost 50% of the water is drawn from the **Fiora springs** located on the slopes of Monte Amiata, while in the Siena area, the most significant systems are the Luco well field and the Vivo aqueduct, which takes water from the three springs of Amiata Ermicciolo, Ente and Burlana, located in the Vivo d'Orcia area.
The water system managed by **GORI** in the **Sarnese Vesuviano**

122 A photo-report has been published on the project, available at the following link: www.youtube.com/watch?v=P-IPb6F0i4M
123 The value is higher than that added in chart no. 54, which features a geo-referenced value.

territorial district has three main subsystems: Vesuviano, Monti Lattari and Ausino. The Vesuviano System is the most extensive of the three and arises from the functional integration of the Sarno aqueduct and the Vesuviano aqueduct, in turn interconnected with external elements of the Campano aqueduct, the West Campania aqueduct and the Serino aqueduct. This is responsible for supplying the majority of the OTA 3 municipalities. The Monti Lattari System serves the territory of the Sorrento Peninsula, the Island of Capri, and the Stabiese plain. Finally, the Ausino System, represents the supply framework for the municipalities of the OTA that occupy the eastern edge of the territory. The water drawn from endogenic sources represents approximately one third of the total, while the remainder originates from systems outside the OTA.

All of the Companies guarantee operation and correct maintenance of collection infrastructure, primary and secondary water plants, supply systems and distribution networks and user meters. Extraordinary maintenance is also performed (renovation, upgrading and/or expansion of plants and networks).

WORKS ON STRATEGIC INFRASTRUCTURE, PESCHIERA-LE CAPORE AND MARCIO AQUEDUCTS: SAFETY WORKS AND AUTHORISATIONS

In 2021, Acea Ato 2 continued activities aimed at making the water supply system more secure, resilient and sustainable, in compliance with the Concession's capacity. In fact, having prepared the projects for the **New Upper Section - Peschiera** and **New Marcio Aqueduct**, Acea Ato 2 began planning further strategic works on a significant scale. This development took place despite difficulties during the pandemic in adapting to a constantly evolving regulatory framework:

- with Italian Prime Ministerial Decree of 16 April 2021, the Extraordinary Commissioner was appointed to "Safeguard the Peschiera-Le Capore aqueduct system"
- with Italian Decree Law 77/2021 - "*Semplificazioni bis*" (L. 29 July 2021, no. 108) the works in question were introduced in Annex 4 of art. 44 and will be subject to a specific authorisation procedure.

Following implementation of Decree Law 77/2021, the Guidelines were issued for drafting the technical and economic feasibility project to act as a basis for assignment of public contracts for works under the National Recovery and Resilience Plan (NRRP), **with which planning of large-scale aqueduct works has been aligned**.
Finally, with Italian Ministerial Decree of the Italian Ministry of Infrastructure and Sustainable Mobility (MIMS) 517/2021, in the context of "Safeguarding and modernisation of the Peschiera water system", four sub-projects were identified involving creation of important sections of supply systems/aqueducts, which could benefit from co-financing with sums from the NRRP. To access NRRP funding, these works must be completed by the deadlines set out in the Plan itself.

Table no. 47 indicates the location and surface areas in square metres of the zones subject to absolute protection[124]. It is noted that the sources illustrated are all drawn in "areas under water stress", as defined at international level [125]by the World Bank Institute. The water drawn is freshwater[126], apart from 1.2% of the amount drawn by AdF, corresponding to approximately 0.8 million cubic metres, which is from marine sources. The amounts drawn by the Companies from the springs listed are indicated in the *Environmental Accounts*.
To protect **areas where springs are located**, Acea Ato 2 also employs **satellite monitoring**. 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 suspect morphological variation**, such as new, unsurveyed constructions, earth movements, small landfills. The Company performs checks on site to identify any threats to water resources, ensuring **precise monitoring**. In fact, **in 2021**, **thanks to the use of a satellite to perform change detection** and additional inspections carried out along the supply and collection network, **65 violations were identified**.

Table no. 47 – The main sources under protection

sensitive area	municipality	area (m²) (*)
IN OTA 2 – LAZIO CENTRALE		
Peschiera springs	municipality of Cittaducale (Rieti, Latium)	375,322
Le Capore springs	municipality of Frasso and Casaprota (Rieti, Latium)	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	municipality of Vallepietra (Rome)	180,385
Ceraso springs and wells (Simbrivio aqueduct)	municipality of Vallepietra (Rome)	14,370
Pertuso springs	municipality of Trevi – Filettino (Latium)	133,711
Doganella springs	municipality of Rocca Priora (Rome)	350,000

124 The areas of absolute protection are the areas immediately surrounding the catchments or off-springs, as defined in Legislative Decree no. 152/2006.
125 www.wri.org/aqueduct
126 Water with total dissolved solids ≤ 1,000 mg/l.

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 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
S.M. La Foce spring and well field	municipality of Sarno (Salerno)	60,202
Fontana Grande source	municipality of Castellammare di Stabia (Naples)	330
centres of Murata, Pugliana, Casaliciello, Santa Lucia and Tartaglia	municipalities of Cercola, Ercolano, Pollena Trocchia, Roccarainola and San Giorgio a Cremano (Naples)	15,473
centre of Monte Taccaro and Angri well field	municipality of Angri (Salerno)	43,072
well field of Suppezza, Gragnano, San Mauro Montalbino, Mercato Palazzo and Santa Lucia	municipalities of Castellammare di Stabia, Gragnano, Nocera Inferiore and Sarno (Salerno)	46,610
wells of Traiano, Stromboli-Vesuvio and Petraro	municipalities of Castel San Giorgio, Mercato San Severino and 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 and Siano (Salerno)	10,657
4 wells in the province of Naples	municipalities of Castellammare di Stabia, Palma Campania, Roccarainol and San Giorgio a Cremano (Naples)	1,529
IN OPTIMAL TERRITORIAL CONFERENCE NO. 6 "OMBRONE"		
Spring of Galleria Alta – Galleria Bassa – Fonte Carolina	municipality of Santa Fiora (Grosseto)	37,046
Ermicciolo Spring	municipality of Castiglione d'Orcia (Siena)	3,885
Arbure Spring	municipality of Castel del Piano (Grosseto)	7,443
Ente Spring	municipality of Arcidosso (Grosseto)	327
Burlana Spring	municipality of Seggiano (Grosseto)	2,442
Luco well field	municipality of Sovicille (Siena)	10,063

(*) The surface area data is estimated.

ENERGY SEGMENT

SCOPE

The chapter *Energy Segment* includes Acea Produzione, the PV companies, Areti, the Acea Ambiente and Ecogena energy production plants (Ecogena is only included for data on energy produced and Energy Efficiency Certificates). Waste-to-energy activities are also described in the chapter Environment Segment.

1,009 GWh total energy produced: **69%** from renewable sources (**698 GWh**)

approximately **220,000 t of CO_2** saved through the production of **electricity** from **renewable sources** instead of traditional ones

16 MW installed and **4 MW** of **PV** purchased, for a total of **72.5 MW** installed

synergies between businesses: project defined involving **Roma Sud treatment plant** and **Tor di Valle power plant**

The Group, which operates in the **generation** of electricity and thermal energy, in the **distribution** of electricity in Rome and Formello, including management of public lighting, and in the **sale** of electricity, heating and gas, **manages the entire chain of production and supply** through the operations of separate independent Companies, as required by electricity-market regulations.
To improve the **management of distribution infrastructure**, Acea implements hi-tech innovative solutions — remote control, IoT and smart grids — enabling **increased resilience**. The increased flexibility of the grid also responds to the trend of increasing numbers of **prosumers** connected (see also chapters *Customers and the community* and *Institutions and business*).

ENERGY PRODUCTION: FOSSIL AND RENEWABLE ENERGY SOURCES

With the goal of increasing **generation of renewable energy**, in line with the development plan outlined in the Industrial Plan, in 2021 Acea acquired a further 4 MW in the photovoltaic segment and installed 16 MW, thus reaching 72.5 MW in total.

GROUP PLANTS

Through **Acea Produzione**, **the PV Companies**[127] and **Acea Ambiente**, the Group **generates electricity** primarily from renewable sources. **The majority of production is provided by hydroelectric plants** and **another significant portion**, also partially renewable, **from waste-to-energy plants utilising paper-mill waste** and **Solid Recovered Fuel** (SRF).
Acea Produzione is equipped with plants for generation from renewables, both hydroelectric and photovoltaic, and fossil fuels (thermoelectric), with the latter primarily through the **high-efficiency co-generation plant** of the Tor di Valle power plant, which had greater availability during the year. At this power plant, activity was also completed for construction of the third co-generation unit, composed of a 9.5 MWe internal-combustion engine, with an increase in installed power from 19 MW in 2020 to 28.5 MW in 2021.
The power park includes:

- **seven hydroelectric power stations** located in the Latium and Abruzzo regions for a total of **122 MW**,
- **2 thermoelectric power stations** located within the Municipality of Rome area: Montemartini (78.3 MW)[128] and Tor Di Valle (28.5 MW), for **106.8 MW_e total available installed capacity**,
- one **photovoltaic park**, for a total of **72.5 MW_p**.

127 For the PV Companies included, see *Disclosing sustainability: methodological note*.

128 The power station is operational only in the event of extraordinary energy demand, and operation can also be managed remotely from the control room at the Tor di Valle Power Station.

The generation of energy from waste-to-energy processing is assigned to **Acea Ambiente**, taking place at **two plants** located in San Vittore del Lazio and Terni, and both with percentages of **biodegradable** material (renewable source) varying between 40% and 50%. The total gross electrical power currently available is approximately **58 MWe**.
In addition, Acea Ambiente produces electricity using **biogas** derived from the anaerobic digestion process at the Orvieto Technology Hub and the composting plants of Aprilia and Monterotondo Marittimo.

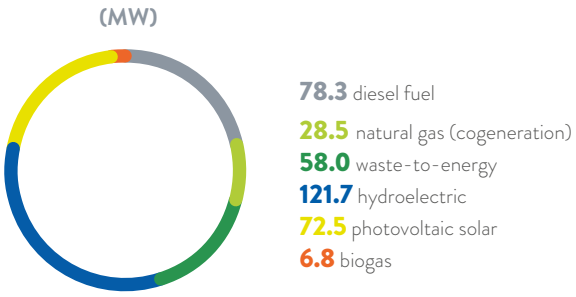
Table no. 48 – Installed power of the electric power stations of Acea Produzione

hydroelectric power stations	thermoelectric power stations
A. Volta di Castel Madama (Rome) power station - gross power **9.4 MW**	Tor di Valle power station: high-efficiency cogeneration (CAR) section (*) (Rome) methane fuel - gross power **28.5 MW**
G. Ferraris di Mandela (Rome) power station - gross power **8.5 MW**	Montemartini power station (Rome) diesel fuel - gross power **78.3 MW**
Salisano power station (Rieti) - gross power **24.6 MW**	
G. Marconi di Orte power station (Viterbo) - gross power **20.0 MW**	
Sant'Angelo power station (Chieti) - gross power **58.4 MW**	
Cecchina power station (Rome) - gross power **0.4 MW**	
Madonna del Rosario power station (Rome) - gross power **0.4 MW**	
general total: gross capacity 229 MW	

(*) The CAR plant in Tor di Valle provides district-heating service in the area south of Rome.

The installed capacities of the Group, which **overall amount to approximately 346 MW**[129], are presented in Chart no. 51, distinguished by energy source.

Chart no. 51 – Installed electrical power of the Group broken down by energy source (MW) (2021)



ELECTRICITY PRODUCED

In 2021 overall gross generation of electricity increased by 10%, rising from 916 GWh in 2020 to 1,009 GWh in 2021. This increase is due to several factors: greater rainfall in the year influenced hydroelectric generation (up 15%), the new photovoltaic component (+5% energy generated) and the waste-to-energy sector (+3%). This latter increase was due to Terni plant experiencing a lower number of shutdowns, making it more efficient in terms of energy usage compared to the previous year. The **production of biogas** also increased, above all thanks to the Aprilia plant, now running at full capacity. For further details, see the *Environmental Accounts*.

The share of electricity generated by **renewable sources**, about **698 GWh**, is **predominant**, corresponding to approximately **69% of the total**, with the following contributions:
- 434.7 GWh from hydroelectric power,
- 153.5 GWh from waste-to-energy,
- 31.4 GWh from biogas (Orvieto, Aprilia and Monterotondo Marittimo plants)
- 78.6 GWh from solar panels (see Chart no. 52 and Table no. 49)[130].

After completion of **upgrading and actions to increase efficiency in 2021** the only **revamping that took place involved the Sant'Angelo power plant**, with the goal of optimising use of available water resources, with the same specifications in terms of installed power and authorised by concession.
In addition, Acea Produzione and Acea Ato 2, are collaborating on **a particularly important project rooted in the development of synergies between the businesses managed by the Group**. The project involves installation of an additional two 1.5-MWe internal combustion engines at the Tor di Valle High Efficiency Cogeneration Plant (CAR), which **will be powered by the biogas from the adjacent Acea Ato 2 Roma Sud treatment plant**. The Tor di Valle plant will in turn provide the treatment plant with **thermal energy to heat the sludge in the digesters**[131] (see info. box for details). Construction of a 267.3 kWp photovoltaic plant has been authorised at the same power station. The worksite, launched in November 2020, was closed in 2021 and the plant is currently operational.

129 The total installed power includes the Acea Produzione plants, the waste-to-energy plants and the Orvieto, Aprilia and Monterotondo Marittimo plants (Acea Ambiente) for the production of biogas.

130 The photovoltaic plants of AdF and the Terni waste-to-energy plant are not included (as they are owned by AdF and Acea Ambiente, respectively): the former produced and self-consumed 12.5 MWh in 2021, while the latter produced 444.3 MWh of which 61% was consumed on site.

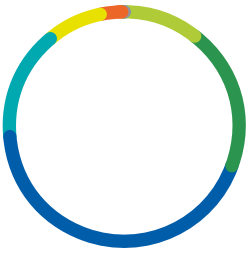
131 In January 2021, the request was submitted to the Ministry for the Environment (MATTM) for preliminary verification for application of an EIA.

SYNERGY BETWEEN THE ROMA SUD TREATMENT PLANT AND THE TOR DI VALLE POWER PLANT

Since 2017, the Roma Sud treatment plant has been powered with electricity from the Tor di Valle power station (managed by Acea Produzione), with alternative power from the MV grid. Acea Ato 2 and Acea Produzione are working to increase synergy between these two plants with the **transfer of biogas produced by anaerobic digestion section** of the treatment plant to the power plant, for it to be used in the generation of electricity and thermal energy, as well as **transferring thermal energy from the power plant to the digesters of the treatment plant** to support the anaerobic digestion process.
In the future scenario, with creation of the **thermal sludge drying** plant, this synergy will be further developed with the possibility to provide thermal energy for the drying plant, utilising the residual heat from the electricity generation units already installed at the co-generation plant.
This will enable **replacement of the methane gas used at the Tor di Valle power plant with biogas produced through anaerobic digestion** of sludge, with **zero environmental impacts**, in terms of CO_2 emissions, because it is derived from the breakdown of organic substances. Similarly, the same benefit will be seen for the treatment plant, which will utilise renewable thermal energy produced by the biogas of the power plant.
In 2021, a technical and economic feasibility study was launched to evaluate the environmental, economic and authorisation aspects of the works, in preparation for implementation.

A significant portion of the energy **from waste-to-energy production**, as already noted, is associated with the combustion of the **biodegradable fraction of waste** used as a primary source. In particular, the **renewable share of the fuel** (SRF) entering the **San Vittore del Lazio plant** was **43.0%** of the total of waste-to-energy production in 2021, while at the **Terni plant** this share was **43.4%**. The percentages **are in line with 2020 for both plants**, but lower than years previous to the pandemic. In fact, **a change in SRF composition was recorded**, particularly for the San Vittore del Lazio plant, which is probably linked to the strict limitations applied in the restaurant industry and catering through canteens in schools and business, etc.

Chart no. 52 – Electricity produced subdivided by primary energy source (TJ) (2021)



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

Table no. 49 – Electricity produced (by primary energy source) (2019-2021)

primary energy source (TJ (GWh) (*))	2019	2020	2021
electricity produced (by primary energy source)			
diesel fuel	4.9 (1.4)	5.4 (1.5)	5.9 (1.6)
natural gas (cogeneration)	320.1 (88.9)	326.4 (90.7)	381.9 (106.1)
waste to energy (approximately 57% of the total in 2021)	643.8 (178.8)	716.8 (199.1)	730.4 (202.9)
total thermoelectric	**968.8 (269.1)**	**1,048.6 (291.3)**	**1,118.3 (310.6)**
hydroelectric	1,533.4 (426.0)	1,354.7 (376.3)	1,564.9 (434.7)
waste to energy (approximately 43% of the total in 2021)	642.2 (178.4)	529.3 (147.0)	552.7 (153.5)
biogas	71.2 (19.8)	96.9 (26.9)	113.0 (31.4)
photovoltaic solar (**)	95.0 (26.4)	269.9 (75.0)	283.0 (78.6)
total renewables	**2,341.8 (650.5)**	**2,250.7 (625.2)**	**2,513.6 (698.2)**
general total	**3,310.6 (919.6)**	**3,299.3 (916.5)**	**3,631.9 (1,008.9)**

(*) 1 GWh = 3.6 TJ.
(**) Photovoltaic includes the production at the plants located on sites of the water area (Acea Ato 2 and Acea Ato 5) for a total of 1 GWh produced.

THERMAL ENERGY PRODUCED

The **Tor di Valle** thermoelectric power plant generated **approximately 99 GWh of thermal energy**. The heat generated was used to serve 42,680 residents in the area south of Rome (Mostacciano, Torrino and Mezzocammino) by means of a district-heating network which provides a volume equal to 3,861,163 cubic metres[132]. In the last two years, **35 of the current 361 thermal substations serving the district-heating network were replaced**, to increase process efficiency and service reliability for users (see also the section *Strategy and sustainability*, the *2020-2024 Sustainability Plan* and the *operational goals*).

The Company **Ecogena**, 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 **cogeneration and trigeneration** plants[133] for the production, in combined mode, of **electrical**, **heat and cooling energy**.
In 2021, the **co-generation plants managed**, combined with **district-heating** networks, due to **end of two contracts** assigned to the plants present in the regions of Latium and Umbria, reduced to a total electrical power of **1.9 MW** (4.9 MW in 2020).
For details on production in the three-year period, see table no. 50.

Table no. 50 – The production of energy by Ecogena plants and energy efficiency certificates - EECs (2019-2021)

energy produced (TJ (GWh))	2019	2020	2021
electricity	51.5 (14.3)	36.0 (10.0)	24.1 (6.7)
of which plants owned by Ecogena	*49.0 (13.6)*	32.2 (8.9)	22.0 (6.1)
of which plants owned by third parties	*2.7 (0.7)*	*3.9 (1.1)*	*2.1 (0.6)*
thermal energy	103.3 (28.7)	87.2 (24.2)	83.8 (23.3)
of which plants owned by Ecogena	*89.2 (24.8)*	*73.2 (20.3)*	*76.2 (21.2)*
of which plants owned by third parties	*14.0 (3.9)*	*14.0 (3.9)*	*7.6 (2.1)*
refrigeration energy (all owned plants)	37.6 (10.5)	39.4 (11.0)	39.9 (11.1)
EECs			
Total EECs (all from plants owned by Ecogena)	954	943	443

NOTE: Other information on EECs is provided in the *Energy savings* section of the chapter *The use of materials, energy and water*.

ENERGY DISTRIBUTION

THE DISTRIBUTION NETWORKS

distribution grids in Rome and Formello: approximately **31,700 km**

approximately **9,800 GWh** of electricity demand on our grid

improved territorial protection (underground HV network/ total HV network): **47 %**

automatic satellite system for grid monitoring: the **G.I.M.M.I.** project

132 Data from August 2021.

133 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.

Areti manages the **electricity distribution network** of Rome and Formello, extending over **approximately 31,700 km** and capable of supplying about **2.8 million residents**. In terms of volumes of electricity distributed, about 9,200 GWh in 2021, Acea is the third largest Italian operator in the sector.
Table no. 51 presents the principal plant data of the Company, including the number of primary and secondary substations, the transformers[134] and the km of overhead and underground distribution lines.
The environmental indicator related to the **protection of the land**, calculated as a percentage share of the **underground high-voltage network** (HV) **in relation to the total of the HV lines in use** (overhead and underground), improved and was 47% in 2021, also as a result of the continuing **transformation and modernisation** of the high and extra-high-voltage electricity distribution grid.

Table no. 51 – Number of overhead and underground distribution lines and plants (2019-2021)

Areti				
systems and output				
	u.m.	**2019**	**2020**	**2021**
High-Voltage/High-Voltage – High Voltage/Medium-Voltage primary substations	no.	70	70	70
High-Voltage/High-Voltage and High-Voltage/Medium-Voltage transformers	no.	170	171	170
transformation power	MVA	7,781	7,881	7,921
substations in use	no.	13,238	13,292	13,309
Medium Voltage/Medium Voltage - Medium Voltage/Low Voltage transformers	no.	12,883	12,897	12,893
transformation power	MVA	6,282	6,298	6,313
overhead and underground networks				
high voltage network – overhead lines	km	282	282	275
high voltage network – underground lines	km	243	243	244
medium voltage network – overhead lines	km	422	421	420
medium voltage network – underground lines	km	10,470	10,211	10,269
low voltage network – overhead lines	km	1,642	1,642	1,642
low voltage network – underground lines	km	18,417	18,511	18,829

MEMORANDUM OF UNDERSTANDING FOR THE RESTRUCTURING OF THE ELECTRICITY GRID

The **plan to modernize the high-voltage electricity distribution grid (150 kV)**, defined in the **Memorandum of Understanding** signed in 2010 among Areti SpA, the Municipality of Rome and Terna SpA continues year on year, as noted above. The actions reduce the environmental impact, through demolition of lines and removal of pylons, as well as contributing to energy savings through works to reconfigure and optimise the HV grid:

- works continued to dismantle decommissioned HV lines, with removal of a total of 48 pylons for 150-kV and 60-kV lines
- 3.6 km of 150-kV underground lines with oil-filled cable were decommissioned on the Belsito - Tor di Quinto stretch, and another 3.6 km with the same specifications on the Belsito - M. Mario/Flaminia stretch
- works continued for creation of the new Roma Nord - San Basilio stretch of 150-kV underground line, with a length of 3.4 km
- creation of the new stretch on the 150-kV Selvotta - Castel Romano overhead line has begun (5.8 km with 24 pylons)
- New 150-kV HV XLPE cables have been commissioned on the stretches Belsito - Tor Di Quinto" (3.8 km) and Belsito - M. Mario/Flaminia, each with a length of 3.8 km.

The management of the electricity distribution network of Rome and Formello is characterized by the **continuous improvement of the performance**, with a particular focus on energy efficiency. Areti carries out works, including reclassification of medium-voltage levels from 8.4 kV to 20 kV and installation of MV/LV transformers with very low losses, which help to **limit network losses**. In 2021 **losses of energy on the grid** were **approximately 6% of total issued power**, in line with the previous year. For further information see the *Energy savings* section in the chapter *The use of materials, energy and water*.
Upgrading of electricity lines supports the energy transition. In this context, **some projects launched by Areti**, **such as PlatOne and G.I.M.M.I.**, are particularly challenging. The first, which also involves Acea Energia, aims to optimise management of the increase expected in loads on the distribution grid, actively involving customers. The second focuses on a system to improve grid monitoring and increasing the efficiency of maintenance. See the corresponding info. boxes for details.

134 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 2021, 114 transformers with PCBs above 50 ppm but below the 500 ppm threshold, including 28 for public lighting, were reported to Arpa, and 8 transformers were disposed of, for a total weight of 10,650 kg and a quantity of PCBs of 846 ppm.

PLATONE

The PlatOne (PLATform for Operation of distribution Networks) project is funded by the European Horizon 2020 project and involves ten public-private partnerships from Italy, Greece, Belgium and Germany, with coordination by the German Aachen University. Through the companies, Areti and Acea Energia, Acea heads the Italian pilot project on Rome, in three specific areas of the capital, working with ENEA, Siemens, RSE, ENG and Apio.
The project promotes an innovative approach to the management of distribution grids, aimed at increasing safety and stability. In the coming years, urban distribution grids will see a significant increase in loads, linked, among other factors, to the **diffusion of electrical vehicles and heat pumps** as well as an increase in **distributed generation connected via medium and low voltage**. Specifically, there could be consumption or generation peaks in certain periods of the year that are critical for the gird. Therefore, to optimally manage these it is possible to **actively involve end users** in grid operation, through creation of a "**local flexibility market**". The PlatOne platform experiments with this solution, developing a multi-platform system capable of involving all market players.
For the end customer, the project implements and standardises a technological solution enabling the resource and certifying all energy transactions connected to flexibility using blockchain technology.
In addition, the user is provided with **an app**, for interaction with the aggregator, e.g. offering the possibility to **modulate loads during certain time periods**. The aggregator processes the flexibility supply of its customers and sends them to the market platform, where flexibility demand of the distributor is also received, connected to grid requirements. By linking supply and demand, and the possibility to actively involves customers in the management of infrastructure, a virtuous cycle is generated enabling the distributor to optimize flows and enabling customers to receive an economic benefit in exchange for the service they offer.
To enable customers to access the flexibility market, it is necessary to install:

- a second-generation **meter**
- a **device** called a **light node**, required to receive activation commands and certify energy transfers.

In addition, to increase flexibility, **micro-photovoltaic plants** have been installed for certain customers, equipped with batteries.
The Italian project, launched in July 2021, will contribute to the creation of an integrated and efficient local ancillary services market, with implementation of advanced IT technology enabling prosumers to sell or purchase electricity entirely automatically.

G.I.M.M.I. GRID INNOVATION PROJECT

The G.I.M.M.I. project (Massive and Targeted Infrastructure Inspection Management) is an innovative end-to-end solution combining **satellite monitoring**, **artificial intelligence (AI) and drones in a single system**. The satellite platform enables Areti to periodically acquire images of HV and MV overhead lines. These are processes and analysed by an algorithm using AI technology that enables identification of human or plant interference. Once interference has been identified and classified on the basis of the level of severity, it is possible to launch targeted inspections using drones.
Implementation of these systems for HV and MV grids offers multiple benefits. The quick response and precision of information enables **specific inspections** in place of mass cyclical inspections, thus reducing the number of inspections, increasing their efficacy and reducing working times, supporting prevention or quick resolution of outages, to the benefit of many customers and the operator. For example, controlled and targeted pruning of vegetation can prevent events that would lead to potentially serious damage to the grid. In addition, the reduced impact of motor vehicles and elimination of helicopter flights for cyclical inspections contributes significantly to reducing CO_2 emissions.
The project, launched in 2021, involves GMatics, a start-up offering satellite monitoring and analysis services using AI algorithms. It is also monitored by the Drone Observatory of the Politecnico di Milano university, which has the task of analysing, mapping and providing indications of current and future trends for drone applications.
An upgrade is currently being studied for the creation of automatic work orders on company SAP systems, enabling planning of inspections, guaranteeing traceability and filing on the system.

ENVIRONMENT SEGMENT

SCOPE

The chapter includes ACEA Elabori, for the project Smart Comp; the activities of the waste treatment hub, waste-to-energy plants and compost production plants, all within Acea Ambiente; and the activities of Aquaser and Acque Industriali. In 2021, the Company Bio Ecologia merged by incorporation into Acea Ambiente, bringing the plant of the same name. The companies Berg and Demap were also added.

27,744 t of quality compost produced: **+50%** compared to 2020

approximately **18,170 kNm³** of biogas produced and, from this, **31 GWh** of energy

waste-to-energy: approximately **407,100 t** of waste input and approximately **92,800 t** of waste output: **23%** (output/input)

Gasiforming: technology to transform a mix of **non-recyclable plastics into green fuel**

Acea is expanding its capabilities in management of the final part of the waste cycle, **for optimised recovery**, **recycling and reuse** and, where possible, **recovery of energy**. Specifically, it oversees:

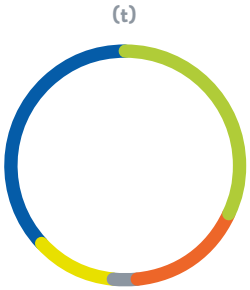
- **the treatment of municipal solid waste** (MSW) and other types of waste (like green waste from separate collection, industrial waste, etc.), **for the recovery of material** and disposal of the residues in landfills
- **storage**, **selection**, **sorting and separation of multi-material waste** originating from separate waste collection, such as plastic material and metal packaging, for subsequent **recovery**
- **the treatment of liquid wastes** such as leachates and liquid sludge;
- **incineration with energy recovery** and consequent reduction in land required for disposal
- **the production of high quality compost** for agricultural use.

The management of solid and liquid waste is performed **using advanced technology and modern systems**, upgraded or expanded in recent years, in order to improve and renew processes and increase recovery of materials and/or energy. The Companies operating in waste management **carry out research**, also in collaboration and partnerships with university institutions and companies in the circular-economy field. Included in this context is the Acea Smart Comp local composting activity carried out by Acea Elabori.
During 2021, Acea Elabori continued, in collaboration with Tuscia University and Enea, the **Acea Smart Comp Project**, which goes beyond the logic of waste transition and proposes a new model for managing organic waste, from large plants to local waste management. This project enabled the Company to become organic waste free during 2020 and to patent the control system for electric composters, that will be industrialised. During the third quarter of 2021, experiments for Acea Smart Comp were completed at the Auchan locations of Villars in Lyon and Sain Priest, both in France, with the intention of establishing the plants in the mass-retail industry. Activity for the project, overseen by the Acea Elabori team, saw the involvement of collaborators from outside the Group, through cross-disciplinary working tables aimed at technological development and remote control, refinement of the process model and further distribution of the product. Experiments with the Acea Smart Comp solution were successfully completed at the barracks for the Carabinieri Salvo d'Acquisto in Rome and the process of moving from the experimental stage to normal operations has begun.
At the Ecomondo event, Acea Ambiente presented the new **Gasiforming** technology, developed in collaboration with the Politecnico di Milano University and the Inter-university Consortium for Materials Science and Technology (INSTM). This patented system is designed to **transform a mix of non-recyclable plastics into green fuels** (see the info. box on Ecomondo, in the chapter *Environmental sustainability and the primary challenges*).
The following paragraphs provide further details of operational aspects of activities in the circular-economy field.

WASTE-TO-ENERGY, COMPOSTING, DISPOSAL OF LIQUID WASTE AND RELATED SERVICES

Chart no. 53 illustrates the types of processing and recovery of materials or energy for the Environment Segment.

Chart no. 53 – Incoming volumes of waste managed by type of plant/activity (2021)



407,121 waste-to-energy (pulper waste and SRF)
208,661 composting (including Orvieto)
41,206 waste entering the Orvieto hub (landfill)
144,100 Intermediation and selection
467,126 liquid waste, wastewater and leachate

WASTE-TO-ENERGY

In the context of circular-economy logic, after maximum recovery of materials, the recovery of energy represents a key phase, which provides energy and economic advantages and leads to a **notable volumetric reduction and the biological stabilisation of waste**, minimising disposal of this waste in landfills without processing.
In addition to the activities already described of solid and liquid waste treatment and anaerobic-digestion lines at composting sites, **Acea Ambiente** also manages the waste-to-energy process through the plants of San Vittore del Lazio and Terni. The two plants are operated according to the certified Environmental Management Systems and registration with the European EMAS III scheme (see also *Corporate identity*, *Management systems*).
In its current configuration, the San Vittore del Lazio plant is the **largest in the Latium Region** and plays an important role in the management of municipal waste, both for the advanced technologies used for its construction and for its considerable treatment potential[135]. It is composed of **three independent waste-to-energy lines** designed to be fed with Solid Recovered Fuel (SRF), with the following characteristics:

- 52 MW_t of thermal power for line 1 and 56.7 MW_t of installed thermal power for each of the other two lines, for a total thermal power of approximately 165 MW_t
- 13.9 MW_e of electric power for line 1 and 15.1 MW_e for each of the other two lines, for a total power of approximately 44 MW_e;
- approximately 400,000 t/year of SRF, sludge and other waste at full treatment capacity.

Acea Ambiente has submitted an application for the creation of a **fourth waste-to-energy line**, enabling full processing of waste entering the plant in the case of shutdowns for upgrading or scheduled maintenance, as well as treatment of sewage sludge in compliance with the indication of the Waste Management Plan approved by the Latium regional authority. The application is moving forward through the procedure and is awaiting final approval.
In 2021 **307,391 tonnes of waste** were processed by the waste-to-energy plants and approximately **268 GWh** of electricity was generated, in line with 2020 figures.

Table no. 52 – The San Vittore del Lazio waste-to-energy plant: operating data (2019-2021)

	u.m.	2019	2020	2021
incinerated fuel	t	340,531	319,122	307,391
gross electricity produced	GWh	276.27	269.38	267.74
conversion efficiency (*)	kWh/kg SRF	0.81	0.84	0.87

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

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

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

The waste-to-energy plant is **also equipped with photovoltaic systems**, the primary system on the pulper waste pre-treatment area and a secondary system on the adjacent building, which in 2021 generated approximately 444 MWh of electricity, with around 61% consumed on site and the remainder sold to the grid.
In 2021 **99,730 tonnes of pulper waste** were processed by the waste-to-energy plant and approximately **89 GWh** of electricity was generated, up on 2020 figures.
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*.

Table no. 53 – Terni waste-to-energy plant: operating data (2019-2021)

	u.m.	2019	2020	2021
waste-to-energy paper mill pulper	t	94,092	90,215	99,730
gross energy produced	GWh	80.93	76.77	88.67
conversion efficiency (*)	kWh/kg pulper waste	0.86	0.85	0.89

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

135 With reference to Decree Law 133/2014 (referred to with the name "*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 Latium Regional Decree no. 199 of 24/04/2016.

In 2021, **certain experiments** were completed applying circular-economy logic to waste-to-energy plants:

- development of a plant solution aimed at **recovering sodium bicarbonate and calcium chloride dihydrate** (reaction by-products) from the treatment of Residual Sodium Carbonate (RSC), deriving from the neutralisation phase of the acid fumes produced by the waste-to-energy plants, currently under contract, and the start of activities to define the industrial scale-up
- **treatment of fly-ash and bottom-ash** for the recovery of the inert fraction present and treatment for the elimination of hazardous characteristics, and initiation of activities to define the industrial scale-up

Please also see *The commitment to research and innovation* in the chapter *Institutions and business*.

INTEGRATED WASTE TREATMENT - ORVIETO PLANT

In Umbria, the Company **Acea Ambiente** manages an important **systems hub for waste treatment**, **recovery and disposal**, ensuring the integrated cycle of municipal solid waste and equivalent materials, produced in the regional basin that includes all municipalities in the province of Terni. The landfill site is also authorised to receive special waste.
The hub includes the following main plant sections: mechanical biological treatment of municipal solid waste, composting and refining of the organic fraction of the sorted waste and disposal in landfills. Management takes place in accordance with the certified Management Systems (see the section *Management systems* in *Corporate identify*), with the goal of **maximising recovery of materials** (production of high-quality compost) and supporting both the **production of renewable energy** (utilising biogas produced for energy) and the **reduction of waste sent to landfill**.
In 2021, total waste entering the plant was **108,361 tonnes**. 67% (approximately 72,500 tonnes) was sent to landfill and almost all of the remainder was sent to the **anaerobic digestion and composting** section of the treatment plant **for the production of biogas and compost**.
The end product resulting from the aerobic process is refined and subsequently analysis for its chemical and physical classification as **high-quality compost**, for us for commercial growing, environmental restoration and, in general, for maintaining green areas.
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 naturally by the landfill site. The latter is collected through a supply network and sent to two internal combustion engines that transform it into electricity, which is then sold to the local public grid.
The electricity generated is broken down as follows:

- approximately **2.6 Mm³ of biogas** and **4.7 GWh of energy** were produced at the treatment plant in **2021**;
- approximately **6.6 Mm³ of biogas** and **9.3 GWh of energy** were produced at the **landfill site**.

Overall, **approximately 14 GWh** of electricity was fed into the grid. (for further details, see the *Environmental Accounts*.)
The Orvieto hub is also equipped with a **photovoltaic plant** owned by Acea Produzione, which did not generate energy in 2021 as it was undergoing upgrading works.

HIGH-QUALITY COMPOST PRODUCTION

Experimentation is currently underway with the University of Tuscia on high-quality compost produced by the Orvieto plant hub, totalling **approximately 3,560 tonnes in 2021**, for use as agricultural fertiliser, applying the direct product and sowing wheat crops on land at the plant itself.
In addition to the Orvieto site, Acea Ambiente has **three other composting plants** in Aprilia, Monterotondo Marittimo and Sabaudia respectively.
At the **Aprilia plant** the deed of seizure expired on 18 March 2021. Thanks to upgrading and expansion works, completed in 2020, the plant can recover up to 120,000 tonnes/year of organic waste, with production of electricity and thermal energy integrated with the pre-existing composting section. Furthermore, in 2021, with issue of the new Integrated Environmental Authorisation (IEA)**a compost bagging line** and **a line for production of SRF from plant waste were installed**. Both of the lines were created and approved during the year and will be operational from January 2022. The **Monterotondo Marittimo plant** has a recovery capacity for the organic fraction of municipal solid waste, garden waste (grass cuttings and material from pruning), and sludge, of (70,000 t/year. Both sites have implemented a **new anaerobic digestion and composting section**, which enables **recovery of electricity and thermal energy**. For details on the quantities of biogas and energy produced, see the chapter *Energy segment* and the *Environmental Accounts*.
At the Sabaudia plant, operations were suspended from 31/10/2019, to allow **upgrading work** on the plant[136]. The liquid waste treatment section is currently inactive. Upgrading work will enable a capacity of 60,000 t/year.

INTERMEDIATION AND TRANSPORT OF WASTE

In 2021, **Aquaser**, which **loads**, **transports**, **recovers and disposes of waste produced by treatment plants**, managed a total of **390,000 tonnes of waste** (493,000 tonnes in 2020).
With regard to **intermediation**, during the year Aquaser took charge of **approximately 155,000 tonnes of waste**, of which **134,000 tonnes of sludge** is attributable to the **Group's water companies**[137], and in particular approximately **76,600 tonnes to Acea Ato 2**, **Acquedotto del Fiora and Acea Ato 5**. The dried out and dehydrated sludge coming from the three Companies was sent to the following end destinations:

- 68% to material recovery operations (pretreatments aimed at agricultural use and composting);
- 13% to recovery of energy (waste-to-energy);
- 19% for disposal.

Also this year, due to regulatory constraints direct spreading was not used in agriculture.
Aquaser **used its own means** to transport approximately **45,000 tonnes of non-hazardous waste**.

136 The plant has been shut down for the whole of 2021. At the end of the upgrading work it will be possible to continue with publication of the call for tenders for definitive planning and creation of the new composting plant. The upgrading project will increase the treatment capacity to 60,000 t/year of incoming waste.

137 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, Acquedotto del Fiora, Umbra Acque, Publiacqua, Acque and Acea Molise.

SELECTION AND SEPARATION OF MULTI-MATERIAL WASTE

The **Demap** plant, located in the province of Turin, carries out **selection and implementation of recycling for plastic and plastic/metal packaging**. Specifically, it handles the storage, selection, sorting and separation of single and multi-material waste originating from separate waste collection, such as plastic material and metal packaging, **for subsequent recovery**. The Demap plant is affiliated with the Corepla Consortium, a group of companies established pursuant to Italian Legislative Decree 22/97 to organise and manage post-consumption plastic packaging, and performs its activity on the basis of a contract for the selection of waste plastic packaging with the Consortium itself. In 2021 approximately **57,000 tonnes of material** entered the plant and were then processed for final separation and recovery.
Another 10,500 tonnes of waste were handled by Berg in the role of broker, even though the main business involves the storage and processing of hazardous and non-hazardous liquid waste, as illustrated below[138]. See also the *Environmental Accounts*.

TREATMENT OF LIQUID WASTE

The Group treats liquid waste on behalf of public and private Companies through the Companies Acque Industriali and Berg and the Bio Ecologia plant, merged into Acea Ambiente.
Acque Industriali performs brokerage services and treatment of liquid waste for private and public companies, as well as activities connected to the integrated water cycle, primarily consisting of the **recovery and disposal of organic sludge**, through management of **four main platforms** located in Pontedera, Pisa Nord, Empoli and Poggibonsi, which received over **92,400 tonnes of liquid waste** in 2021. In addition, the Company provided brokerage services for approximately 54,000 tonnes of waste during the year.
Acque Industriali uses technologies that **support recovery of raw materials contained in waste**, **energy savings and efficient use of resources**, such as stripping/absorption of ammonia in a closed cycle that enables **recovery of ammonium sulphate**, which can be used as an agricultural conditioner. In 2021, approximately **219,700 kg** were produced. In addition to the above, the Company provides services for design, creation and management of plants for the treatment of wastewater for third parties, decontamination of polluted sites and environmental consulting for the management of plants, investing in research and development in the relevant sectors, in collaboration with recognised Research Bodies. For details of the type of incoming waste, the resources used, the waste produced and other specific information, see the **Environmental Accounts**.

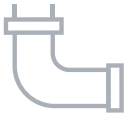
The **Berg** plant is a **polyfunctional platform for the storage and processing of hazardous and non-hazardous waste**, authorised for the sale and brokerage of waste and the creation of plants for treatment and processing of liquid waste.
Specifically, the plant has two departments: storage and treatment of liquid waste and storage and treatment of solid waste. In 2021 the plant **processed approximately 133,000 tonnes of waste**, **both solid and liquid**, and provided brokerage services for a further 10,500 tonnes of waste.
The **Bio Ecologia**[139] plant in Chiusi handles the chemical/physical and biological treatment of **non-hazardous liquid waste**[140] **and treatment of sewage**. In 2021 approximately **93,000 tonnes of liquid waste** were processed and approximately 149,000 m^3 of wastewater.

WATER SEGMENT

SCOPE

The scope includes the companies Acea Ato 2, Acea Ato 5, AdF, GORI and Gesesa.
Acque, 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, with evidence of their contribution, 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*.

more than **6 million** citizens served and **481 Mm^3** of drinking water issued by Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa



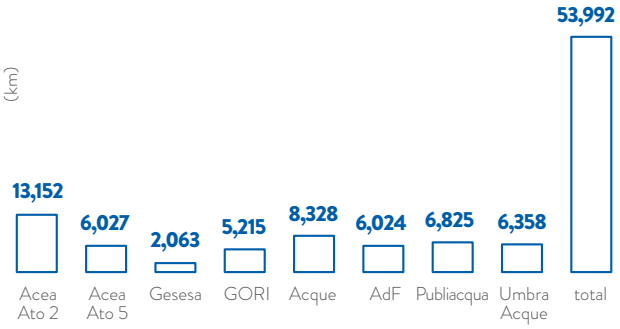
approximately **34,790 km** of drinking-water network managed by Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa

738,488 analytical tests on drinking water (Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa)

138 In 2021, Bio Ecologia did not carry out any waste brokering activity.
139 (*) On 1 May 2021, Bio Ecologia Srl was merged by incorporation into Acea Ambiente.
140 The quantities of liquid waste authorised for treatment (excluding wastewater) have a maximum limit of 99,900 tonnes/year.

The Acea Group is a national leader in terms of number of citizens served and one of the primary operators in the water sector. Activities regarding **management of water resources** for all phases defined by the **integrated water service** are performed with a particular focus on preservation and safeguarding of water and natural ecosystems from springs to surface bodies where water returns into the environment. Safeguarding of water resources translates primarily into **recovering leaks** (see the section *Attention to water consumption*), the **circular economy**, activities to combat **climate change**, **protection of springs** and other sites of interest at an EU, regional or local level and natural parks (see section *Safeguarding of land and biodiversity*) and also **monitoring** of internal water consumption, with the end goal of reducing consumption.
The **total** pool of users served in Italy **by the Group**[141] is about 8.5 million residents, with **volumes of drinking water fed into the network** in 2021 equal to approximately **1,318 million cubic metres**. The distribution networks of the main Group Companies operating within the integrated water service stretches approximately 54,000 km (see Chart no. 54).

Chart no. 54 – The water distribution network of the main Group Companies in Italy (2021)



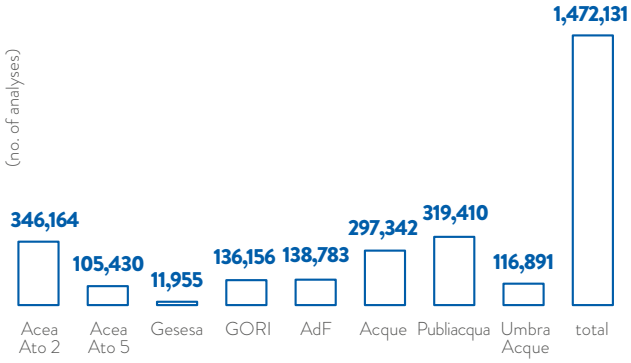
NOTE: the kilometres of network include the aqueducts.

The **volume of drinking water drawn and issued by Acea Ato 2**, **Acea Ato 5**, **GORI**, **AdF and Gesesa** in 2021 was approximately **1,040 million cubic tonnes**, with total issue[142] of 481 million cubic metres for more than **6 million citizens** served. The specific data on the three Companies, are provided in the *Environmental Accounts*.
99.9% of the volumes drawn are fresh water, with the remainder, approximately 1 million m^3 being seawater and drawn in the Tuscany area. The sources are located in areas at potential risk of water stress, as defined by the map of the Aqueduct Water Risk Atlas, drawn up by the World Resources Institute (WRI)[143] that illustrates the water availability of the different countries, taking into consideration risks caused by climate change, including extreme weather events (drought and flooding). The Companies in the water segment implement various initiatives to mitigate the impacts associated with these risks, including **Water Safety Plans** (see the section *Water Safety Plans - WSPs*), actions to **minimise leaks** on distribution networks and investments to ensure greater security of water supplies.
In the **ATO 2 - Lazio Centrale** optimal territorial area alone, which includes Rome and another 112 Municipalities[144], in 80[145] of which, at 31 December 2021, Acea Ato 2 managed the entire IWS, having taken over the sewerage service in the Municipality of Rocca Canterano in August 2021. The **volume of water drawn and issued from and to the network**, serving approximately 3.7 million citizens, was approximately **668 million cubic metres**[146].

WATER QUALITY

Water quality is monitored by all the companies in the operating segment (see chart no. 55). The **analytical checks**, in addition to those performed by the Local Water Authorities, are performed on a scheduled, ongoing basis and regard both drinking water issued to users, essential due to the associated health effects, and water returned to the environment following treatment. The results of drinking water analyses are compliant for all Companies, at around 99%.

Chart no. 55 – Analytical checks on drinking water, total and by Company (2021)



N.B.: for Acea Ato 2 analysis data does not include analyses performed by Acea Elabori.

In **Rome**, the qualitative characteristics of the water 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 Latium there are areas of volcanic origin where the water has potability issues linked to the natural presence of some substances in greater concentrations compared to those indicated by regulations. In these areas, Acea Ato 2 continues to take action aimed at resolving these problems, e.g. increasing the number of drinking water plants capable of removing unwanted substances and reducing them to concentrations well within legal limits. Monitoring of the chemical/biological parameters of the water in the distribution network of the water system allows a high quality and safety level to be achieved.

141 The data for total number of citizens served by the water business, volume fed into the network, and size of the networks and checks on the water (shown in specific charts) include the main Operating Companies of the Group, including those outside the scope of the *Consolidated Non-Financial Statement*.

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

143 For identification of areas under water stress, as indicated by the standard GRI 303, the Aqueduct Water Risk Atlas was employed, available on the World Resource Institute website: www.wri.org/aqueduct.

144 On 14/07/2021 with Regional Council Resolution n° 10, which followed Regional Executive Resolution no. 752 of 03/11/2020 on the same subject, Optimal Territorial Area n° 2, Central Lazio-Rome, was modified including in it the Municipality of Campagnano di Roma, which previously belonged to OTA no. 1 North Lazio-Viterbo.

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

146 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.

Overall, in 2021, **346,164 analyses were conducted in the area managed by ATO 2**, for a total of 11,926 drinking-water samples. In addition to the analyses conducted to **check water quality**, performed by Acea Ato 2, with the support of Acea Elabori, another 840 analyses were performed by Acea Elabori for **study and research purposes** aimed at continuous improvement of monitoring of the drinking-water system.
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. 54 for the analyses performed on Rome drinking water). **AdF**, which outsources analyses to Publiacqua SpA, took 4,757 samples, identifying representative withdrawal points in the context of districts, with equivalent characteristics, into which the entire network of the aqueduct is divided. All withdrawal points are georeferenced using the GPS system and area available in WebGis. In 2020, AdF launched works for creation of an in-house laboratory and in 2021 it carried out a tender procedure for the purchase of instrumentation. The laboratory will be subject to accreditation in compliance with standard ISO IEC 17025:2018.

Table no. 54 – Analyses in Rome (2019-2021) and main quality parameters of the drinking water distributed in Latium, in Campania and in Tuscany (2021)

ANALYSES PERFORMED BY ACEA ELABORI ON DRINKING WATER – ROME HISTORICAL NETWORK (2019-2021)							
withdrawal area	no. withdrawal points	no. samples			no. analyses		
	2021	2019	2020	2021	2019	2020	2021
collection	57	329	227	344	11,968	13,579	15,267
water system and water feed pipes	22	164	135	104	5,617	4,950	3,997
tanks/water centres	22	203	85	198	7,096	3,048	7441
distribution networks	405	3,095	3,619	3,379	99,835	120,372	107,709
total	**532**	**3,791**	**4,066**	**4,025**	**124,516**	**141,949**	**134,414**

MAIN AVERAGE CHEMICAL AND MICROBIOLOGICAL CHARACTERISTICS OF THE DRINKING WATER DISTRIBUTED IN LAZIO, IN CAMPANIA AND IN TUSCANY (2021)							
parameters	measurement unit	average value Acea Ato 2	average value Acea Ato 5	average value GORI	average value Gesesa	average value AdF	parameter Legislative Decree no. 31/01
chlorides	mg/l Cl	7.8	6.7	43	21.0	27.0	<250
sulphates	mg/l SO_4	11.0	7.7	24	24.0	41.0	<250
calcium	mg/l Ca	80.1	87.5	113	exempt (*)	61.0	not applicable
magnesium	mg/l Mg	14.9	15.6	28	exempt (*)	11.0	not applicable
sodium	mg/l Na	7.3	4.3	29	45.0	17.0	<200
potassium	mg/l K	4.3	1.1	14	exempt (*)	2.3	not applicable
calculated fixed residue	mg/l	347.0	347.7	548	299.0	302.0	(**)
nitrates	mg/l NO_3	3.6	3.8	18	8.0	4.1	<50
fluorides	mg/l F	0.13	0.12	0.53	0.2	0.14	<1.50
bicarbonates	mg/l HCO_3	326.5	343.3	470	exempt (*)	223.0	not applicable

(*) 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.

FILTRATION OF DRINKING WATER: GESESA LAUNCHES PROJECT IN PEZZAPIANA

In 2021, Gesesa launched a project for the creation of an **activated-carbon filtration system** for treatment of drinking water for the water plant in Benevento, in the Pezzapiana area. The filtration plant will provide adequate water resources for the city of Benevento, maintaining the values for the substances tetrachloroethylene and trichloroethylene below the Contamination Concentration Limits (CCL) defined by Italian Legislative Decree 152/2006.
In addition, the project promotes **circularity criteria**, with the plant-based activated carbon used as adsorbent, once no longer functional, rather than being disposed of, are subject to thermal regeneration by specialised companies.
Once fully functional, therefore, the filtration system will improve management of water resources upstream and will promote the reuse of the adsorbent material downstream. The project is aimed at efficient management of water resources through technological innovation, minimising environmental impacts.

During 2021, Acea Ato 2 designed, created and commissioned an **innovative experimental plant for processing water destined for human consumption capable of removing arsenic**. The plant uses an innovative filtration medium made with amyloid proteins from dairy-industry waste (ß-Lactoglobulin), capable of capturing not only arsenic but also vanadium and lead. It has a treatment capacity of approximately 5 l/s (18 m^3/h), corresponding to the drinking-water requirements of a small settlement of around 600 families (2,000 people).
With regard to the **processing of drinking water**, at the Grottarossa and Montanciano plants, monitoring and analysis activity continued on treatment processes (chemical conditioning/pre-oxidisation, clariflocculation, sand filtration, granular activated carbon (GAC) filtration, post-oxidisation/disinfection), evaluating the efficiency of the removal of pollutants, specialised parameters for emerging organic species, both microbiological and sub-products of disinfection, in relation to the main management parameters of the plant. In addition, with reference to **forecasting the availability of water resources**, Acea Ato 2 has implemented a **machine-learning algorithm based on the random forest technique** to identify **meteorological proxies** (temperature and/or precipitation) **or management proxies** (volumes drawn) correlated to the variability of the state of preservation of the resource, with reference to the different collection sources (springs, well fields, etc.)

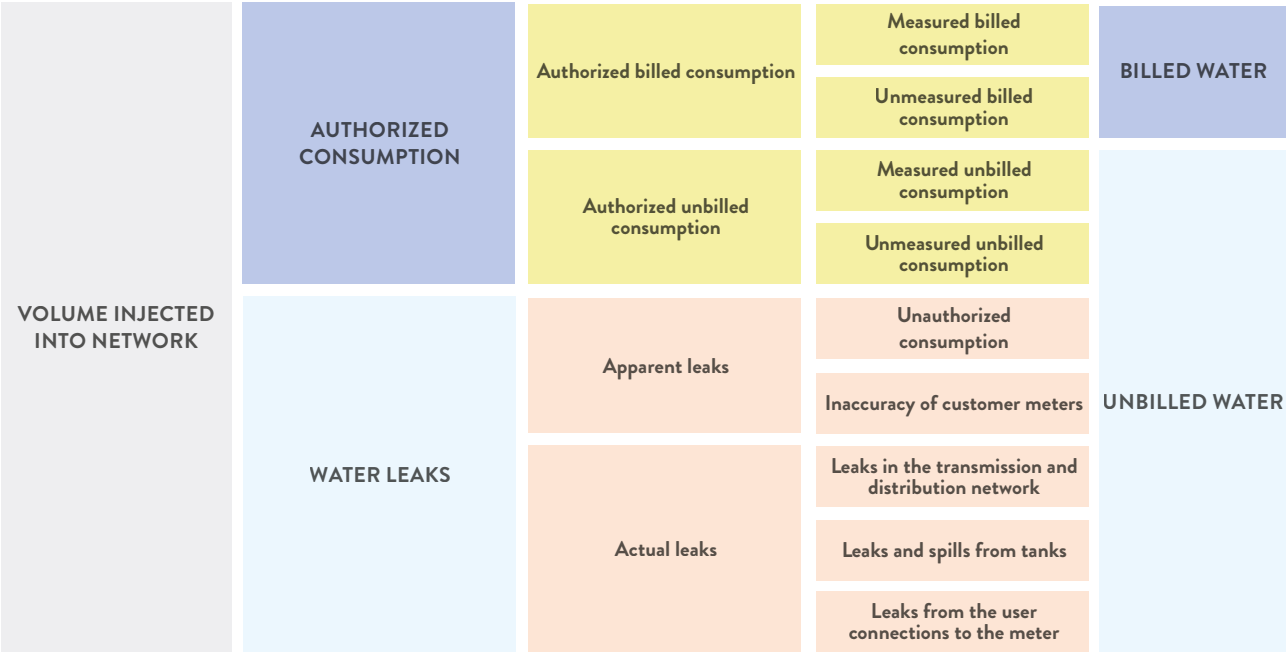
WATER SAFETY PLANS (WSPS)

The implementation of a **Water Safety Plan** (WSP) is required pursuant to the Decree of the Italian Ministry of Health of 14/06/2017, in implementation of EU Directive 2015/1787, which adopted the WSP methodology developed by the World Health Organization (WHO). Use of the WSP enables **prevention and reduction of the risks inherent in the drinking water service**, analysing dangerous events along the entire water supply chain, from collection to treatment and distribution, and through to the user's meter. The risk is calculated on the basis of the severity and probability of the pollution event or water shortage and after such assessment, the following are defined: **actions to mitigate risks**, **monitoring systems**, **operating procedures** under normal and emergency conditions, the **water quality control** plan, and the methods for **informing the public** and the competent authorities. In Italy, the Istituto Superiore di Sanità (ISS) has adopted WHO guidelines and approves WSPs.
Acea Ato 2 began implementation of the WSPs back in 2018, with an initial pilot project for the water system connected with the emergency drinking water plant for water from the river Tiber, in the Grottarossa area, with supervision of the Istituto Superiore di Sanità (ISS). For the WSP in question (completed in 2019), in 2020 the initial draft of the Plan was finished and submitted to the Ministry of Health. The Company has therefore launched the WSPs for the **ten major aqueduct systems managed**, stretching approximately 640 km. At 31/12/2021 the WSPs for the following aqueduct systems had been completed and submitted to the Ministry of Health: Peschiera-Capore, Appio Alessandrino, Marcio, new and old Simbrivio aqueducts, Laurentino and new Vergine aqueduct. In December 2021, a final meeting was held on the WSP of the Doganella aqueduct system, for which submission of documentation to the Ministry of Health is expected in 2022. Since April 2021, Acea Ato 2 has also launched implementation of the **WSPs for the distribution networks**, starting with the municipality of Guidonia Montecelio, for which the documentation has been shared with the Bodies involved, in November 2021. Overall, implementation of the **Water Safety Plans in Acea Ato 2** will involve 100% of the population served by aqueduct systems and from sources managed locally.
AdF also launched a project back in 2019 for the development and implementation of the **Water Safety Plan**, focusing initially on the aqueduct systems of the **Santa Fiora springs**, for six *Water Supply Zones* (WSZ) and a basin with 2,775 residents. The project, **completed at the end of 2021**, saw **active involvement of the main stakeholders** in the local area (local bodes/local health authority/ARPAT/District Basin Authority) and activation of a hydrogeological and geochemical study on the Santa Fiora springs, conducted in 2020 in the context of a scientific partnership with the Institute of Geoscience and Georesources of the Pisa branch of the CNR (National Research Council). Through the project, AdF acquired the necessary know-how to develop a planning tool as detailed by the **new EU Directive 2020/2184** on drinking-water quality, through refinement of a methodology for describing the environmental context and aqueduct infrastructures required for the subsequent risk assessment phase, according to an FMEA (*Failure Mode and Effect Analysis*) approach. In 2021, WSPs were created on the water systems fed solely by the North branch of the Dorsale Fiora resource, for 16 WSZs and more than 17,000 citizens.
After creating a cloud environment in 2020 for sharing, also with Control Bodies, of information on the drinking-water supply chain and useful for the implementation and approval of WSPs, in 2021 **GORI**, completed activity for the description of aqueduct systems, with requests being sent to the relevant local health authorities to identify the necessary figures for risk assessment, control measures and their efficacy. Operating Instructions and procedures are being drafted for the management of documents and accesses to the cloud, along with an **operating instruction manual for risk management**.
In 2021, **Gesesa** continued with training plans and authorisations on the draining necessary to manage WPSs, which will be prepared in collaboration with the University of Sannio. During the year, **Acea Ato 5** set up a multifunctional in-house team for implementation of plans.

WATER LEAKS

Sustainable management of water also requires **minimising losses on distribution networks**, with all operational Group Companies in the water area involved. Again in 2021, as in the previous year, there was **intensive activity to identify leaks**, quantified as described in chart no. 56, in order to recover the greatest possible quantity of water. In particular, the **dividing the network into water districts** makes it possible to optimise operating pressures, reducing losses, with targeted searches in the field in the most critical districts. With greater control of the individual parts of the network, it is possible to reduce losses, promptly identifying them or picking up on other anomalies.

Chart no. 56 – Water loss accounting model



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

Overall, to date, **Acea Ato 2** has created **581 measurement districts** for over **11,500 km of distribution network**. The activity consisted of surveys, flow and pressure measurements, map production, user analysis and water balancing, creation of measurement stations, installation of shut-off and adjustment elements, mathematical modelling and searches for leaks. The results of efficiency actions were imported into the GIS systems. In addition, 2021 saw optimisation of the quality of process measurements, through verification and calibration of meters installed on sources and drinking water plants, and **progress in survey activity and georeferencing of networks**. The actions implemented enabled a reduction in water-loss volumes of more than **13% compared to 2019**[147].

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 39.8% (they were equal to 44.7% in 2019). Furthermore, in line with the downward trend of the previous two years, total losses on the Rome network were down by 28.6% (29.5% in 2020 and 34.2% in 2019).

In 2021 **Acea Ato 5** completed district planning for the networks of nine new municipalities. In addition, efficiency was improved for districts previously created in order to rebalance operation of the network and optimise the distribution service. The Company has created **97 new districts** covering **520 km of network**. Active control of pressures has continued, with installation of meters, reducers and flow-control valves at strategic points, with the goal of improving management of flows into the zones managed, reducing differences between daytime and night-time pressure levels. In 2021, **31 water pressure control valves** were installed.

On the supply network, as planned, 137 km of network was inspected, with the addition of further stretches identified after study of the single-line diagrams performed during the year. No significant leaks were identified and **approximately 30 km of network** was restored: this activity led to **cartographic reconstruction**, during the year in question, **of 925 km of network**. On the basis of these works, 2021 losses were slightly lower, at approximately 67% (68% in 2020) of resources issued to the aqueduct system, and volumes lost were down 17% compared to 2019.

At **Gesesa** during 2021 a Recovery Plan was launched for water resources in the city of **Benevento**, which involves **replacement of damaged pipes**, **implementation of remote control technology**, **application of a system to reduce water leaks and reduction of operating pressures on the network**. Losses in the year were 57.8% of water issued to the aqueduct system (59.4% in 2020). Actions will continue in 2022, also involving other Municipalities.

AdF conducted intensive activity to search for system leaks on its own water networks. In total in 2021, the Company inspected approximately 3,000 km of distribution network and created districts covering 300 km of network, with 115 of this on networks not yet subject to monitoring of night-time minimums. This enabled a decrease in the average size of districts and **district planning for approximately 90% of the distribution network**, with 87% coverage of total users. Monitoring was launched for a portion of the water distribution network in the town of Grosseto using a fixed leak-detection system, with a noise logger. The activities launched by AdF have allowed a significant reduction in the volume of water lost, achieving a reduction of 13% compared to 2019. Action taken enabled a reduction in losses, from 42.5% in 2020 to 39% in 2021.

147 The reference year is 2019, for all Companies, in accordance with the goals set out in the 2020-2024 Sustainability Plan.

In 2021, there was also continuation of three pilot studies for experimentation of new innovative technology applied to searching and detection of water leaks. The first of these, involving satellite searches on 600 km of network, gave good results both in terms of the number of leaks detected and the speed of detection. The second, based on a predictive methodology that identifies the areas most at risk of breakages, gave good results in the city town of Grosseto, enabling definition of 23 critical areas, in which 16 hidden leaks were identified. The third is a study based on reducing network pressure, to guarantee the minimum pressure required for maintenance of optimal operation at the critical point, which will be combined with analysis on the reduction in CO_2 emissions due to reduced pumping to issue water at the tank upstream of the network.

In 2021 **GORI** launched various actions in the municipalities of Nola, Angri, Nocera Inferiore, Castellammare di Stabia, Gragnano and Torre Annunziata, including verification and full mapping of networks for GIS representation and activities aimed at water-network optimisation[148]. Tradition leak-detection activity also continued for the remaining municipalities in the District. Overall, GORI conducted searches for leaks on **1,676 km of water network**, of which 1,118 km was analysed using "systematic" searches for leaks, and 558 km on the basis of "faults". In 2021, eight pressure regulation valves were installed and repair work was performed on approximately 141 km of water network. The combined action of the strategies enabled a reduction in volumes lost of approximately 14% compared to 2019. See the *Environmental Accounts* for details on individual water balances.

SEWERAGE SERVICE AND TREATMENT SYSTEM

13,712 km of sewerage network and **484 treatment plants** managed by Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa, for **779 Mm³** of water treated

approximately **152,790 t of sludge produced** by Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa, of which **67% recovered** (44% in 2020)

Water resources, after uses for the various civil purposes, is **collected through the sewer pipes** and **sent to the treatment plants**. There, wastewater is treated enabling **removal of pollutants via physical processes** (filtering, sedimentation, flocculation) **and biological** methods (aerobic and/or anaerobic decomposition of the organic substance with bacteria), and the production of sludge.
With **865 treatment plants** (of which **484** managed by Acea Ato 2, Acea Ato 5, AdF, GORI and Gesesa), the total volumes of water processed by the Group[149] in 2021, were **981 Mm³**, of which **779 Mm³** by Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa[150]. The total number of Group treatment plants has decreased, from 895 plants in 2019 to 865 in 2021, on the basis of the **project for centralisation of treatment of wastewater** in order to streamline the service, which involves the main Companies (see info. box for more details on Acea Ato 2). For the Companies Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa, volumes of wastewater processed and percentage coverage of sewerage and treatment services for the total number of users served by the aqueduct are presented in Tables 55 and 56. The sewerage networks managed in 2021 total **22,381 km**, of which **13,712 km** relate to the five Companies listed.

Table no. 55 – Volumes of wastewater treated by Water Companies operating in Latium, in Campania and in Tuscany (2019-2021) (Mm³)

company	2019	2020	2021	destination
Acea Ato 2	599.8	596.9	601.5	returned to the environment (river/channel) and sea (in sea 0.3%)
Acea Ato 5	21.3	21.2	25.0	surface water body (river)
GORI	45.2	70.1	124.0	surface water body and sea (in sea, in 2021, 23%, equal to approximately 28 million cubic metres[151])
AdF	25.8	23.3	25.9	surface water body and sea (0.9% in sea)
Gesesa (*)	n/a	2.2	2.3	surface water body (river)

(*) In 2020, Gesesa began installing flow meters at the entry to treatment plants. Estimated data.

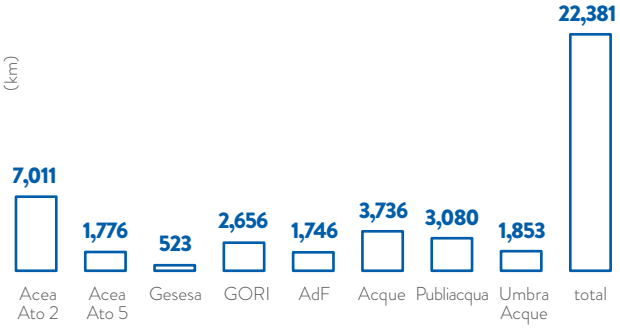
148 For example, the phase of planning optimisation of network includes construction of mathematical models of the network, calibration with smart mobile instrumentation, planning of optimal districts, pre-localisation of leaks and checks in the field, smart leak detection guided by the mathematical model, identification of stretches to be replaced and definitive planning with related preparatory activity.

149 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.

150 Gesesa started installing the first flow meters on certain plants in 2020 and estimating the quantities of wastewater treated.

151 Plants that discharge into the sea for the Company GORI are those on the islands of Capri, the Sorrento Peninsula and that of Foce Sarno.

Chart no. 57 – Sewer networks of the main Group Companies in Italy (2021)



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 parameters established (as per Italian Legislative Decree no. 152/2006).

Almost 100% of the wastewater treated, which can be defined entirely as "fresh water", containing less than 1,000 mg/l of total dissolved solids, **flows into bodies of surface water**. Only 0.9% of the water treated by AdF is discharged into the sea and 23% of the water treated by GORI, approximately 4% of total water treated[152]. The portion of water discharged into the sea travels through underwater pipes, following treatment at the coastal treatment plants of the Sorrento Peninsula (Sorrento, Massa Centro and Marina del Cantone), the island of Capri (Gasto, Occhio Marino and La Selva) and Foce Sarno. The main basins affected by discharge are presented in Table no. 57.

Table no. 56 – Percentage coverage of the sewer and purification services for total user accounts of the Water Companies in the NFS (2019-2021)

company	2019		2020		2021	
	sewer	purification	sewer	purification	sewer	purification
Acea Ato 2	91.5%	88.1%	91.7%	88.4%	91.5%	88.3%
Acea Ato 5	66.5%	55.9%	66.8%	57.3%	67.1%	57.7%
GORI	82.3%	66.0%	84.0%	70.4%	86.7%	76.1%
Gesesa	80.3%	30.4%	80.6%	33.9%	80.6%	34.8%
AdF	84.2%	73.5%	84.2%	73.6%	84.1%	74.8%

Table no. 57 – Hydrographic basins affected by discharges of water companies within the scope of the NFS

company	hydro graphic basins affected
Acea Ato 2	basins of rivers Tiber, Aniene, Mignone and Arrone
Acea Ato 5	basins of rivers Gari, Sacco, Cosa and Liri, Fosso della Maddalena, tributary of the River Sacco, Fosso del Diluvio, tributary of Lago di Canterno
Gesesa	basins of rivers Calore, Sabato, Isclero and Tammaro
GORI	hydrographic basin of the river Sarno and Regi Lagni canals
AdF	basins of the rivers Ombrone, Orcia, Fiora, Albegna, Elsa, Pecora

NOTE: prior to discharge, wastewater is treated in the treatment plants managed by the Companies themselves.

CENTRALISATION OF ACEA ATO 2 TREATMENT PLANTS CONTINUES

To improve the quality of treated water, Acea Ato 2 has defined a Centralisation Plan for treatment plants aimed at **streamlining the service**, centralising treatment, where sustainable, at a limited number of sites identified through analysis of the land from a geomorphological and urban-planning perspective.

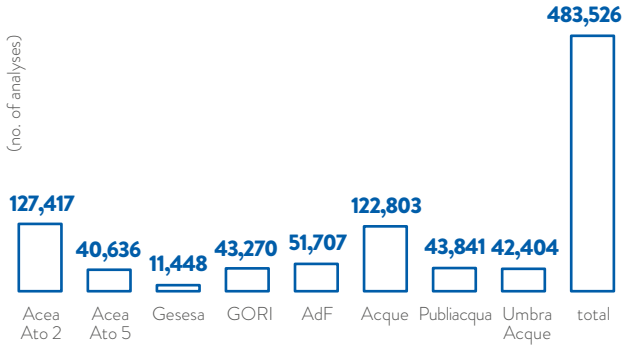
In fact, with a high number of small and medium-sized treatment plants managed (117 treatment plants with capacity below 10,000 P.E.), service coverage is guaranteed primarily by large and medium-large treatment plants (43 treatment plants with capacity above 10,000 P.E.). From the date of acquisition of the Integrated Water Service (2003), and subsequent steps, 14% of treatment plants with low and medium capacity have already been eliminated. The reduced fragmentation in favour of medium-large plants, combined with integration of sewerage collector systems, has allowed **greater control of treatment efficacy** and optimisation of management and energy costs.

Acea Ato 2 has therefore prepared a rationalisation plan, which it keeps up to date, choosing between centralisation and upgrading of small plants on a case-by-case basis. The optimal solution depends on many factors that must be carefully evaluated for the specific case. In 2021, the Centralisation Plan reached the goal of **eliminating a further 5 minor treatment plants** (Guado Tufo Sacrofano, Grotte Portella Frascati, Valle Focicchia and Valle Vergine Rocca di Papa and La Botte Guidonia) **as well as one medium-sized plant** (Lucrezia Romana – Ciampino).

152 The discharge of water, as for intake, occurs in areas at potential risk of water stress, as defined by the cited Aqueduct Water Risk Atlas.

The Company manages treatment processes in line with the provisions of the authorisations required for each plant and on the basis of the regulatory context in which they operate. The discharge limits are established for each plant, through an authorisation issued by the competent administrative body, which, on the basis of technical and environmental assessments during evaluation, may set stricter parameters compared to those applicable nationally. In this regard, for example, the regulatory framework in which Acea Ato 2 operates is characterised by prescriptive standards for discharge which are **slightly higher** compared to the national regulatory reference level, and similarly, for Acea Ato 5, in the Province of Frosinone, authorisations regarding the quality of water discharged are stricter than those established by sector-wide regulations. This is a precautionary approach.
The Company that performs analyses to verify the proper treatment of waters indicated the percentages for non-compliance with discharge limits, which are nevertheless very low, relative to the total quantities analysed: 3.3% for Acea Ato 2, approximately 3.4% for Acea Ato 5 and Gesesa, 0.8% for GORI and 4.3% for AdF. In 2021, no hazardous substances were identified in analyses of Group wastewater.

Chart no. 58 – Analytical checks on wastewater, total and by company (2021)



Specifically, for **Acea Ato 2**, **127,417 analyses** performed **confirm the high purification performance** achieved by the **treatment process**.
In the "historic" area managed by Acea Ato 2, which includes **Rome and Fiumicino**, **the main treatment plants treated in 2021 approximately 516 million of cubic metres of wastewater**, a figure that is slightly higher than the previous year (512 million cubic metres in 2020). Considering also the smaller treatment systems and the plants of the municipalities acquired in OTA 2 (a total of 164) a **total volume of approximately 602 million cubic metres of wastewater treated**, in line with 2020 (597).
Table no. 58 shows the details of the most important parameters from the main treatment plants of Acea Ato 2, Acea Ato 5, GORI, AdF 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. 58 – Output parameters of the main treatment plants managed by Acea Ato 2, Acea Ato 5, GORI, AdF And Gesesa (2021)

	Acea Ato 2	Acea Ato 5	GORI	AdF	Gesesa (Benevento)	concentration limits in surface water (Legislative Decree no. 152/06)
parameter	average of values (mg/l)					
BOD5	5	4	8	9	8	≤ 25
COD	20	21	15	32	19	≤ 125
SST	8	3	19	10	5	≤ 35
nitrogen (ammoniacal, nitrate and nitrous)	6	6	7	20	3	-
phosphorous	1	3	1	4	1	-
	quantity output (t)					
COD	16,041	925	1,892	585	25	-
SST	7,443	313	2,402	196	6	-

The sludge produced during the purification process **is mostly** sent for **recovery of material** (see the section *Intermediation and transport of waste* in *Environment segment*).
In 2021, actions continued to reduce the **quantity of sludge produced by treatment plants** managed by the Group Companies. Specifically, **Acea Ato 2 began use of its thermal dryer at the Ostia plant**. As a result of actions taken in recent years, in 2021 the reduction in the quantity of dehydrated/dried sludge was over 5% (compared to 2019), in line with the targets defined in the 2020-2024 Sustainability Plan. In 2024, it is expected that the sludge produced will be dried at the largest plants (Roma Est, Roma Nord, Roma Sud, Ostia and COBIS).
In 2021, **AdF completed works at the Grosseto San Giovanni plant** for **centralisation and thermochemical hydrolysis of sludge** produced by treatment plants under its management, launching activity in the second half of the year. The works enabled a 30.5% reduction in volumes of sludge produced compared to 2019. With the planned integration of anaerobic digestion and cogeneration processes, it will be possible to contribute to the energy independence of the plant through the production of biogas.
For **Acea Ato 5**, increasing focus on identifying innovative technological solutions aimed at **recovering material from treatment sludge**, in line with circular-economy principles, guided the choice towards use of the Fiuggi Colle delle Mele treatment plant, which is particularly efficient and has an appropriate residual capacity, for treatment of liquid waste produced. In 2021, the Company launched works for activation of the same sludge treatment methods for the Ceccano treatment plant.
At **Gesesa**, in 2021 the centrifuge was installed at the Ponte delle Tavole treatment plant, which was already operational, and assessment is underway for further specific actions. *At the end of 2020*, **GORI** began using a sludge-drying system at the Angri treatment plant. Authorisation and technical activity is underway for the upgrading of existing dryers at the treatment plants of Nocera Superiore and Foce Sarno, which came under management in 2019 and 2020, respectively, and for which activation is expected within two years. Construction of a drying system is also planned at the Nola plant.

In 2021, **Acea Ato 2** also completed preparatory activities for the **production of biomethane**, with a project target of 1 million Sm^3 per year in 2024, as an **opportunity for water operators in the circular-economy context**. Once fully operational, the "biomethane" project aims to produce over 2 million Sm^3 of biomethane per year through upgrading of biogas available at the two large treatment plants for civil wastewater of Roma Est and Roma Nord. This is a renewable energy source, the development of which was included by the Italian Government in the National Recovery and Resilience Plan (NRRP) with the provision of capital funding to incentivise production. In the year, the Company completed design of the two plants, including the points of input of biofuel to the gas network managed by Italgas Reti and verification of compliance with fire-prevention regulations with the collaboration of the Rome Fire Department. According to plans, the two plants should be operational by the first quarter of 2023.

PROMISCES PROJECT

Together with SIMAM and another 24 European partners, in November 2021 Acea Elabori saw the kick-off of the Promisces (***Preventing Recalcitrant Organic Mobile Industrial chemicalS for Circular Economy in the Soil-Sediment-Water System***) in Paris, with the aim of identifying the current barriers that prevent circularity in the soil-sediment-water (SSW) system and defining strategies to overcome them. More specifically, the project is intended to **remove highly persistent**, **mobile and potentially toxic substances** (identified within the European REACH regulations[153]), to help contribute to the goal of zero pollution and to improve protection of human health.
The project, financed by the European programme Horizon 2020, calls for seven case studies in Europe. Acea Elabori will work to remove PFAS (per- and polyfluoroalkyl substances) from dredged up materials to allow for reuse. PFAS are a highly persistent type of pollutants that damage ecosystems, creating high water and soil reclamation costs and with significant impacts on human health.
The project will take place over multiple years, during which techniques to monitor and model the substances and sources of pollution will be analysed, in order to enhance relevant scientific knowledge and support the promotion of solutions to prevent, mitigate and remedy this issue in the SSW system. In cooperation with interested parties, tools and strategies will be developed (as well as techniques and regulations) for sustainable management in the context of the zero pollution action plan.
By defining advanced treatment techniques for water purification and leachates from landfills, the project will contribute to circularity and the protection of ecosystems, as well as to the activities of the various companies in the Acea Group working in the integrated water system and protection of water.

Acea also works with **ENEA on projects aimed at sustainable management of the waste and water cycle**, with the objective of applying innovative technologies and solutions to industrial projects. In the context of the Framework Agreement signed with the Agency, in 2021 Acea began two studies. The first focuses on the creation of a self-tracking tool for continuous **improvement of the quality and reliability of analysis services offered by Acea Elabori**. The second is aimed at preliminary investigation for the **definition and implementation of sampling and MP (microplastics) analysis methodologies on water lines of treatment plants and in recipient bodies of water**.

THE USE OF MATERIALS, ENERGY AND WATER

energy efficiency (Areti and the Water Segment): approximately **24 GWh of savings per year** and approximately **7,500 t** of CO_2 **emissions avoided**

approximately **420 GWh of electricity consumed** by Group Companies **from renewable sources** with GO certification and **132,360 t** of CO_2 **emissions avoided**

47,700 m^3 of water recovered: **23%** of the total used in industrial processes in the Environment Segment

"Piaggio Reuse": the **Acque Industriali project** to eliminate the withdrawal of water from external sources, reusing water discharged from the production cycle

153 Regulation (EC) 1907/2006, the integrated European regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

CONSUMPTION OF MATERIALS

The main materials used in production processes differ according to the business sector. For the **Companies in the Environment Segment**, the most important resources include **incoming waste for production of compost and electricity** (waste-to-energy from pulper waste and SRF). Thermoelectric plants, managed by **Acea Produzione**, use **fossil fuels (natural gas and diesel) for the production of electricity**. For the electricity distribution process, carried out by **Areti**, one important gas is sulphur hexafluoride SF_6, used **in medium and high-voltage plants** for its specific electrical and thermal insulation properties. For the **Companies in the water segment**, there is use of **chemical products** required for process management, such as reactants for drinking water processing, disinfection and treatment of wastewater. Finally, **Acea Energia** and the structures managing commercial activity for the **Water Companies**, whilst all committed to processes of digitalisation, all use **paper** for customer invoicing. Please see Table no. 59 and the *Environmental Accounts* for details of resources used by each area.

Table no. 59 – Type and consumption of materials by the main Group Companies (2019-2021)

materials	u.m.	2019	2020	2021
incoming waste for composting and landfill	t	153,330	221,950	249,867
pulper	t	94,092	90,215	99,730
SRF	t	340,531	319,122	307,391
methane	Sm^3 x 1,000	23,703.0	23,495.6	26,101.5
diesel fuel	l	574,405	587,028	646,730
SF_6	t	21.9	22.3	22.3
various chemicals of water companies	t	15,775	17,951	18,804
paper	t	356	352	341

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 agrifood waste). Pulper and SRF for waste-to-energy are resources with a renewable component linked to the biodegradable fraction of the waste. In 2021, the renewable and biodegradable portions of pulper waste and SRF were approximately 43%. The data for paper are related to the billing of the Companies Acea Energia, Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa. Some values for the previous two-year period have been adjusted for consolidation.

ENERGY CONSUMPTION

GROUP ENERGY CONSUMPTION

Total energy consumption, both **direct and indirect**, is approximately **12,850 TJ**, down by 1.8% on 2020, due primarily to reduced energy usage of SRF[154] and lower electricity consumption for the distribution of drinking water (see Tables 60 and 61).
Whilst some areas have seen an increase in consumption, such as the treatment segment, primarily due to the management of new plants by GORI, in general **indirect consumption has decreased**, due in particular to lower consumption for the segment involved in the distribution of drinking water, due to greater rainfall and therefore reduced energy use for pumping systems.

Electricity consumption of the main Companies, particularly connected to the distribution of drinking and non-drinking water, treatment, waste-management plants and internal consumption sites, **originates from renewable sources with a Guarantee of Origin**, **for a total of approximately 420 GWh**, which in 2021 **was equal to 57% of specific consumption (731.8 GWh)** (Table no. 60).
The trends of **energy consumption intensity indexes** show improvement and certain increases in efficiency are specified in Table no. 62.
Approximately 0.9 GWh are produced by on-site PV plants for self-consumption at Group plants.

Table no. 60 – Direct energy consumption of the main Companies in the Group (2019-2021) (*)

	2019	2020	2021
energy per source		TJ (GWh)	
RDF/SRF and pulper waste (waste-to-energy) – non-renewable share	3,283.0 (911.9)	2,849.4 (791.5)	2,770.1 (769.5)
biogas (100% renewable – waste management and water segment)	243.9 (67.7)	420.8 (116.9)	424.1 (117.8)
SRF and pulper waste (waste-to-energy) – non-renewable share	3,280.8 (911.3)	3,859.1 (1,072.0)	3,659.0 (1,016.4)
methane (for electricity generation, district heating, processes, water area dryers and heating for offices) (***)	1,280.5 (355.7)	1,238.6 (344.0)	1,330.0 (369.4)

154 Due to lower running levels in the first two months of 2021.

LSC oil for process (disposal of Acque Industriali wastewater)	1.8 (0.5)	2.0 (0.6)	1.3 (0.4)
PG (heating)	0.7 (0.2)	0.8 (0.2)	0.6 (0.2)
diesel (for electricity generation and other uses, composting plants)	38.3 (10.6)	47.7 (13.3)	48.2 (13.4)
petrol (road haulage)	3.9 (1.1)	7.1 (2.0)	18.0 (5.0)
diesel (road haulage)	126.3 (35.1)	124.5 (34.6)	124.8 (34.7)
GPL (road haulage)	0.0 (0.0)	0.5 (0.1)	0.6 (0.2)
total	**8,259.1 (2,294.2)**	**8,550.6 (2,375.2)**	**8,376.7 (2,326.9)**

(*) The figures for the two-year period 2019-2020 have been restated to include Bio Ecologia, Demap and Berg, making them comparable with 2021.
NOTE: The energy produced by the Group plants and fed into the network is illustrated in the *Environmental Accounts* (Products – Energy Segment).

Table no. 61 – Indirect energy consumption of the main Group Companies (2019-2021) (*)

types of indirect consumption (TJ (GWh))	2019	2020	2021
electrical energy losses on the distribution networks and transport	1,188.4 (330.1)	1,076.7 (299.1)	1,090.4 (302.9)
own use of electricity for the implementation of distribution and transmission activities	142.1 (39.5)	128.9 (35.8)	110.6 (30.7)
losses and self-consumption in the production of electrical energy	233.1 (64.8)	251.5 (69.9)	279.6 (77.7)
electricity consumption for the production of PV energy (**)	8.2 (2.3)	14.3 (4.0)	12.2 (3.4)
electrical consumption for Ecogena plants (**)	19.4 (5.4)	19.7 (5.5)	13.7 (3.8)
losses of heat in the district heating network	109.7 (30.5)	99.8 (27.7)	86.0 (23.9)
consumption for public lighting	252.3 (70.1)	241.1 (67.0)	242.4 (67.3)
consumption for production processes, distribution of electricity and thermal energy and public lighting	**1,953.2 (542.6)**	**1,831.9 (508.9)**	**1,834.9 (509.7)**
electrical consumption for waste management plants (**)	43.2 (12.0)	41.7 (11.6)	35.2 (9.8)
electricity consumption for distribution of drinking water (***)	1,477.5 (410.4)	1,719.6 (477.7)	1,588.1 (441.1)
electricity consumption for wastewater purification (***)	904.8 (251.3)	902.7 (250.7)	972.5 (270.2)
consumption of electrical energy for the offices (**)	41.4 (11.5)	36.9 (10.3)	38.7 (10.8)
electricity consumption for other operating processes (Integrated Water Service, waste management, offices, etc.)	**2,466.9 (685.2)**	**2,700.9 (750.3)**	**2,634.5 (731.8)**
total indirect energy consumption	**4,420.1 (1,227.8)**	**4,532.9 (1,259.1)**	**4,469.4 (1,241.5)**

(*) The figures for the two-year period 2019-2020 have been restated to include Bio Ecologia, Demap and Berg, making them comparable with 2021.
(**) Energy with GO certification (Guarantee of Origin).
(***) Energy with GO certification (Guarantee of Origin) for 57%.

Table no. 62 – Energy intensity indices (2019-2021)

ENERGY CONSUMPTION INTENSITY INDEX	u.m.	2019	2020	2021
electricity consumed for public lighting per lamp	TJ/lamp	0.00112	0.00106	0.00106
total electricity consumed by Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa/water issued into aqueduct systems (*)	TJ/Mm^3	2.202	2.436	2.457
electrical energy consumed by Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa for sewer service and treatment/water treated (**)	TJ/Mm^3	1.31	1.26	1.25

(*) The increased consumption of electricity is primarily due to increases in consumption by GORI, which in recent years acquired and launched management of plants previously controlled by the Campania regional authority.
(**) there has been a slight decrease, and therefore an increase in efficiency, in the ratio of energy consumed to water treated.

ENERGY CONSUMPTION OUTSIDE OF THE GROUP

Acea works to increase awareness and monitor its supply chain in relation to energy issues. Since 2015, it has monitored **energy consumption outside the Group**, requesting a representative panel of its suppliers to fill out a specific questionnaire. In December 2021 the questionnaire was sent to 100 suppliers, the principal parties in terms of value of orders for the year. Thanks to the results from 40 of those contacted (equal to 42% of the total Acea expenditure for the procurement of goods/services and works), the total energy consumption for all suppliers was estimated at 390,506 GJ[155]. Since 2021, the questionnaire has included a specific section on water consumption (see the section *Attention to water consumption*, further on in the document).

ENERGY SAVINGS

Ecogena is the organisation registered to develop **energy-efficiency initiatives for the Group Companies** and report their results to the Gestore dei Servizi Energetici (GSE) for the **awarding of Energy Efficiency Certificates** (EECs). At 31/12/2021, the plants managed by Ecogena received **8,980 TEE** pursuant to Italian Ministerial Decree of 5 September 2011.
For Areti to achieve the energy-saving goal, actions were focused on the purchase of EECs on the market managed by the electricity market operator (GME). **The 2020 requirement**, with **expiry postponed to July 2021**, is 54,848 EECs. On top of this, there is the residual portion of the 2019 requirement equal to 48,947 EECs with respect to the initial 122,369 EECs, and the residual portion relating to the 2018 requirement equal to 10,102 EECs. The total requirement was therefore 113,897 EECs, of which the minimum to be cancelled was 43,011, with this quantity being correctly cancelled. Since 30/06/2021 the management contract for EECs for Areti's compliance was terminated and **this activity returned directly under the control of Areti**.

ENERGY EFFICIENCY ACTIONS

Again in 2021, Acea launched **actions aimed at recovery of energy efficiency**, in particular at the **headquarters** and the **Companies of the Water**, **Energy Infrastructure and Environment operating segments**. At the headquarters there was replacement of window fixtures in the stairwell, lift motors and various lighting fixtures with LED technology in certain offices and corridors. Energy consumption of the headquarters continued to be lower than the historical average, also in relation to the health emergency. At Acea's La Fornace conference centre, also used for employee training, a photovoltaic plant is in use. This produced 10.6 MWh in 2021, with 4.2 MWh for self-consumption and the remaining 6.4 MWh issued to the national electricity grid.
Considering the **photovoltaic systems** at the plants of Acea Ato 2, AdF and Terni, total energy consumption (on-site self-consumption) was approximately **950 MWh**, with a consequent **300 tonnes of CO_2 emissions avoided**.
For the **Water Segment**, in 2021 consumption saw a slight reduction (-2.4%) due in part to an increase in rainfall and in part to energy-efficiency measures. Below is a description of the **energy-efficiency actions** taken by the Companies in relation to routine operations.
In this regard, in 2021 **Acea Ato 2** achieved **a total saving of 8.9 TJ** (2.48 GWh). In particular, consumption has been reduced for energy used in the recovery of water losses in Roma, through significant measures taken to recover the resource, **with a saving of approximately 2.6 TJ** (0.72 GWh). There have been increases in efficiency corresponding to **4.7 TJ** (1.29 GWh) at two water plants and for the treatment segment **there have been increases in efficiency for a saving of 1.7 TJ** (0.47 GWh) through specific actions to optimise two treatment plants. For **Acea Ato 5** increases in efficiency, corresponding to **3.2 TJ** (0.90 GWh), are attributable to the replacement of multiple pumps used for withdrawal at springs and well fields, installation of inverters, elimination of two treatment plants and a sewerage pumping plant, and replacement of traditional lamps with LED lamps. **GORI** implemented actions to increase efficiency for a saving of **62.6 TJ** (17.4 GWh), primarily through use of water sources with greater efficiency, new remote-management methods and the use of electric pumps with a greater yield. **AdF** increased efficiency for a saving of **5.3 TJ (1.5 GWh)** through actions on the aqueduct, with replacement of older pumps, district planning, management of pressure levels and leak detection. Gesesa has achieved an initial saving through increased efficiency of **1.4 TJ** (0.4 GWh) resulting from actions to manage pressure levels in the context of the current district-planning process. Overall, the above actions have enabled the **water segment to avoid** approximately **7,130 t of CO_2**.
For the **Environment** Segment, activities to **increase energy efficiency** in 2021 have involved actions at the **San Vittore del Lazio plant**: replacement of two electric motors **with new** more effi-

155 The figure is obtained by readjusting the consumption of respondents relative to the total purchased during the year.

cient models on lines 2 and 3, and replacement of traditional lamps with LED lamps, an annual overall saving from increased efficiency of 151,000 kWh. Other minor actions include replacement of LED systems at the Aprilia plant (5.8 MWh), and replacement of the centrifuge for drying of sludge[156] at the Chiusi plant of Bio Ecologia (23 MWh/year). For Acque Industriali in August 2021, the LSC-oil boiler of the Pontedera plant was replaced with a GPL system, for an annual increase in efficiency in 2021 that saved 840 kWh. 57 tonnes of CO_2 emissions were avoided.

In the Networks segment, the Company **Areti** continued in 2021 **with works to increase efficiency** on the electricity distribution network managed, including:

- the use of **257 MV/LV transformers** with **very low losses**, which allowed a reduction in electricity consumption of 388 MWh[157]
- other **actions on the HV/MV/LV distribution network** aimed at optimising the structure of the MV network and upgrading of HV and LV lines, currently estimated at a total of 1,127 MWh saved (including use of transformers).

Table no. 63 shows the types of actions and relative energy savings for Areti, for the last three years. **In 2021**, the total **energy saving** was **4 TJ** (1.1 GWh) and **355 tonnes of CO_2 emissions were avoided**[158].

Table no. 63 – Energy efficiency in Areti (2019-2021)

ENERGY SAVINGS ACHIEVED (GJ)

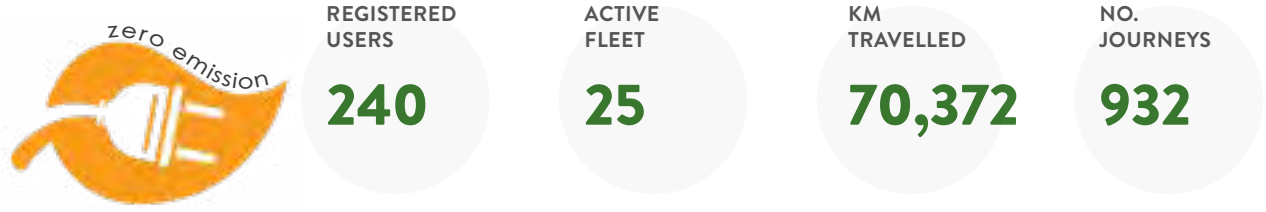
action	2019	2020	2021
reduction in losses from the network	4,860	6372 (*)	4,057 (**)
of which reduction in losses through the purchase of new transformers	*1,454*	*1,141*	*1,397*

(*) consolidated figure
(**) estimated figure

Consumption for public lighting in 2021 was **67 GWh** (242 TJ), in line with 2020 consumption. The ratio of LED lamps to total lamps remained unchanged at 91.7%.

Again in 2021, a further positive contribution was provided by the **25 electric vehicles** already in use in 2019 by the Company's staff in the context of a car-sharing scheme (Renault ZOE cars). In 2020, 100 electric Renault Kangoo cars were also purchased, destined for 24-hour personal work use, assigned individually to single employees. Of these, at the end of 2021, approximately 40 are already operational. In 2021, Areti monitoring calculated a total for all journeys of approximately 284,444 km, consumption of approximately 46 MWh and a net saving of approximately 28,670 kg of CO_2 linked to the absence of use of vehicles running on diesel.

Chart no. 59 – Car-sharing data (2021) (*)



(*) The chart refers to the ZOE model cars in the car-sharing scheme. It does not include Renault Kangoo vehicles assigned individually.

In 2021 Acea Ato 2 also added to its fleet of vehicles with **15 electric box trucks** and completed installation of on-site charging stations at the treatment plants of Roma Sud, Ostia, Roma Nord, Roma Est and Cobis.

156 The increased efficiency of performance of the centrifuge primarily enables an increase in volumes that can be processed, along with an energy saving.

157 In 2021, 257 transformers with very low losses were moved from the company warehouse, partially for replacement of traditional transformers and partly to equip new MV/LV substations.

158 Calculations for estimation of CO_2 emissions avoided in the entire section *Relations with the environment* have been carried out using the 2021 Terna location-based conversion factor, equal to 0.315 tonnes of CO_2/MWh. In the Sustainability Plan reporting, the same estimate is made using the 2019 conversion factor, in line with the calculation for definition of the 2024 target.

ATTENTION TO THE USE OF WATER RESOURCES

The main water intake of the Group 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. Water resources are also used for cleaning of units in treatment plants, backwashing fine grilles and anaerobic digestion units. Water is also used in small quantities for laboratory activity.
While in 2020 accounting for industrial and civil water usage, including reuse, was greatly improved, **in 2021 the increase in the portion recovered**, **approximately 2.2 million m³** (515,000 m³ in 2020) led to lower consumption of drinking water. Some Companies in the water sector launched specific projects and actions for reuse of treated water (see the box on reuse of water used for technical purposes by GORI). The recent European Regulation 2020/741 on the reuse of treated water in agriculture, in addition to provisions that will be adopted with national regulations, facilitates a significant reuse of treated water in coming years.
The Group promotes informed and careful use of water resources, **also throughout the supply chain**, raising awareness among suppliers through issue of a questionnaire (see also the sub-section *Energy consumption outside of the Group*).

REUSE OF WATER USED FOR TECHNICAL PURPOSES BY GORI

At the treatment plants currently managed by GORI there is reuse of treated effluents **for usage within the plant itself**. The wastewater reused, defined as "for technical purposes", is distributed within plants through specific pipes and used for various purposes, including washing equipment (screens, units for thickening and drying of sludge), backwashing of certain parts of the treatment plant (membranes, fabric or sand filters), and washing of sand and screens. The quantities of water used for these activities are not currently measured. In 2022, a monitoring programme will be launched for all uses of water for services within the treatment plants, including activities carried out using water for technical purposes as previously described, and other uses (cooling, irrigation of green areas, fire-protection uses, toilets, etc.) that are currently carried out with drinking water. Through installation of specific flow meters, the goal is to implement a water-audit methodology that enables assessment of the water footprint for treatment processes and identification of strategies for greater savings and reuse of water within the individual plants. Reuse of treated wastewater is an effective response to water stress which also affects the territorial area managed by GORI.

In order to reuse water from treatment processes and minimise consumption of drinking water, in the period 2020-2021, the Company **Acea Ato 2** completed **the industrial water network** (non-drinking water) **for the treatment plants of Roma Sud**, **Roma Nord**, **Cobis and Ostia**. In the period 2022-2023, there are plans for expansion of the industrial water network for the Roma Est treatment plant, as well as for the launch of similar works at the Parco Leonardo treatment plant (Fiumicino), increasing the quantity of water reused with a circular-economy approach.
The works described have enabled a reduction in the quantity of drinking water used for industrial processes, also impacting the figure for the Group. In fact, in 2021 (see Table no. 64), total water consumption, excluding water recovered, was down 7%.
Not all Companies have been successful in obtaining authorisations for reuse: in 2021, Acea Ato 5 submitted a plan to the Area Authority for the reuse of wastewater discharged by certain treatment plants, included in the Plan of Works, selected on the basis of the potential reusers.
Excluding the plants with capacity below 2,000 Population Equivalent, with dimensions too small to guarantee constant provision to potential reusers, assessment was carried out within the scope of plants for which adaptation/upgrading works are already set out under the current Plan of Works. This assessment identified a single plant located in the municipality of Pontecorvo and situated near large agricultural companies/land-improvement cooperatives that could benefit from reuse of the treated water. However, analysis of overall costs and works time frames led to its feasibility being excluded.

The **Companies in the Environment Segment** limit the consumption of drinking water, **mainly using water from wells**. In addition, at the **plants of San Vittore del Lazio**, **Orvieto**, **Aprilia**, **Monterotondo Marittimo** and **Terni**, there are active **systems for the recovery of rainwater**. At the Terni plant, for example, rainwater is collected in **two tanks** equipped with a filtration system and storage tanks, before industrial use. The **Aprilia composting plant** also has a **system for the treatment of residual water from waste awaiting processing** for reuse in production processes, and only for industrial uses (e.g. washing vehicles). Other water reused for industrial purposes, since 2021, has been obtained from the evaporation line for liquid digested material. At the **Monterotondo Marittimo**, plant, in order to reduce water consumption aimed at greater consolidation and safeguarding of resources, there is a recovery system for rainfall that, after constructed-wetland treatment, enables collection of the water in special aerated lagoons, both as a reserve for fire-fighting and as a reserve of industrial water for process use. In December 2021, works were also completed for the creation of new fire-fighting tanks that allow allocation of the recovered water reserve only for industrial use within the site. At the **San Vittore del Lazio waste-to-energy plant**, every year rainwater is used in the production of demineralised water, after treatment in a specific chemical-physical plant, and is completely reused in the process. There is therefore zero discharge. Finally, the **Orvieto plant hub collects rainwater** from the roofs of some buildings, channelling it into the fire-fighting tank serving the building where compost maturation and storage phases take place. Thanks various solutions described, **the volume of water recovered from the Environment Segment** was approximately **47,700 m³**.
Attention to management and consumption of water is also highlighted by the Piaggio Reuse project, led by Acque Industriali (see specific info. box).

PIAGGIO REUSE

Piaggio Reuse is a project led by Acque Industriali aimed at establishing a **circular water management model** at the Pontedera plant complex, in the province of Pisa. Currently co-existing at the Pontedera complex are the chemical and physical treatment plant of the Piaggio plant, the civil wastewater treatment plant of Acque SpA and the industrial wastewater treatment plant of Acque Industriali, which primarily processes effluents from the Piaggio plant. The project involves a qualitative increase in water leaving the wastewater treatment plant, through creation of a **biological post-treatment phase using MBR** (Membrane Bio Reactor) technology that generates a flow of water **for reuse within the production cycle** and brings a consequent drastic **reduction**, or complete elimination, **of water drawn from groundwater resources**. A similar effect is expected on the volumes of water discharged, with lower environmental and economic costs. The project began in 2021 with an initial step in the form of a pilot project, and will be extended in 2022 to the full-scale plant. The results of the project could be replicated on all industrial plants with very high water consumption.

Group water intake associated with industrial processes and civil uses is presented in Table no. 64.

Table no. 64 – Water intake of the main Group Companies (2019-2021)

type of intake (Mm³)	2019 (*)	2020	2021
industrial processes (district heating, thermoelectric generation, Ambiente plants, Water companies)	**0.380**	**0.851**	**2.419**
of which aqueduct (*)	*0.237*	*0.229*	*0.108*
of which well	*0.092*	*0.104*	*0.105*
of which river water (**)	*0.003*	*0.003*	*0.003*
of which recovered water	***0.048***	***0.515***	***2.202***
water consumption for civil use (***)	**2.079**	**2.615**	**2.533**
total water consumption	**2.459**	**3.466**	**4.952**
total water consumption excluding recovered water	**2.411**	**2.951**	**2.749**

NOTE: Intake of freshwater occurs in areas at potential risk of water stress, as defined by the Aqueduct Water Risk Atlas, the map drawn up by the World Resources Institute (WRI).
(*) This item includes water transported by tankers to the Aprilia site (7,580 m³ in 2021).
(**) Consumption refers exclusively to the withdrawal from the Paglia river near the Orvieto composting plant.
(***) Civil consumption derives from: aqueduct (99.9%), well and tankers.

WATER INTAKE OF PANEL OF SUPPLIERS MONITORED

Since 2020, to raise awareness along the supply chain of the importance of safeguarding water resources, the Sustainability Planning & Reporting Unit, with the support of the Procurement and Logistics function, has sent a panel of suppliers (on an experimental basis) a request for environmental data including information on water intake, divided by process and civil uses. **40 suppliers** out of 100 suppliers invited to replied to the section on water resources, corresponding 42% of the total expenditure of the Acea Group for procurements of goods, services and labour. Water intake for the above suppliers in 2021 equalled approximately 10,750 m³, divided into 7,050 m³ for industrial uses and 3,700 m³ for civil uses. Acea intends to continue with this request in the coming years as well, improving data collection and continuing to raise awareness on this issue.

Discharges of water intake occur within **authorised** and **closely controlled processes**. For example, at the **Terni waste-to-energy plant**, residual water from production processes is **first treated by internal treatment plants**, before being discharged into public sewerage. Water used in the waste-to-energy process at the **San Vittore del Lazio** plant, instead, is collected and stored in special underground tanks and disposed of as waste, as it may contain components that make it unsuitable for normal discharge. Wastewater from toilet facilities of production lines and offices are collected in septic tanks and subsequently sent for disposal. Sewage from the headquarters is instead collected and transferred in an "Imhoff tank" with a sub-irrigation system for clarified material into the soil. Rainwater is reused in the production of demineralised water, after treatment in a specific chemical-physical plant, without external discharge.
Water intake for industrial uses in activities connected to the integrated water service, and in particular water treatment, undergoes the **same treatment as waters transported via public sewerage**, i.e. it is retreated at the head of the treatment plant and sent to the locations described in the section *Sewerage service and treatment system*, in the chapter *Water segment*. All civil water intake from the aqueduct ends up directly in the public sewer system.

EMISSIONS

continuous analysis of waste-to-energy emissions: **values of pollutants significantly lower than legal limits**

improvement in Scope 1 **emissions intensity index** (production of energy from thermoelectric WtE): **369 g/kWh**

ATMOSPHERIC EMISSIONS

Atmospheric emissions due to Acea plants are subject to scheduled and continuous monitoring. Plants are managed according to the UNI EN ISO 14001 and UNI EN ISO 45001/OHSAS 18001:2007 standards. The waste-to-energy plants and the Orvieto plant are also **registered under the European EMAS III scheme**, extended until 2024.

The most significant macro-pollutants connected with the main production processes of Acea Ambiente and Acea Produzione plants are presented in Table no. 65. The data, tracked through the Continuous Emissions Monitoring Systems (CEMSs) are in line with the values for previous years, with the exception of SO_x emissions. In fact, in 2021 the greater concentration and therefore greater mass of sodium hydroxide (SO_2) is attributable to the trend in the chemical constituents of fuel. The values are still very low.

Table no. 65 – Total atmospheric emissions of pollutants from the main Group plants (2019-2021)

emissions (t)	2019	2020	2021
CO_2	7.02	8.22	7.68
NO_x	188.19	190.67	198.11
SO_x	0.33	0.90	1.60
particles (particulate matter)	0.60	0.60	0.74

NOTE: the emissions refer to the plants of Acea Ambiente – waste-to-energy and Acea Produzione.

Specifically, monitoring of the **waste-to-energy plants** is carried out by means of fixed and mobile stations that **sample and analyse the fumes coming out of the chimneys**, **measuring concentrations** for numerous parameters that are periodically checked by internal personnel and certified by qualified external laboratories. Again in 2021, the **values of the main pollutants** were also **significantly below the legal limits** (see Table no. 66).
At the **San Vittore del Lazio plant**, during the year surveys were performed on odorous emissions, as well as monitoring of diffuse and fugitive emissions and continuation of a biomonitoring campaign using bees as bioindicator insects (see section *Safeguarding of land and biodiversity*, in the chapter *Environmental sustainability and the primary challenges*). Finally, each waste-to-energy line is equipped with systems to monitor emissions from the chimney, enabling continuous tracking for concentrations of pollutants 24/7, with availability of data on the Group website (www.gruppoacea.it). Environmental monitoring is performed at all plants, For example, in October and November 2021, there was a campaign of monitoring for chemical and biological risk at the Aprilia plant, including areas of the new anaerobic-digestion section.

Table no. 66 – Concentrations of atmospheric emissions generated by waste-to-energy plants (2019-2021)

		San Vittore del Lazio plant (*)				Terni plant (*)			
pollutant	**u.m.**	**scope of reference** (**)	**2019**	**2020**	**2021**	**scope of reference (**)**	**2019**	**2020**	**2021**
HCl	mg/Nm³	8	0.151	0.145	0.064	8	3.580	3.807	3.701
NO_x	mg/Nm³	70	29.652	29.925	29.488	180	128.650	125.989	120.644
SO_2	mg/Nm³	40	0.003	0.086	0.310	25	0.430	0.969	0.928
HF	mg/Nm³	1	0.023	0.020	0.016	1	0.080	0.00	1.040
CO	mg/Nm³	40	0.803	0.604	1.083	25	1.140	1.057	0.049
total particles (particulate)	mg/Nm³	3	0.007	0.010	0.049	25	0.790	0.763	0.760
PAH (polycyclic aromatic hydrocarbons)	mg/Nm³	0.01	0.00001	0.0000	0.000007	0.01	0.0000	0.00000	0.00002
dioxins and furans (PCDD +PCDF)	ng/Nm³	0.1	0.0074	0.0094	0.0023	0.1	0.0087	0.0000	0.0000
heavy metals (Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V)	mg/Nm³	0.5	0.0387	0.0246	0.0315	0.3	0.033	0.03	0.04

(*) 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.

Monitoring carried out on installations at risk[159] has shown **the absence of emissions** in significant quantities **of substances responsible for reducing the ozone layer** (for consumption see the section *Resources used*, in the *Environmental accounts*).

GREENHOUSE-GAS EMISSIONS

Acea quantifies its CO_2 emissions by **monitoring and evaluating the carbon footprint of the individual macro production processes** according to the guidelines of the GHG protocol[160] which requires reporting in the categories of **direct** (**Scope 1**) and **indirect** (**Scope 2** and **Scope 3**).
Direct Scope 1 emissions **mainly come from** the Group's **two waste-to-energy plants** and the **thermoelectric power plants**. Three plants are subject to the **Emission Trading Scheme** (ETS) (the waste-to-energy plant in Terni and the thermoelectric plants in Montemartini and Tor di Valle). The allowances assigned under the NAP (National Allocation Plan) are lower every year and in any case small, compared to the actual emissions recorded. Data for the three-year period 2019-2021 is presented Table no. 67.

Table no. 67 – CO_2 emission allowances as per the National Allocation Plan (NAP) and actual emissions by plant (2019-2021)

plant (t)	**2019**		**2020**		**2021**	
	assigned by NAP	**actual**	**assigned by NAP**	**actual**	**assigned by NAP**	**actual**
Tor di Valle (*) (**)	4,775	46,993	3,782	44,227	3,564	49,863 (***)
Montemartini	0	1,513	0	1,546	0	1,704
Terni waste-to-energy plant (**)	0	99,281	0	122,338	0	123,552 (***)

(*) As with previous years, in 2021 the applicable legislative framework allowed the Tor di Valle plant to benefit from free of charge emission allowances (3,564 t) as it serves a district-heating network.
(**) The 2020 figures for actual emissions have been updated with the certified figures.
(***) Estimated emissions, pending certification by the responsible body.

Scope 1 emissions include other components deriving from certain processes of plants in the Environment Segment (composting, treatment and disposal of liquid waste), from drying at treatment plants, from petrol and diesel vehicles in the fleet, from leaks of sulphur hexafluoride (SF_6) that may arise at Areti plants, from combustion processes for heating of premises and offices, and finally from leaks of freon gases from air-conditioning units.
The figures for CO_2 issued emitted by waste-to-energy plants in

159 This is primarily air conditioning equipment using refrigerant gases subject to the 1987 Montreal protocol, particularly chlorofluorocarbons.
160 See www.ghgprotocol.org for more information.

the two years 2020-2021 **was down on 2019** (see Table no. 68). This is due primarily to **a decrease in the biodegradable fraction** of waste for both the San Vittore del Lazio and Terni plants (from 51% and 47% in 2019 to approximately 42% for both plants in 2020 and 43% in 2021), partly attributable to a change in the composition of waste due to closures of businesses with a higher biodegradable fraction (restaurants and catering) due to the health emergency.

Greenhouse-gas emissions for **Scope 2** deriving from electricity consumption **decreased further** in 2021, primarily due to the various actions taken by Group Companies to increase efficiency, as illustrated in the section *Energy savings*[161].
Scope 3 emissions include those reported deriving from the sale of gas, from the sale of electricity, from consumption of electricity by suppliers from whom we purchase goods, services and labour, from employee commuting and from work travel (see Table no. 68).
In 2021 **emissions for commuting and business travel were further reduced** due to restrictions triggered by the Covid-19 pandemic as well as extension of remote working for the majority of employees and consequent **limitation of travel**.
Scope 3 emissions associated with the purchase of goods, services and labour are calculated using monitoring data for energy consumption outside the Group, requested from a **representative panel of suppliers** using a questionnaire (see the section *Energy consumption outside the Group)*. In particular, the data requested regards energy (primarily consumption of fuels, electricity and vehicle fuels) and data for refrigerant gases used at supplier premises, which contribute to **Scope 3** emissions.
To reduce emissions from the **sale of electricity** (values indicated in table both using location-based and market-based methodologies), **Acea Energia** has for several years proposed commercial offers to customers for green energy with GO (guarantee of origin) certification. **Since 2021**, **all new retail customers in the free market** will have green energy with GO certification, and this will be progressively extended to existing contracts. This sustainable offer also applies for gas, with compensation through purchase of VER (Verified Emission Reduction) certified carbon credits. See also the section *Customer care*, in the Chapter *Customers*. **Green energy sold** to free market customers in 2021 totalled approximately 2,300 GWh[162] (1,198 GWh in 2020), corresponding to 38% of total energy sold to free market customers (see also the *Environmental Accounts*). The **sale of electricity with GO certification** has therefore led to a **saving of approximately 724,000 t of CO_2 in the Scope 3 category**. For sales of gas in 2021, there has been compensation of **approximately 2.2 MSm^3** (1% of the total sold) corresponding to approximately **4,360 t of CO_2**.

INTENSITY INDICES FOR GREENHOUSE-GAS EMISSIONS

Scope 2 carbon dioxide emissions, **deriving from leaks on electricity distribution networks**, **relative to total electricity distributed**, is one of the intensity indices for greenhouse gas emissions monitored. This index has **improved further**, changing from 0.0112 t/MWh in 2019 to **0.0097 t/MWh** in 2021, in line with the **continuous decrease in relative leaks** on the network (technical leaks/issued electricity). The **index for Scope 1 emissions against energy produced has also improved**[163], due in particular to improved operating conditions at the waste-to-energy plants (see Table no. 68).

Table no. 68 – Environmental indicators: CO_2 emissions, greenhouse gas intensity indices and vehicle emissions (2019-2021)

CO_2 EMISSIONS				
SCOPE 1 EMISSIONS				
FROM ENERGY PRODUCTION PLANTS				
	u.m.	**2019**	**2020**	**2021**
CO_2 emissions from Acea Produzione thermoelectric power stations (*)	t	48,506	45,773	51,567
CO_2 emissions from the Ecogena plants	t	10,925	9,607	7,829
CO_2 emissions from Acea Ambiente waste-to-energy plants (*)	t	280,504	341,763	320,483
FROM WASTE MANAGEMENT, ENERGY DISTRIBUTION, HEATING PLANTS AND VEHICLE FLEET				
CO_2 emissions from waste-management plants (**)	t	1,507	1,582	1,895
CO_2 emissions from water-plant processes of the IWS (***)	t	6,893	6,979	7,486
CO_2 emissions from heating (***)	t	940	872	881
CO_2 emissions from vehicle fleet	t	**9,550**	**9,705**	**10,533**
CO_2 emissions from Areti plants (from SF_6) (****)	t	9,400	8,695	6,975
CO_2 emissions from refrigerants (HCFCs) (*****)	t	0	1	0
TOTAL SCOPE 1 EMISSIONS (******)	**t**	**368,225**	**424,977**	**407,649**

161 The other reason is associated with the energy conversion factor from consumption in MWh to tonnes of CO_2 emitted, which decreased in 2021 to 315 g/kWh from the 336 g/kWh in 2020.

162 Of which an estimated 1,896 GWh by Acea Energia, including internal consumption of the Group Companies (420 GWh) and an estimated 404 GWh by Acea Energy Management.

163 For calculation of the index, energy produced by thermoelectric power plants and waste-to-energy plants is considered.

SCOPE 2 EMISSIONS				
Location-based Scope 2 emissions (market based) (*******)	t	394,798 (273,937)	380,010 (278,452)	350,391 (262,649)
of which CO_2 emissions from network leaks	t	118,824	100,489	95,414
SCOPE 3 EMISSIONS				
CO_2 emissions deriving from the purchase of goods/services and works (********)	t	22,303	11,642	31,701
CO_2 emissions from commuting (*********)	t	7,060	1,937	1,651
CO_2 emissions from business travel	t	288	46	38
CO_2 emissions from volumes of gas sold	t	214,043	276,284	346,567
CO_2 emissions from the sale of electricity, location based (market based)	t	2,168,154 (2,382,384)	2,200,491 (2,382,384)	2,447,005 (2,507,585)

INTENSITY INDICES FOR GREENHOUSE-GAS EMISSIONS

intensity indices of the GHG emissions	**u.m.**	**2019**	**2020**	**2021**
CO_2 emissions (Scope 1 + Scope 2)/Acea Group added value	(t/k€)	626.2	594.3	519.8
Scope 1 CO_2 emissions/gross production (**********)	(g/kWh)	357.8	423.0	368.8
Scope 2 CO_2 emissions deriving from losses on the electrical energy distribution network/issued GWh	(t/MWh)	0.0112	0.0104	0.0097

NOTE: From 2021 the table has been updated for the whole three-year period, adding Scope 1 CO_2 emissions for all Ecogena plants and Scope 2 emissions for internal use by Areti, consumption of Ecogena the PV plants of Acea Produzione. In addition, 2019 and 2020 data have been adjusted to include the Bio Ecologia plant, and the plants of the companies Berg and Demap.

(*) The 2020 figures for the Tor di Valle and Terni Plants have been corrected after the ETS certification, while the 2021 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, of Acque Industriali, and non-biogenic emissions from the combustion of biogas produced on site.

(***) Data refers to uses of dryers and generators.

(****) These are the tonnes of equivalent CO_2 corresponding to the emissions of insulating SF_6 present in Areti's HV equipment (1 t of SF_6 equates to 23,500 t of CO_2, GHG Protocol-5th Assessment Report- AR5). The 2019 figure has been adjusted.

(*****) In the last three years, the replenishment of HCFC fluids in the Group's plants was so small that it did not lead to significant CO_2 emissions.

(******) Also including the companies Umbra Acque, AdF, Publiacqua and Acque (outside the NFS scope), only considering the stake owned by Acea, for the three-year period 2019-2021 Scope 1 CO_2 emissions are: 369,565 t, 426,304 t and 409,060 t.

(*******) The indirect emissions (*Scope 2*) include all the Companies within the NFS scope. As an emission factor per unit of electricity consumed (t CO_2/MWh), for the location-based calculation the value of 0.315 was used for 2021 (0.336 for 2020 and 0.360 for 2019), as per Terna's "International Comparisons" document (updated annually). For the calculation of *Scope 2* emissions using the market-based method, the residual mix coefficients are the following for 2019, 2020 and 2021, respectively: 0.487 t/MWh, 0.466 t/MWh and 0.459 (Source: AIB document "European Residual Mixes 2020"). Also including the companies Umbra Acque, AdF, Publiacqua and Acque (outside the NFS scope), only considering the stake owned by Acea, for the three-year period 2019-2021, location-based CO_2 emissions are 438,882 t, 419,377 t and 387,198 t respectively, whereas market-based emissions are 333,092 t, 332,714 t and 316,233 t. Emissions due to technical network losses in 2020 were calculated on the basis of the corresponding adjusted figure in 2021.

(********) This value, estimated, refers to suppliers of goods, services and works. The 2021 figure is broken down as follows: 26,205 tonnes of CO_2 for suppliers of services and works and 5,496 tonnes of CO_2 for suppliers of goods. The significant increase compared to 2020 is attributable to a change in the composition of the panel of suppliers included in the calculation (90% of suppliers of services and labour responded compared to only 41% in 2020 and 26% in 2019) as well as due to progressive phase-out of restrictions and shutdowns caused by the pandemic.

(*********) Since 2021, emissions from commuting have been calculated using a new methodology.

(**********) Scope 1 emissions included are those from power generation plants. The figure for this indicator was lower in 2021 due to reduced CO_2 emissions both from waste-to-energy plants and due to an increase in energy production, primarily at the Terni plant.

NOTE: Emission factors for Scope 1 emissions are taken from the standard parameters – ISPRA data 2020, DEFRA 2021 and GHG Protocol-5th Assessment Report-AR5.

WASTE

45% of waste recovered against total waste produced **(157,770/347,487 t)**

47% ash recovered against total produced in waste-to-energy plants **(43,425/92,765 t)**

67% of sludge recovered against total sludge produced by Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa **(102,760/152,791 t)**

Following an update of Standard 306 on Waste by GRI[164], which occurred in 2020, a project was launched aimed at defining waste streams for the main Group Companies (in particular the Companies of the Water Segment, those of the Environment Segment, Acea Produzione and Areti).

For a greater level of detail, streams were defined for **process and non-process waste**. The latter category includes waste that does not derive from production activity in a strict sense, and generally represents a minimal part of total waste, also having a very variable composition determined by non-recurring events.

Table no. 69 – Total waste produced (2019-2021)

waste produced (t)	2019	2020	2021
total waste	**306,940**	**308,713**	**347,487**
hazardous	*78,388*	*70,763*	*67,627*
non-hazardous	*228,552*	*237,950*	*279,860*
detail by type of processing			
entirely recovered waste (*)	**112,479**	**111,474**	**157,770**
entirely disposed of waste (*)	**194,461**	**197,239**	**189,717**
waste-to-energy	*1,824*	*3,769*	*2,962*
incineration	*13,931*	*16,948*	*5,242*
landfill and other disposal operations	*178,706*	*176,522*	*181,513*

(*) Waste sent for recovery in 2021 was divided as follows: 109,759 t for preparation for reuse, 44,984 t for recycling 3,027 t for other recovery operations.

WASTE FROM THE INTEGRATED WATER SYSTEM

In the Water Segment, production of waste largely corresponds with the production of sludge from the treatment process, with a minimal portion from sand and screens used in the same process. The former is essentially composed of water, biomass and a portion of chemical substances used for conditioning during drying, which helps to reduce the volumes of waste outputs. Sand and screens derive from pre-treatment of wastewater and contain plastic, aggregates and paper materials. The remainder is composed of residual material from cleaning to maintain systems. This may include sludge from regeneration of cation-exchange resins. Chart no. 60 shows an example of waste streams for the water sector.

164 The previous version of the Standard, from 2016, grouped effluents and waste together.

Chart no. 60 – Waste streams for the Water Segment companies

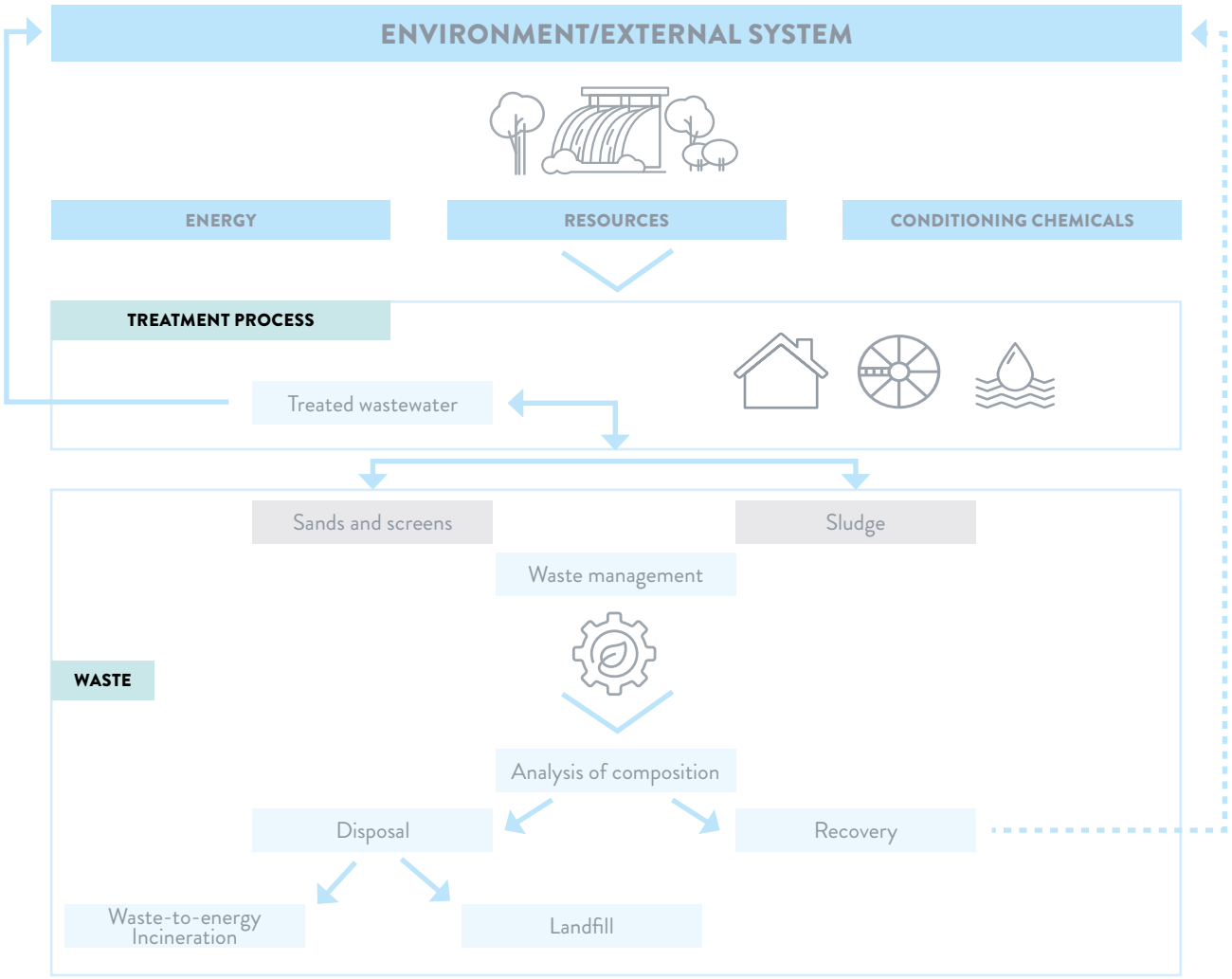


Table no. 70 – Waste produced by companies in the Water segment (2019-2021)

water segment waste (t)	2019	2020	2021
total waste	**153,465**	**152,285**	**176,438**
hazardous	*116*	*239*	*379*
non-hazardous	*153,349*	*152,046*	*176,059*
of which sludge, sand and screens	*143,316*	*138,756*	*166,969*
detail by type of processing			
entirely recovered waste	**54,992**	**63,570**	**110,019**
of which sludge, sand and screens for recovery (*)	*53,283*	*59,884*	*108,620*
entirely disposed of waste (*)	**98,473**	**88,715**	**66,419**
of which sludge, sand and screens for disposal (**)	*90,033*	*78,872*	*58,349*
waste-to-energy	*801*	*2,759*	*2,962*
incineration	*13,230*	*16,660*	*5,242*
landfill and other disposal operations	*84,442*	*69,296*	*58,215*

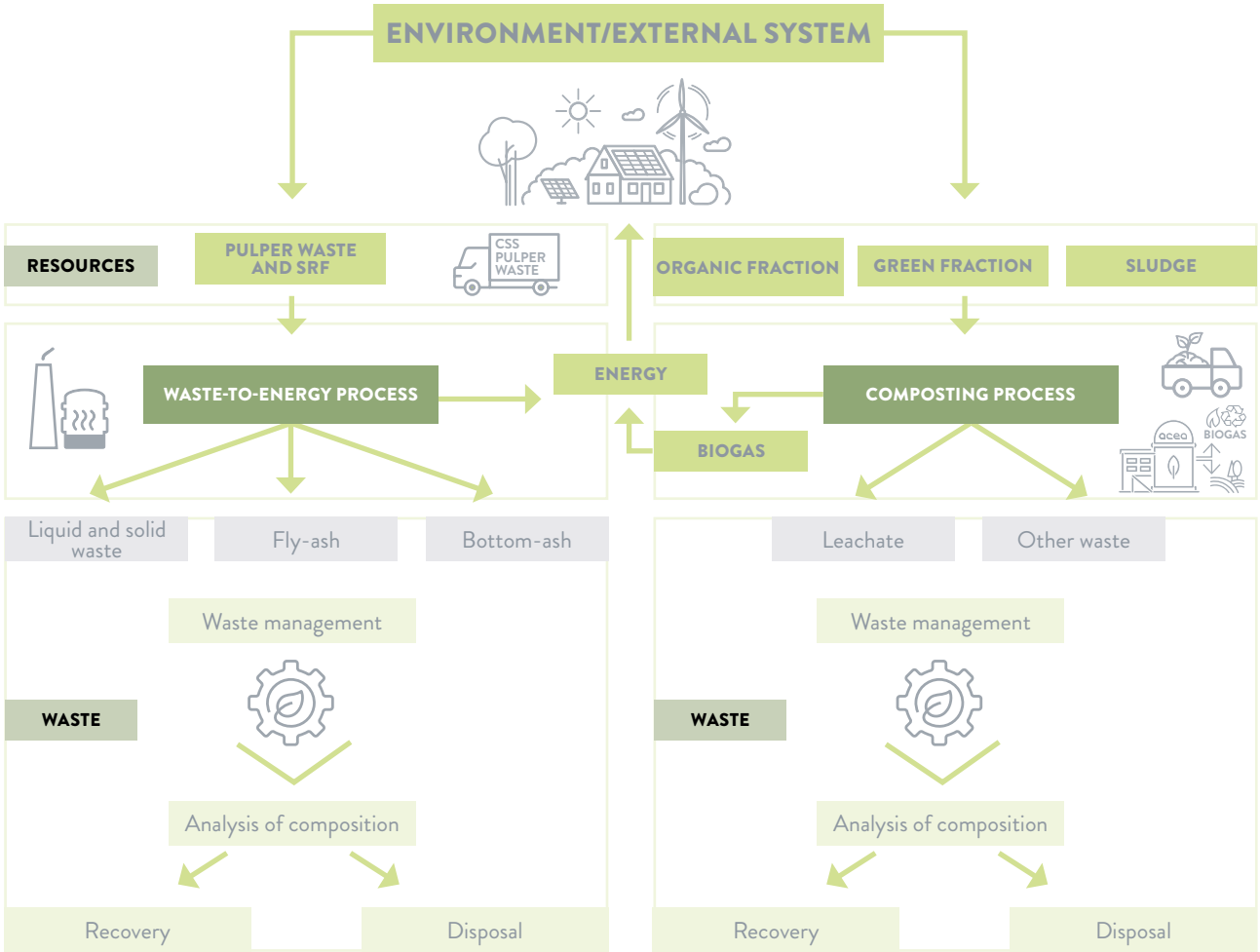
(*) In 2021, 102,760 t of sludge and 5,860 t of sand and screens were sent for recovery.
(**) In 2021, the following was sent for disposal: 50,031 t of sludge and 8,318 t of sand and screens.

Aquaser acts as a broker for certain Group water companies (Acea Ato 2, Acea Ato 5 and AdF), carrying out the pick-up, transport and recovery/disposal of waste (solid and liquid), with identification of final-destination sites for special waste with regard to solid materials, and providing logistical services (pick-up, transport and discharge) for liquid waste that is handed over to authorised plants.

WASTE FROM THE ENVIRONMENT SEGMENT

The streams for the Environment Segment are highly varied, due to the range of types of plants and the broad spectrum of services provided by the Companies. Activities can be grouped in the four macro categories: waste-to-energy, composting, treatment of liquid waste and brokerage/transport. Below are details for the first three, while transport and brokerage are handled under *Waste-to-energy, composting, disposal of liquid waste and related services* in the *Environment Segment* section. With the plants of San Vittore del Lazio and Terni, waste-to-energy activity produces the greatest quantity of waste, totalling 92,765 t in 2021. The majority of waste produced is fly-ash, bottom-ash and water from the buffer tank[165]. In 2021, 43,425 tonnes of ash were recovered (approximately 47% of the total). The Orvieto plant and the three composting plants (Aprilia, Monterotondo Marittimo and Sabaudia) produce leachate as their primary waste in terms of quantity, derived from stabilisation of waste and primarily sent for disposal (98%). As an example, streams of treatment, disposal and recovery for waste-to-energy and composting sites are illustrated in Chart no. 61. Finally, there are the treatment plants handling liquid waste of the Companies Acque Industriali, Berg and the plant of Bio Ecologia[166], merged into Acea Ambiente, which primarily produce sludge. The above plants also produce non-process waste, which only represents 1% of the total waste generated by the Environment Segment.

Chart no. 61 – Main waste streams in the Environment Segment (waste-to-energy and compost sites)



165 Water from buffer tanks or "water for technical purposes", refers to liquid solutions used as a buffer for acidic components that develop during combustion of waste.
166 The waste from the Bio Ecologia plant derive both from treatment of liquid waste and treatment of wastewater.

Table no. 71 – Waste produced by companies in the Environment Segment (2019-2021)

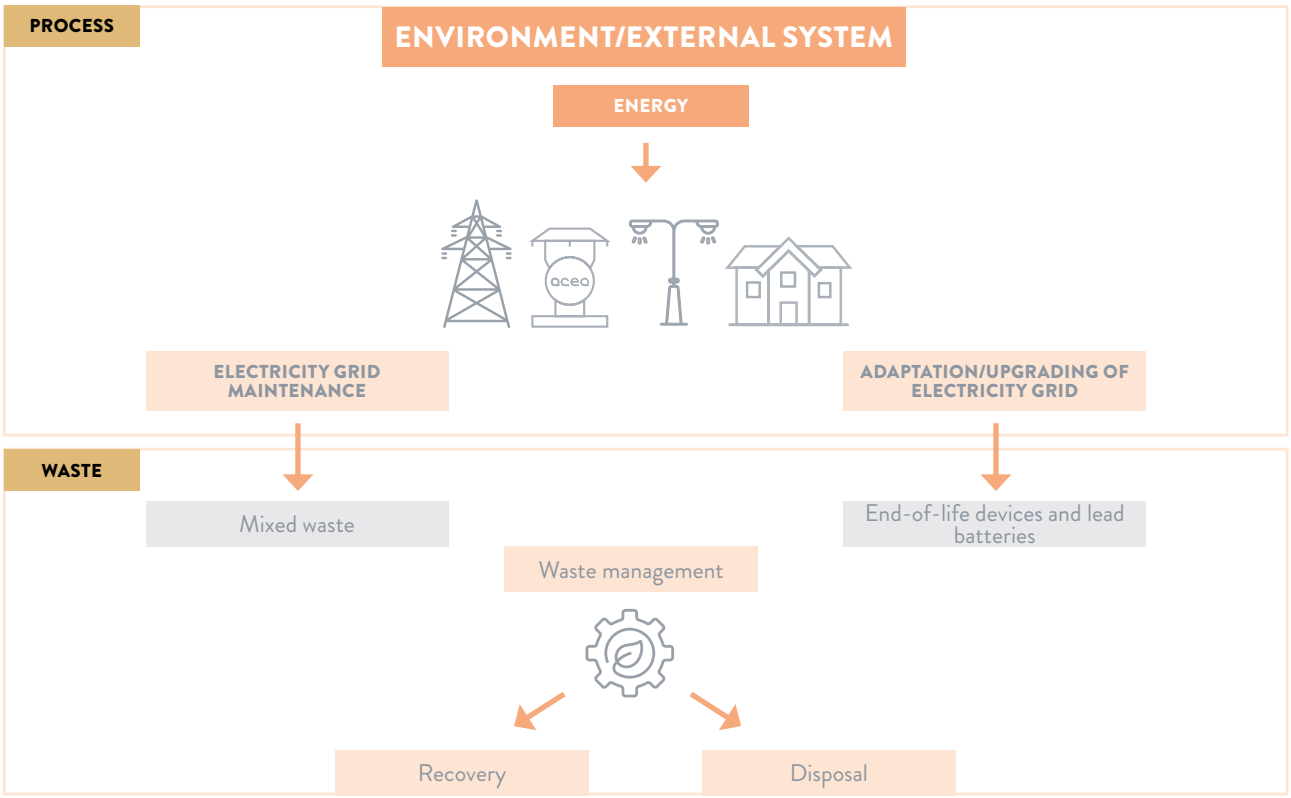
environment segment waste (t)	2019	2020	2021
total waste	**150,435**	**154,619**	**168,024**
hazardous	76,437	69,654	65,526
of which ash	68,092	59,509	59,142
non-hazardous	73,998	84,965	102,498
of which liquid waste (leachate and buffer water)	45,767	53,823	57,537
detail by type of processing			
entirely recovered waste	**55,589**	**46,503**	**46,032**
of which ash	52,608	42,629	43,425
entirely disposed of waste (*)	**94,846**	**108,116**	**121,992**
of which sent to landfill and subject to other disposal operations	93,123	106,818	121,992

WASTE FROM DISTRIBUTION OF ELECTRICITY

Areti, which manages the distribution of electricity, primarily produces waste derived from maintenance or replacement of infrastructure.

The Company does not generally produce non-process waste[167]. Special waste, produced during technical activity performed by contractors, is considered under the responsibility of the parties generating it during performance of their activity and its collection and management is also their responsibility[168]. Chart no. 62 illustrates the stream for waste generated by Areti activity.

Chart no. 62 – Waste streams for Areti



167 With the exception of 2019, in which 142 t of earth and rock containing hazardous substances was produced following special reclamation work.

168 This management occurs according to procedure (PRO00.11QAS "Waste Management") and the quantities produced are handed over for recovery or disposed of by authorised third parties.

Table no. 72 – Waste produced by the Areti Company (2019-2021)

Areti waste (t)	2019	2020	2021
total waste	**1,964**	**1,106**	**2,153**
hazardous	1,769	841	1,645
non-hazardous	195	265	508
detail by type of processing			
entirely recovered waste	**910**	**747**	**902**
entirely disposed of waste (*)	**1,054**	**359**	**1,251**
of which transformers and capacitors containing PCBs	*13*	*11*	*0*

MANAGEMENT AND MINIMISATION OF WASTE PRODUCED

All Group Companies contribute to an overall reduction in the quantity of waste, in line with circular-economy principles.
Acea Produzione produces a minimal quantity of waste (approximately 774 t in 2021), promoting recovery and recycling where possible.
The water companies have projects underway **aimed at reducing the volume of sludge**, for example by implementing new dryer lines, centrifuges and other specific systems. This approach represents a great impact in terms of the circular economy: a reduction in the percentage of water in sludge guarantees the opportunity for material and/or energy use or disposal with lower costs.
In 2021, in addition to taking over various regional plants, **GORI** changed supplier assigned to recovery and disposal and, for the first time, **65% of sludge produced was recovered and sent for composting** (in 2020 1% of sludge was recovered). At **AdF**, in order to reduce the quantity of sludge deriving from the water-treatment process, a new Newlisi section was installed at the San Giovanni treatment plant in Grosseto, with the goal of treating dewatered sludge produced in the other plants, reducing the overall quantity. Since 2017, **Acea Ato 2** has defined and implemented the "**Sludge Management Plan**". This contains structural and strategic actions with the dual objective of reducing volumes of treatment sludge produced and exploiting the solid components both as a material and for energy, through a range of different actions, rationalising the entire treatment segment and transforming large treatment plants into hubs for centralised sludge processing. In order to reduce the volumes of waste, **Acea Ato 5** is planning the **installation of a sludge drying system** at the Fiuggi - Colle delle Mele treatment plant. In 2021, the various design alternatives were assessed. Overall, 67% of sludge was recovered for the Water Segment, corresponding to 102,760 tonnes.

At the **Aprilia and Monterotondo Marittimo composting plants** a new plant configuration has been operational since 2019, which enables energy recovery through anaerobic digestion. At the Aprilia plant, with issue of the new EIA, obtained in January 2021, various actions will be implemented, including construction of a new line for production of SRF from plant waste.
Waste from the majority of Group Companies is sent to an external site[169]. Finally, for all Companies, waste is managed by companies outside the Group, with the exception of Acea Ato 2, Acea Ato 5 and AdF, which, as mentioned, handover their waste to Aquaser, in the role of broker with identification of final-destination sites[170]. The reliability of brokers in general is guaranteed by the mandatory **authorisation required by the specific regulations** for performance of activities and by periodic checks on documentation.
The data and information on waste for the main Companies is managed with dedicated management software[171].
Quantitative data on waste disposed of derives from direct measurements taken using weighing systems, which are periodically calibrated and certified. For the Companies of the Environment Segment, in almost all cases there is a difference between the outgoing weights and incoming weights, due to the scales used for approximation in the systems adopted, in any case documented using the forms applicable by law. In addition, for these Companies and for Acea Produzione, which are equipped with plants mainly certified in accordance with standard UNI EN ISO 14001, systematic checks are carried out on legislative compliance of compliance in terms of environmental factors.
In 2021, there were no significant releases of pollutants into the environment, such as mineral oils, fuels or chemical products[172].

169 The only exception is the Orvieto plant, which is classed as a plant hub and therefore has waste streams with internal final destinations.

170 Liquid waste from the plants of Acea Ato 2 are assigned to Aquaser solely for logistical services, being transported and discharged at plants authorised pursuant to art. 110 of Italian Legislative Decree 152/2006 managed by Acea Ato 2 itself.

171 With the exception of Gesesa and Areti, all companies have dedicated management software.

172 At the Area Nolana treatment plant (GORI) in 2021 there was a spillage of ferric chloride, used for conditioning of sludge, which was appropriately confined within sealed containment channels without affecting the environment.

WATER COMPANY DATA SHEETS AND OVERSEAS ACTIVITIES

This chapter illustrates the activities of some Group companies not included in the scope of the Consolidated Non-Financial Statement (see Disclosing sustainability: methodological note). In particular, data and information are provided relating to the main operating Companies for the water sector in Umbria and Tuscany, consolidated using the equity method in the statutory financial statements, and to the companies that are active abroad in the same sector.

Water activities in Umbria and Tuscany

UMBRA ACQUE

Umbra Acque SpA is a company with predominantly public capital, 40% owned by Acea SpA, which manages 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 around 494,000 inhabitants served.

MANAGEMENT SYSTEMS

Umbra Acqua has an **Integrated Quality, Environment and Safety Management System** (QAS), in compliance with the **UNI ISO 9001:2015, UNI ISO 14001:2015 e ISO 45001:2018 standards** and holds the **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). The analysis laboratory is accredited according to the UNI ISO/IEC 17025:2005 standard and for the purposes **of monitoring drinking water**, in line with the Ministerial Decree 14/06/2017.

QUALITY DELIVERED: MAIN INTERVENTIONS ON THE NETWORKS AND CONTROLS ON DRINKING WATER AND WASTE WATER

SIZE OF NETWORK, MAIN WORKS, METERS AND CHECKS ON DRINKING WATER AND NETWORKS (2021)

size of drinking-water network - *data in GIS*	**6,358 km** (**1,388** km of supply network, **4,970** km of distribution)
type of work	
interventions due to network failure/leak detection	**17,851 interventions** (17,645 due to faults, 206 leak detection)
meter installations (new installation and replacement)	**28,843 interventions** (5,939 new installation, 22,904 replacements)
network extension	**26 km** of expanded network
network reclamation	**50.3 km** of reclaimed network
drinking water quality control	**6,376 samples** collected and **116,891 tests** performed

SIZE OF NETWORK, WORKS AND CHECKS ON SEWERAGE WATER AND NETWORKS (2021)

size of sewerage network - *data in GIS*	**1,853** km
type of work	
interventions due to network failure	**1,109 interventions**
planned interventions	**96 interventions**
network extension	**39 km** of expanded network
network reclamation	**17 km** of network reclaimed following video inspection
quality control on wastewater for sewerage networks	**400 samples** collected and **6,012 tests** performed

HUMAN RESOURCES IN FIGURES

GENERAL DATA ON PERSONNEL (2020-2021)

	2020			2021		
(no.)	men	women	**total**	men	women	**total**
composition of the staff						
executives	4	0	**4**	5	0	**5**
managers	9	1	**10**	10	2	**12**
clerical workers	72	92	**164**	72	92	**164**
workers	211	0	**211**	209	0	**209**
total	**296**	**93**	**389**	**296**	**94**	**390**
contract type						
staff with permanent contract	274	77	**351**	280	89	**369**
(of which) part-time staff	0	7	**7**	0	7	**7**
permanent staff	18	14	**32**	12	4	**16**
staff under apprenticeship contracts	4	2	**6**	4	1	**5**
total	**296**	**93**	**389**	**296**	**94**	**390**
changes						
incoming staff	**20**	**14**	**34**	**9**	**3**	**12**
outgoing staff	**15**	**4**	**19**	**9**	**2**	**11**
turnover rate (%)	**11.8**	**19.4**	**13.6**	**6.1**	**5.3**	**5.9**
incoming rate (%)	6.8	15.1	**8.7**	3.0	3.2	**3.1**
outgoing rate (%)	5.1	4.3	**4.9**	3.0	2.1	**2.8**

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2020-2021)

	2020	2021 (*)
accidents (no.)	5	5
total days of absence	465	234
hours worked (*)	633,642	659,520
frequency index (FI) (number of accidents per 1,000,000/working hours) (*)	**7.89**	**7.58**
severity index (SI) (days of absence per 1,000/working hours) (*)	**0.73**	**0.35**

(*) The data is estimated.

TRAINING 2020-2021

course type, hours provided and costs

	courses (no.)		training (hours)		costs (€)	
course type	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**
advanced training	1	1	8	6	2,340	310
technical-specialised	57	77	4,096	7,842	56,779	82,211
legal	5	2	96	8	2,393	538
managerial	20	10	1,922	149	32,525	2,689
safety	17	20	3,419	1,780	30,022	16,716
total	**100**	**110**	**9,541**	**9,785**	**124,059**	**102,464**

employees trained

	2020			2021 (*)		
(no.)	men	women	**total**	men	women	**total**
	296	93	**389**	303	96	**399**
breakdown of training hours by qualification						
executives	161	0	**161**	219	0	**219**
managers	369	28	**397**	359	61	**420**
clerical workers	2,497	2,113	**4,610**	2,396	3,309	**5,705**
workers	4,373	0	**4,373**	3,441	0	**3,441**

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

Training provided during the year was held almost entirely via **e-learning** and involved **100% of personnel**. The **"smart workers" training course** with in-depth information on privacy, IT security and time management and the one on **corporate waste management** are among the topics most dealt with.

Employees of the commercial area received courses on **stress management**, and personnel on the operations side were involved in training courses on **new management software**. Finally, like every year, **safety** training continued in compliance with applicable laws.

ENVIRONMENTAL ACCOUNTS

PRODUCTS AND ANALYTICAL TESTS	u. m.	2019	2020	2021	Δ% 2021/2020
WATER BALANCE (*)					
drinking water from the environment	**Mm³**	**58.13**	**58.60**	**56.34**	**-3.9**
from the surface	*Mm³*	*0*	*0*	*0*	-
from wells	*Mm³*	*44.30*	*44.82*	*42.80*	*-4.5*
from springs	*Mm³*	*11.22*	*10.61*	*10.20*	*-3.9*
of which water from other aqueduct systems	*Mm³*	*2.61*	*3.17*	*3.34*	*-5.4*
total drinking water leaving the aqueduct system (c) = (a+b)	**Mm³**	**30.51**	**31.38**	**31.04**	**-1.1**
total drinking water dispensed and billed in the network (a)	**Mm³**	**29.50**	**28.73**	***28.61***	**-0.4**
measured volume of water delivered to users	*Mm³*	*29.50*	*28.73*	*28.61*	*-0.4*
volume consumed by users and not measured	*Mm³*	*0*	*0*	*0*	-
total drinking water authorised and not billed in the network (b)	**Mm³**	**1.01**	**2.65**	***2.43***	**-8.3**
measured unbilled authorised consumption	*Mm³*	*0.85*	*1.21*	*0.74*	*-38.8*
unmeasured unbilled authorised consumption	*Mm³*	*0.16*	*1.44*	*1.69*	*17.4*
LOSS ASSESSMENT ACCORDING TO ARERA RESOLUTION 917/17 R/IDR					
water leaks	Mm³	28.13	27.22	25.30	-7.1
water loss percentages	%	48.4	46.45	44.90	-3.2
TREATED WASTE WATER					
water treated in the main treatment plants	**Mm³**	**56.5**	**56.8**	**59.3**	4.4
ANALYTICAL TESTS ON DRINKING WATER AND WASTE WATER					
no. analytical tests on drinking water	**no.**	**135,500**	**107,257**	**116,891**	9.0
of which no. analytical tests on surface water	*no.*	*6,500*	*7,209*	*7,350*	*2.0*
no. analytical tests on wastewater (**)	**no.**	**38,481**	**35,610**	**42,404**	19.1

(*) The 2021 figures are estimated.
(**) The figure includes analyses carried out at treatment plants and industrial waste.

RESOURCES USED	u. m.	2019	2020	2021	Δ% 2021/2020
COLLECTION, SUPPLY AND DISTRIBUTION OF DRINKING AND NON-DRINKING WATER					
materials					
sodium hypochlorite	t	60.0	91.7	93.1	1.6
sodium chloride	t	200.0	213.6	221.6	3.7
hydrochloric acid	t	200.0	206.5	210.1	1.7
aluminium polychloride	t	12.0	11.5	11.1	-3.5
phosphoric acid (10%)	t	9.0	0	0	-
WASTE WATER TREATMENT					
materials					
polyelectrolyte emulsion	t	90.9	123.4	95.0	-23.0
ferric chloride (40%)	t	28.0	61.5	114.3	85.9
mineral oil and fats	t	1.40	0	0	-
OTHER CONSUMPTION					
drinking water (*)	**m^3**	**28,889**	**20,222**	**59,178**	**-**
drinking water consumed for non-industrial water uses (offices, outside showers etc.)	*m^3*	*2,282*	*1,597*	*10,416*	-
drinking water consumed for process water uses (washing machinery and bays, etc.)	*m^3*	*26,607*	*18,625*	*42,762*	-

(*) The figures for 2020 and 2021 are estimated considering the partial closure of offices and the different organisation of work following the health emergency.

ENERGY CONSUMPTION	u.m.	2019	2020	2021	Δ% 2021/2020
FUELS					
vehicle fuels					
diesel	l	422,430	410,000	456,600	11.4
petrol	l	7,497	7,000	5,800	-17.1
ELECTRICITY					
total electricity for drinking water	**GWh**	**72.82**	**69.13**	**69.45**	**0.5**
electricity for water pumping stations	*GWh*	*72.45*	*68.78*	*69.11*	*0.5*
electricity for offices	*GWh*	*0.37*	*0.35*	*0.34*	*-2.9*
total electricity for waste water	**GWh**	**22.56**	**22.78**	**23.22**	**1.9**
electricity for treatment	*GWh*	*17.70*	*17.86*	*17.94*	*0.4*
electricity for pumping stations	*GWh*	*4.74*	*4.81*	*5.17*	*7.5*
electricity for offices	*GWh*	*0.11*	*0.12*	*0.11*	*-8.3*

ENERGY EFFICIENCY (2019-2021)

action	energy savings achieved (kWh)		
	2019	2020	2021
extraordinary maintenance on plants	-	75,000	150,000

In 2021, extraordinary maintenance work was completed on the San Giovenale plant of the IWS, with adoption of **more efficient technology** that enabled an estimated energy saving of approximately 150 MWh.

WASTE	u. m.	2019	2020	2021	Δ% 2021/2020
SPECIFIC WASTE FROM TREATMENT OF WASTE WATER					
treatment sludge (*)	t	16,436	14,941	13,868	-7.2
sand and sediment from treatment	t	1,332	1,057	1,353	28.0
WASTE EXCLUDING SLUDGE AND SAND					
hazardous waste (**)	t	7.2	20.2	8.0	-60.4
non-hazardous waste (*)	t	5,931	4,940	3,767	-23.7

(*) The figure includes liquid sludge transported to other plants for the dewatering process, for a value of 5,269 t in 2019, 4,940 t in 2020 and 2,525 t in 2021.
(**) The increase in 2020 is due to the exceptional disposal of vehicles and company cars.

TOTAL COD IN INPUT AND OUTPUT (2019-2021)

(t/year)	2019	2020	2021
CODin	18,481.6	17,135.4	13,401.1
CODout	2,365.5	2,288.4	1,556.4

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS (2019-2021)

parameter	average values (mg/l) 2019	average values (mg/l) 2020	average values (mg/l) 2021
BOD_5 (*)	20.1	18.6	12.3
COD	41.9	40.3	21.0
SST	25.5	30.8	12.0
NH_4^+	6.5	5.0	2.0
phosphorous	2.0	2.0	2.0

(*) The output BOD_5 value is expressed with the value of the limit of quantification (LOQ) equal to 12.3, resulting in all analytical calculations being lower than this value.

PURIFICATION EFFICIENCY OF THE MAIN TREATMENT PLANTS (2019-2021)

parameter	average values (%) 2019	average values (%) 2020	average values (%) 2021
100 x (CODin - CODout)/CODin	87.2	87.0	88.4
100 x (SSTin - SSTout)/SSTin	89.1	89.4	95.7
100 x (NH_4^+in - NH_4^+out)/NH_4^+in	83.5	86.4	93.8
100 x (P in - P out)/P in (*)	34.0	33.0	35.0

(*) Umbra Acque does not detect the phosphates leaving the treatment plants, as the standard does not fix the limit but the total phosphorus as required by tab. 2 of Annex 5 in part III of the Consolidated Environmental Law (TUA), with a closer monitoring of the nutrient discharged onto surface water bodies.

PUBLIACQUA

Publiacqua SpA is a mixed ownership Company with a majority public interest, owned by Acea through Acque Blu Fiorentine SpA, which manages the Integrated Water Service in the area of Optimal Territorial Conference no. 3 – Medio Valdarno, with a total population of approximately 1.2 million citizens served.

MANAGEMENT SYSTEMS

Publiacqua has an **Integrated Quality, Environment and Safety Management System** (QAS) in compliance with the **UNI EN ISO 9001:2015**, **14001:2015** and **45001:2018** standards for its main operations. The analysis laboratory is accredited according to the **UNI ISO/ IEC 17025:2005** standard. In 2021, the **UNI ISO 37001:2016** Corruption Prevention Management System was implemented, obtaining certification.

QUALITY DELIVERED: MAIN INTERVENTIONS ON THE NETWORKS AND CONTROLS ON DRINKING WATER AND WASTE WATER

SIZE OF NETWORK, MAIN WORKS, METERS AND CHECKS ON DRINKING WATER AND NETWORKS (2021)

size of drinking-water network - *data in GIS*	**6,825 km** (**1,389** km of supply network, **5,436** km of distribution)
TYPE OF WORK	
interventions due to network failure/leak detection	**4,105 interventions** (3,488 due to faults, 617 leak detection)
meter installations (new installation and replacement)	**7,448 interventions** (3,073 new installations and 4,375 replacements) and 38,625 mass replacements under contract
network extension	**1.7 km** of expanded network
network reclamation	**35 km** of reclaimed network
drinking water quality control	**10,334 samples** collected and **319,410 tests** performed

SIZE OF NETWORK, WORKS AND CHECKS ON SEWERAGE WATER AND NETWORKS (2021)

size of sewerage network - *data in GIS*	**3,736** km
TYPE OF WORK	
interventions due to network failure	**3,891 interventions**
planned interventions	**1,132 interventions**
network extension	**22.3 km** of expanded network
network reclamation	**10.2 km** of reclaimed network
quality control on wastewater for sewerage networks	**2,827 samples** collected and **43,841 tests** performed

HUMAN RESOURCES IN FIGURES

GENERAL DATA ON PERSONNEL (2020-2021) (*)

	2020			2021		
(no.)	men	women	**total**	men	women	**total**
composition of the staff						
executives	3	1	**4**	3	1	**4**
managers	14	8	**22**	15	7	**22**
clerical workers	185	143	**328**	187	142	**329**
workers	255	6	**261**	259	5	**264**
total	**457**	**158**	**615**	**464**	**155**	**619**
contract type						
staff with permanent contract	422	153	**575**	421	153	**574**
(of which) part-time staff	*3*	*9*	*12*	*3*	*7*	***10***
permanent staff	11	5	**16**	6	2	**8**
staff under apprenticeship contracts	24	0	**24**	37	0	**37**
total	**457**	**158**	**615**	**464**	**155**	**619**
changes						
incoming staff	**37**	**14**	**51**	**29**	**7**	**36**
outgoing staff	**22**	**4**	**26**	**22**	**10**	**32**
turnover rate (%)	**12.91**	**11.39**	**12.52**	**10.99**	**10.97**	**10.99**
incoming rate (%)	8.10	8.86	8.29	6.25	4.52	5.82
outgoing rate (%)	4.81	2.53	4.23	4.74	6.45	5.17

(*) The figures for 2020 have been modified after the consolidation.

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2020-2021)

	2020	2021
accidents (no.) (*)	16	9
total days of absence (**)	238	323
hours worked (***)	1,015,197	1,037,016
frequency index (FI) (number of accidents per 1,000,000/working hours)	**15.76**	**8.68**
severity index (SI) (days of absence per 1,000/working hours)	**0.23**	**0.31**

(*) Accidents with effects lasting for more than one day are considered.
(**) The value also excludes days of absence related to persistent or reopened injuries from previous years.
(***) This is the sum of ordinary and overtime hours.

TRAINING (2020-2021) (*)

course type, hours provided and costs

	courses (no.)		training (hours)		costs (€)	
course type	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**
advanced training (**)	5	2	78	182	5,906	2,641
IT	3	3	37	398	3,544	3,962
technical-specialised	42	44	3,061	4,298	49,610	58,104
managerial	7	5	1,281	809	8,268	6,603
administrative-managerial (***)	40	54	1,198	2,249	47,248	71,309
safety	43	46	2,679	4,102	50,792	60,745
total	**140**	**154**	**8,334**	**12,038**	**165,368**	**203,364**

employees trained

	2020			2021		
(no.)	men	women	**total**	men	women	**total**
	362	137	**499**	464	154	**618**
breakdown of training hours by qualification						
executives	67	36	**103**	44	10	**54**
managers	248	158	**406**	244	61	**305**
clerical workers	1,734	1,610	**3,343**	2,060	1,420	**3,480**
workers	4,460	21	**4,481**	6,608	52	**6,660**

(*) Some figures for 2020 have been restated after the final calculations.
(**) The advanced training courses provided to employees are managed by Acea SpA, which bears part of the costs.
(***) In 2021, the administrative-managerial item includes 1,143 hours of training on Anti-corruption issues.

In 2021, the provision of courses on **safety** and related to in-depth projects on **technology and systems** continued, with particular reference to updates on work equipment; the updating of skills relating to the regulations pertaining to Legislative Decree no. 231/01.

E-learning sessions were also held, such as the **managerial training** course **dedicated to the organisational climate**. The continuation of the emergency situation did not allow in-class teaching.

ENVIRONMENTAL ACCOUNTS

PRODUCTS AND ANALYTICAL TESTS	u. m.	2019	2020	2021	Δ% 2021/2020
WATER BALANCE (*)					
drinking water from the environment	**Mm³**	**157.7**	**148.6**	**146.8**	**-1.2**
from the surface	*Mm³*	*101.2*	*92.9*	*91.9*	*-1.1*
from wells	*Mm³*	*44.4*	*43.4*	*42.9*	*-1.2*
from springs	*Mm³*	*11.4*	*11.6*	*11.5*	*-0.9*
of which water from other aqueduct systems	*Mm³*	*0.7*	*0.7*	*0.5*	*-28.6*
total drinking water leaving the aqueduct system (e) = (a+b+c+d)	**Mm³**	**88.2**	**85.1**	**87.6**	**2.9**
total drinking water dispensed and billed in the network (a)	**Mm³**	**79.6**	**77.6**	**78.6**	**1.3**
measured volume of water delivered to users	*Mm³*	*79.6*	*77.1*	*78.1*	*1.3*
volume consumed by users and not measured	*Mm³*	*0*	*0.5*	*0.5*	-
total drinking water authorised and not billed in the network (b)	**Mm³**	**0.4**	**0.4**	**0.4**	**-**
measured unbilled authorised consumption	*Mm³*	*0*	*0*	*0*	-
unmeasured unbilled authorised consumption	*Mm³*	*0.4*	*0.4*	*0.4*	-
drinking water exported (sub-distributors) (c)	**Mm³**	**0.6**	**0.8**	**0.8**	**-**
measured process losses (d)	**Mm³**	**7.6**	**6.3**	**7.8**	**23.8**
LOSS ASSESSMENT ACCORDING TO ARERA RESOLUTION 917/17 R/IDR					
water leaks (**)	Mm³	69.5	63.5	59.2	-6.8
water loss percentages	%	44.1	42.7	40.3	-5.6
TREATED WASTE WATER					
water treated in the main treatment plants	**Mm³**	**105.1**	**97.5**	**98.2**	**0.7**
ANALYTICAL TESTS ON DRINKING WATER AND WASTE WATER					
no. analytical tests on drinking water	**no.**	**261,251**	**288,321**	**319,410**	**10.8**
of which no. analytical tests on surface water (***)	*no.*	*24,497*	*26,665*	*25,761*	*-3.4*
no. analytical tests on waste water	**no.**	**40,127**	**39,580**	**43,841**	**10.8**

(*) The figures for 2020 have been restated after the final calculations.
(**) 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.
(***) Analysis of crude surface water (untreated).

RESOURCES USED	u. m.	2019	2020	2021	Δ% 2021/2020
COLLECTION, SUPPLY AND DISTRIBUTION OF DRINKING AND NON-DRINKING WATER					
materials					
sodium hypochlorite	t	1,384	1,117	1,097	-1.8
sodium chloride	t	351	347	349	0.6
hydrochloric acid	t	378	403	402	-0.2
flocculant	t	5,818	5,055	5,028	-0.5
purate	t	353	349	414	18.6
sulphuric acid	t	565	523	608	16.3
oxygen	t	37	90	76	-15.6
acetic acid	t	126	113	112	-0.9
carbon dioxide (*excluding drinking fountains)	t	804	634	648	2.2
ferrous chloride	t	30	45	37	-17.8
phosphoric acid	t	16	13	18	38.5
WASTE WATER TREATMENT					
materials					
polyelectrolyte emulsion	t	378	289	307	6.2
sodium hypochlorite	t	70	61	64	4.9
peracetic acid, caustic soda, polyamine/anti-foaming agent	t	15	13	12	-7.7
polyaluminium chloride (PAC)	t	4,354	4,382	4,151	-5.3
lime	t	530	527	693	31.5
acetic acid 80%	t	524	712	684	-3.9
OTHER CONSUMPTION					
drinking water (*)	**m³**	**n/a**	**182,775**	**275,109**	**50.5**

(*) The figure has been estimated.

ENERGY CONSUMPTION	u.m.	2019	2020	2021	Δ% 2021/2020
FUELS					
process fuels - wastewater					
methane	Sm^3	64,541	84,214	90,109	7.0
biogas produced	m^3	668,720	609,120	593,478	-2.6
heating fuels					
methane	Sm^3	51,059	60,429	53,431	-11.6
diesel fuel	l	4,600	4,500	5,000	11.1
lpg	l	1,960	1,822	1,750	-4.0
vehicle fuels					
diesel	l	353,462	349,724	360,131	3.0
petrol	l	16,404	26,913	26,172	-2.8
ELECTRICITY (*)					
total electricity for drinking water	**GWh**	**76.9**	**72.6**	**71.2**	**-1.9**
electricity for water pumping stations	*GWh*	*75.4*	*71.4*	*69.6*	*-2.5*
electricity for offices	*GWh*	*1.5*	*1.2*	*1.6*	*33.3*
total electricity for waste water	**GWh**	**36.4**	**35.9**	**35.0**	**-2.5**
electricity for treatment	*GWh*	*32.5*	*31.5*	*30.5*	*-3.2*
electricity for pumping stations	*GWh*	*3.8*	*4.3*	*4.4*	*2.3*
electricity for offices	*GWh*	*0.1*	*0.1*	*0.1*	-

(*) The figures have been restated after final calculations, and varies from the figure published last year.

ENERGY EFFICIENCY (2019-2021)

	energy savings achieved (kWh)		
action	**2019**	**2020**	**2021**
network efficiency improvement	1,350,000	4,110,000	3,195,000
Osmannoro plant – new process blower	60,000	-	-
Villamagna 90 office - LED relamping	6,100	10,700	-
relamping offices	-	-	6,700

The greatest energy savings in 2021 can be traced back to the works on the water networks aimed at reducing losses, which allowed an estimated energy saving of 3,195 MWh. Also significant are the works for pumping of the Coverciano Aqueduct to reduce dissipation and dispersion and improve the quality of the power supply; the installation of a new pump and an impeller in the Anconella water purifier stations, for the more efficient management of intermediate flows and the minimisation of dissipative regulations when the required flow rates are lower (night-time hours). These interventions will create savings from 2022.

WASTE	u.m.	2019	2020	2021	Δ% 2021/2020
SPECIFIC WASTE FROM TREATMENT OF WASTE WATER					
treatment sludge	t	30,145	28,760	30,873	7.3
sand and sediment from treatment	t	1,274	1,328	1,284	-3.3
WASTE EXCLUDING SLUDGE AND SAND					
hazardous waste	t	54.4	32.6	83.6	156.4
non-hazardous waste	t	8,356	8,205 (*)	7,173	-12.6

(*) The figure was restated following actual recorded consumption.

TOTAL COD IN INPUT AND OUTPUT - SAN COLOMBANO TREATMENT PLANT (2019-2021)

(t/year)	2019	2020	2021
CODin	17,463	14,536	14,851
CODout	1,403	1,321	1,691

OUTPUT PARAMETERS - SAN COLOMBANO TREATMENT PLANT (2019-2021)(*)

parameter	average values (mg/l) 2019	average values (mg/l) 2020	average values (mg/l) 2021
BOD_5	1.5	2.2	2.1
COD	12.8	13.8	15.6
SST	4.1	4.8	4.9
NH_4^+	0.6	0.5	1.0
phosphorous	0.8	0.8	0.7

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

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS (2019-2021) (*)

parameter	average values (mg/l) 2019	average values (mg/l) 2020	average values (mg/l) 2021
BOD_5	2.6	2.2	2.1
COD	18.2	14.3	17.1
SST	6.3	4.9	4.7
NH_4^+	2.9	0.7	1.1
phosphorous	1.6	0.9	0.8

(*) 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 TREATMENT PLANTS (2019-2021)

parameter	average values (%) 2019	average values (%) 2020	average values (%) 2021
100 x (CODin - CODout)/CODin	91.2	89.4	93.2
100 x (SSTin-SSTout)/SSTin	94.8	95.1	92.3
100 x (NH_4^+in - NH_4^+out)/NH_4^+in	98.0	97.9	95.8
100 x (PO_4^{-3}in -PO_4^{-3}out)/PO_4^{-3}in	74.8	74.0	72.7

PURIFICATION EFFICIENCY OF THE 38 MAJOR TREATMENT PLANTS (2019-2021) (*)

parameter	average values (%) 2019	average values (%) 2020	average values (%) 2021
100 x (CODin - CODout)/CODin	92.0	90.9	88.4
100 x (SSTin-SSTout)/SSTin	95.6	96.1	93.9
100 x (NH_4^+in - NH_4^+out)/NH_4^+in	96.7	97.4	95.8
100 x (PO_4^{-3}in -PO_4^{-3}out)/PO_4^{-3}in	72.0	73.3	73.0

(*) 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.

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 approximately 735,000 user accounts served.

MANAGEMENT SYSTEMS

Acque has implemented an **Integrated Management System based on quality, environment, safety, energy efficiency and social responsibility, road safety and the prevention of corruption.** In addition, the laboratory is accredited pursuant to the **UNI CEI EN ISO/IEC 17025:2018** standard and the Pagnana treatment plant in Empoli has **EMAS IV registration**.

QUALITY DELIVERED: MAIN INTERVENTIONS ON THE NETWORKS AND CONTROLS ON DRINKING WATER AND WASTE WATER

SIZE OF NETWORK, MAIN WORKS, METERS AND CHECKS ON DRINKING WATER AND NETWORKS (2021)

size of drinking-water network (*) - *data in GIS*	**6,024 km** (**815** km of supply network, **5,209** km of distribution)
TYPE OF WORK	
interventions due to network failure/leak detection	**18,677 interventions** (18,242 due to faults, 435 leak detection)
meter installations (new installation and replacement)	**20,991 interventions** (7,087 new installation, 13,904 replacements)
network extension	**0.4 km** of expanded network
network reclamation	**49 km** of reclaimed network
drinking water quality control	**9,301 samples** collected and **297,342 tests** performed

SIZE OF NETWORK, WORKS AND CHECKS ON SEWERAGE WATER AND NETWORKS (2021)	
size of sewerage network - *data in GIS*	**3,080** km
TYPE OF WORK	
interventions due to network failure	**3,243 interventions**
planned interventions	**1,532 interventions**
network extension	**0.6 km** of expanded network
network reclamation	**2.85 km** of reclaimed network
quality control on wastewater for sewerage networks	**7,829 samples** collected and **122,803 tests** performed

(*) The figures are estimated and coincide with the RQTI 2020 amounts sent to ARERA at the end of 2021.

HUMAN RESOURCES IN FIGURES

GENERAL DATA ON PERSONNEL (2020-2021)

	2020			2021		
(no.)	men	women	**total**	men	women	**total**
composition of the staff						
executives	2	2	**4**	2	2	**4**
managers	6	4	**10**	7	4	**11**
clerical workers	96	158	**254**	95	159	**254**
workers	149	0	**149**	150	0	**150**
total	**253**	**164**	**417**	**254**	**165**	**419**
contract type						
staff with permanent contract	247	161	**408**	249	163	**412**
(of which) part-time staff	*2*	*29*	***31***	*1*	*30*	***31***
permanent staff	6	3	**9**	0	2	**2**
staff under apprenticeship contracts	0	0	**0**	5	0	**5**
total	**253**	**164**	**417**	**254**	**165**	**419**
changes						
incoming staff	**10**	**5**	**15**	**11**	**2**	**13**
outgoing staff	**9**	**0**	**9**	**10**	**1**	**11**
turnover rate (%)	7.5	3.0	**5.8**	8.3	1.8	**5.8**
incoming rate (%)	4.0	3.0	**3.6**	4.3	1.2	**3.1**
outgoing rate (%)	3.6	-	**2.2**	3.9	0.6	**2.6**

INDUSTRIAL ACCIDENTS AND FREQUENCY AND SEVERITY INDICES (2020-2021)(*)

	2020	2021
accidents (no.)	3	7
total days of absence (**)	62	359
hours worked	667,740	654,851
frequency index (FI) (number of accidents per 1,000,000/working hours)	**4.49**	**10.69**
severity index (SI) (days of absence per 1,000/working hours)	**0.09**	**0.55**

(*) The increase in the number of accidents and the extent of severity compared to the previous year is linked to the full resumption of operations, which in 2020, had been reduced as a result of the lockdown period caused by the Covid-19 pandemic.
(**) The value also excludes days of absence related to persistent or reopened injuries from previous years.

TRAINING 2020-2021

course type, hours provided and costs (*)

	courses (no.)		training (hours)		costs (€)	
course type	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**
IT	4	2	282	403	4,302	0
new hires	0	1	0	1,001	0	0
technical-specialised	29	33	674	1,766	11,115	12,488
managerial	2	3	80	97	2,020	270
safety	26	36	1,610	4,105	17,670	9,891
environment	1	1	48	8	0	0
cross-cutting	9	4	851	148	12,661	0
training pursuant to Legislative Decree no. 231/01	2	1	228	250	3,488	0
e-learning training	1	7	27	386	404	0
total	**74**	**88**	**3,800**	**8,164**	**51,660**	**22,649**

employees trained (**)	2020			2021		
(no.)	men	women	total	men	women	total
	227	135	**362**	286	174	**460**
breakdown of training hours by qualification						
executives	18	10	**28**	116	32	**148**
managers	105	81	**186**	161	43	**204**
clerical workers	879	1,540	**2,419**	1,933	3,314	**5,247**
workers	1,167	0	**1,167**	2,565	0	**2,565**

(*) Emergency tests are excluded; by new hires, we mean the coaching of new staff by more experienced workers.
(**) 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.

ENVIRONMENTAL ACCOUNTS

PRODUCTS AND ANALYTICAL TESTS	u. m.	2019	2020	2021	Δ% 2021/2020
WATER BALANCE (*)					
drinking water from the environment	**Mm^3**	**76.94**	**74.74**	**74.74**	**-**
from the surface	*Mm^3*	*3.24*	*3.27*	*3.27*	-
from wells	*Mm^3*	*59.84*	*57.32*	*57.32*	-
from springs	*Mm^3*	*5.86*	*6.29*	*6.29*	-
of which water from other aqueduct systems	*Mm^3*	*7.99*	*7.86*	*7.86*	-
total drinking water leaving the aqueduct system (e) = (a+b+c+d)	**Mm^3**	**46.18**	**46.08**	**46.08**	**-**
total drinking water dispensed and billed in the network (a)	**Mm^3**	**43.97**	**43.63**	**43.63**	**-**
measured volume of water delivered to users	*Mm^3*	*43.97*	*43.63*	*43.63*	-
volume consumed by users and not measured	*Mm^3*	*0*	*0*	*0*	-
total drinking water authorised and not billed in the network (b)	**Mm^3**	**0.30**	**0.28**	**0.28**	**-**
measured unbilled authorised consumption	*Mm^3*	*0.08*	*0.07*	*0.07*	-
unmeasured unbilled authorised consumption	*Mm^3*	*0.22*	*0.21*	*0.21*	-
drinking water exported to other systems (c)	**Mm^3**	**1.04**	**0.96**	**0.96**	**-**
measured process losses (d)	**Mm^3**	**1.22**	**1.09**	**1.09**	**-**
LOSS ASSESSMENT ACCORDING TO ARERA RESOLUTION 917/17 R/IDR					
water leaks	Mm^3	30.8	28.7	28.7	-
water loss percentages	%	40.0	38.3	38.3	-
TREATED WASTE WATER					
water treated in the main treatment plants	**Mm^3**	**46.7**	**46.4**	**44.6**	**-3.9**
ANALYTICAL TESTS ON DRINKING WATER AND WASTE WATER					
no. analytical tests on drinking water (including analytical tests on surface water)	**no.**	**329,752**	**357,585**	**297,342**	**-16.8**
no. analytical tests on waste water	**no.**	**128,459**	**122,766**	**122,803**	**-**

(*) The figures for 2020 have been restated following consolidation and differ from those previously published. The 2021 figures are estimated to be equal to those for 2020.

RESOURCES USED	u. m.	2019	2020	2021	Δ% 2021/2020
COLLECTION, SUPPLY AND DISTRIBUTION OF DRINKING AND NON-DRINKING WATER					
materials					
laboratory reagents (chemical section and microbiological section)	t	2.03	2.31	1.86	-19.5
sodium hypochlorite	t	208.82	180.13	231.26	28.4
hydrochloric acid	t	351.09	477.99	339.45	-29.0
potassium permanganate	t	2.75	4.17	4.12	-1.2
aluminium polychloride	t	181.73	208.59	194.19	-6.9
DREWO 8155 PG powder	t	5.00	0	0	-
DREFLO 908 PG powder	t	3.98	0	0	-
salt in bags	t	7.20	1.00	1.00	-
sodium chloride	t	354.34	366.69	362.42	-1.2
caustic soda	t	0.55	2.37	0.75	-68.4
citric acid	t	1.23	2.55	0.85	-66.7
alifons L	t	0	0.13	0	-
aluminium polychlorosulphate	t	11.55	0	0	-

WASTE WATER TREATMENT					
materials					
polyelectrolyte emulsion	t	169.08	233.87	193.57	-17.2
aluminium polychloride	t	12.00	19.50	7.50	-61.5
ferric chloride for sludge dehydration	t	496.03	527.69	545.60	3.4
sodium hypochlorite for final disinfection	t	11.55	29.20	11.05	-61.9
acetic acid	t	0.10	0	0.05	5
sulphuric acid	t	1.25	0.99	0	-1
caustic soda (sodium hydroxide) - Solvay	t	1.15	2.02	1.35	-33.2
citric acid removed	t	0	0	0.05	-
biotek base L - biological reactivator	t	0.04	0.04	0	-
biotek clar – biological reactivator	t	0.25	0.25	0.30	20.0
desmell Bio L – odorogenic emissions treatment	t	0.08	0	0.10	-
nutrients	t	545.50	1,135.59	1,320.49	16.3
OTHER CONSUMPTION					
drinking water (*)	**m^3**	**297,077**	**284,305**	**284,305**	**-**
drinking water consumed for non-industrial water uses (offices, outside showers etc.)	*m^3*	*118,963*	*215,604*	*215,604*	-
drinking water consumed for process water uses (washing machinery and bays, etc.)	*m^3*	*178,114*	*68,701*	*68,701*	-

(*) The figures have been restated following consolidation and differ from those previously published. The 2021 figures are estimated to be equal to those for 2020.

In 2021, Aque used approximately **418,873 m^3 of recovered water** for washing the sheets of sludge dehydration equipment (belt presses) and for the backwashing of the Pollino water plant filters in Porcari (Lucca).

ENERGY CONSUMPTION	u.m.	2019	2020	2021	Δ% 2021/2020
FUELS					
process fuels - drinking water/non-drinking water					
diesel fuel	l	1,300	1,500	2,050	36.7
process fuels - wastewater					
diesel fuel	l	1,100	0	500	-
heating fuels					
methane	Sm^3	56,244	50,743	55,583	-9.5
lpg	l	17,781	15,419	17,847	-15.7
vehicle fuels					
diesel	l	202,128	228,802	240,882	5.3
petrol	l	33,962	15,373	26,950	75.3
methane	kg	52,084	23,884	15,308	-35.9
ELECTRICITY					
total electricity for drinking water	**GWh**	**53.80**	**51.09**	**50.99**	**-0.2**
electricity for water pumping stations	*GWh*	*53.34*	*50.72*	*50.33*	*-0.8*
electricity for offices	*GWh*	*0.46*	*0.37*	*0.66*	*78.4*
total electricity for waste water	**GWh**	**32.83**	**32.29**	**31.90**	**-1.2**
electricity for treatment	*GWh*	*25.70*	*24.66*	*24.49*	*-0.7*
electricity for pumping stations	*GWh*	*6.85*	*7.40*	*7.00*	*-5.4*
electricity for offices	*GWh*	*0.28*	*0.23*	*0.41*	*78.3*

ENERGY EFFICIENCY (2019-2021)

	energy savings achieved (kWh)		
action	**2019**	**2020**	**2021**
Pieve a Nievole (PT) inter-municipal treatment plant: implementation of microbubbles oxidative section Line 2	-	-	303,095
treatment plant via Hangar Pontedera (PI): implementation of microbubbles oxidative section	261,150	252,650	208,020
La Fontina (PI) treatment plant: replacement of air distribution plates lines 1 and 2	-	577,230	472,605

Acque has implemented energy efficiency improvements, such as the replacement of the oxygenation system on the Pieve a Nievole and Pontedera (PI) treatment plants, which led achieving, in 2021, energy savings indicated in the table equal to over 983 MWh.

WASTE	u.m.	2019	2020	2021	Δ% 2021/2020
SPECIFIC WASTE FROM TREATMENT OF WASTE WATER					
treatment sludge	t	21,953.18	19,879.80	20,246.84	1.8
sand and sediment from treatment	t	1,279.04	1,981.55	1,412.77	-28.7
WASTE SLUDGE AND SAND					
hazardous waste	t	42.93	24.96	16.80	-32.7
non-hazardous waste	t	61,408.12	72,919.75	63,778.23	-12.5

TOTAL COD IN INPUT AND OUTPUT (2019-2021)

(t/year)	2019	2020	2021
CODin	22,017	22,808	22,021
CODout	1,382	1,268	1,212

OUTPUT PARAMETERS FOR THE MAIN TREATMENT PLANTS (2019-2021) (*)

parameter	average values (mg/l) 2019	average values (mg/l) 2020	average values (mg/l) 2021
BOD_5	6.3	5.5	4.7
COD	27.9	25.5	24.3
SST	7.0	5.0	5.9
NH_4^+	3.5	3.0	3.3
phosphorous	2.3	2.0	2.2

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

PURIFICATION EFFICIENCY OF THE MAIN TREATMENT PLANTS (2019-2021)(*)

parameter	average values (%) 2019	average values (%) 2020	average values (%) 2021
100 x (CODin - CODout)/CODin	93.7	95.0	95.4
100 x (SSTin - SSTout)/SSTin	95.7	97.8	98.2
100 x (NH_4^+in - NH_4^+out)/NH_4^+in	90.6	92.7	92.7
100 x (PO_4^{-3}in - PO_4^{-3}out)/PO_4^{-3}in	68.8	73.0	68.3

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

Overseas activities

Acea operates abroad, in the water sector[173], with regards to **technical aspects or the commercial management of the service**, including through **staff training** and the **transfer of know-how** to local businesses. In particular, it is present in Honduras, Dominican Republic and Peru through companies created **in partnership with local and international stakeholders**, in an area inhabited by over 10 million people.

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 water network stretches approximately 2,170 km and the sewerage network approximately 1,270 km.

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: the process is underway to obtain the **Anti-Corruption Management** certificate according to the **UNI ISO 37001** standard.

AGUAS DE SAN PEDRO SA – MAIN COMPANY AND OPERATING DATA

country (area)	Honduras (San Pedro Sula)
users	122,308
inhabitants served	733,848
customer	municipal administration
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	388
turnover (in € thousand)	37,210

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

The **pandemic emergency** slowed certain activities, such as establishment of new connections and other maintenance works, but operating teams have always been in the field guaranteeing service continuity. The Company **suspended service disconnection** for customers with unpaid bills, and payment periods were extended without applying interest expense and for customers without meters invoicing continued only of the administrative component for very low economic value.
From the start of the emergency, **biosecurity and personnel-protection measures** have been established, updated on the basis of the guidelines issued by the government and WHO protocols, including: preparation of the **biosecurity protocol** that reviewed working methods and the use of company tools to ensure social distancing and avoid contact, **provision of PPE** to limit the spread of the virus and specific **training** of personnel with clear and simple messages on how to take care, in order to protect each other, in the workplace and in the family, and the role of water during the pandemic to guarantee hygiene procedures. In addition, a Covid-19 **vaccination** programme was implemented for all employees.
Despite the difficulties, the Company continued activity to offer **technical assistance to rural communities** and implemented **initiatives for the protection of the environment**, in the context of the **programme for the conservation** of the El Merendón **natural 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 approximately 82 thousand fruit and wood trees, the reforestation of an area of 107 hectares for the benefit of 308 producers;
- **fire prevention**. In this regard, in recent years, the Company has contributed with construction of **surveillance towers** and is active with campaigns for protection of the territory and involvement of the fire-prevention team. In 2021, the team intervened to **put out 2 fires** in Merendón, which involved 11 hectares of forests and, thanks to the surveillance towers, they managed to prevent 160 fires from starting in the Rio Manchaguala basin;
- **advice on the 3 Sectoral Committees for Water Management,** including support in the preparation of reports and plans for the preservation of supply micro-basins;
- **social and technical assistance** for the rural communities of Merendón, with organisation of 25 laboratories in the micro-basin communities of Rio Manchaguala, Rio Frio and El Palmar, concerning maintenance of biofilters, hygiene and environmental care (for a total of 200 people involved from 25 communities); periodic supervision was carried out on the 2,200 drinking water biofilters installed in just as many homes in the Merendón communities, and training was provided to children belonging to the Infant Health Committees on the use and maintenance of biofilters, as well as on sanitation practices for the protection of health and the environment.

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 (21,800 meters installed in 2021), maintenance of existing meters and directing the works for new connections.
The Company implemented a **Quality Management System** certified according to the **UNI ISO 9001:2015 standard**, which covers all activities performed.

ACEA DOMINICANA SA – MAIN CORPORATE AND OPERATING DATA

country (area)	Dominican Republic (north and east Santo Domingo)
users served	188,371
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	139
turnover (in € thousand)	4,175

Due to the pandemic emergency and its persistence, educational campaigns were suspended aimed at students of schools, issued in previous years to raise awareness on the correct use of water, along with campaigns on reforestation. For the former, an attempt was made to introduce the virtual mode, but due to the lack of vehicles and electric service in many public schools in East and North Santo Domingo, it was not possible to provide the service.
During the year, **employee training** on **occupational health** continued, and, in particular, on stress management, the quality management system and customer service and support, for a total of 642 hours of training. Regarding **health and safety**, in order to contain the spread of Covid-19, the Company adhered to regulations issued and implementing measures to protect its employees from infection.

OPERATING COMPANIES IN PERU

The operating Companies in Lima (Peru) manage part of the water services on behalf of the local publicly owned water company SEDAPAL (drinking water and sewerage Service in Lima) with projects defined in their calls for tenders. The Group companies active in 2021 were: Consorcio Agua Azul, Consorcio Servicio Sur, Consorcio Acea and Consorcio Acea Lima Sur.

MAIN CORPORATE AND OPERATING DATA

country (area)	Peru (Lima)
customer	Sedapal (Drinking water and sewerage service in Lima, state owned)
duration of the contracts	Consorcio Agua Azul: 07/04/2000 – 18/06/2027
	Consorcio Servicio Sur: 24/08/2018 – 24/08/2021
	Consorcio Acea: 5/12/2020 – 5/12/2023
	Consorcio Acea Lima Norte: 7/01/2021 – 7/01/2024
	Consorcio Acea Lima Sur: 18/12/2021 – 18/12/2024
shareholders	Consorcio Agua Azul: Acea SpA (44%), Marubeni Co. (29%), Inversiones Liquidas SAC (27%)
	Consorcio Servicio Sur: Acea International (50%), Acea Ato 2 (1%), Conhydra (29%), Valjo (14%), India (6%)
	Consorcio Acea: Acea Perù SAC (99%), Acea Ato 2 (1%)
	Consorcio Acea Lima Norte: Acea Perù SAC (99%), Acea Ato 2 (1%)
	Consorcio Acea Lima Sur: Acea Perù SAC (99%), Acea Ato 2 (1%)
no. of employees	Consorcio Agua Azul: 31
	Consorcio Servicio Sur: 41 (August 2021)
	Consorcio Acea: 949
	Consorcio Acea Lima Norte: 578
	Consorcio Acea Lima Sur: 95
turnover (in € thousand)	Consorcio Agua Azul: 12,608
	Consorcio Servicio Sur: 4,290
	Consorcio Acea: 7,202
	Consorcio Acea Lima Norte: 10,443
	Consorcio Acea Lima Sur: 21

Specifically:

- **Consorcio Agua Azul**, a subsidiary of Acea SpA, manages the treatment and supply of drinking water in the **northern area of Lima**; to this end, using the surface and underground waters of the Chillón river it built a water treatment plant capable of satisfying the drinking water needs of the area, which it will manage until 2027, when it will be transferred to the State;
- **Consorcio Servicio Sur** is a special purpose vehicle led by Acea International in partnership with Peruvian partners, which manages the corrective maintenance contract for the water and sewerage system in the **area south of Lima**. The contract, which began in August 2018 and finished in August 2021, was implemented **in the area of Surquillo** and involved the extraordinary maintenance works required for the maintenance of full functionality of the water and sewerage service, and of hygiene, sanitary and environmental conditions;
- **Consorcio Acea**, controlled by Acea Peru was awarded for the management and control of 253 pumping stations for drinking water serving the **Ate, Breña and San Juan de Lurigancho areas in the central area of Lima** at the end of 2020;
- the **Consorcio Acea Lima Norte**, attributable to Acea Peru, manages the maintenance of the drinking water and sewerage service for the **Comas and Callao areas in the northern area of Lima;**
- Since the end of 2021, the **Consorcio Acea Lima Sur**, a subsidiary of Acea Peru, has been carrying out maintenance activities on the drinking water and sewerage systems for the **Surquillo area in the southern area of Lima.**

Below is some significant information from the standpoint of sustainability relating to the various companies operating in Peru.
The **Consorcio Agua Azul** has adopted an **Integrated Quality and Environment System** according to **UNI ISO 9001:2015** and **UNI ISO 14001:2015** aimed at optimising production processes and reducing the environmental impact through energy efficiency and the limited use of materials.
During the year, the **programme of health and safety in the workplace and first-aid training** continued, which for reasons connected to the health emergency was only provided to employees. Continuous training on the issue enabled **maintenance of the result of zero accidents at work** in 2021. The Company adopted biosecurity and personal-protection measures, limiting the number of personnel in the office and altering the shift patterns of operational teams, in addition to issuing **rapid antigen tests** and **molecular tests** for personnel. The pandemic has also caused the suspension of consolidated activities, carried out in previous years and with a positive impact on the territory, including courses organised with the Asociación de Productores Ecológicos organisation of the Chillón valley, on the use of fertilisers, crop treatment and maintenance of organic certification for farmed crops, and the training courses at the Faculty of Engineering of the National University of Peru and curricular internships for students. However, in 2021, the Consorcio resumed distribution of **educational kits** to 7 local schools, with the aim of developing a link with local communities, and in particular, to promote school attendance. For the Christmas holidays, the **children of local schools and children of employees were delivered toys and Christmas packages**.

From the standpoint of the **sharing economy**, **Consorcio Servicio Sur** allowed employees to use **company cars** for **commuting** and to share them with other employees. Regarding **health and safety**, in order to contain the spread of Covid-19, the Company introduced measures to limit infections amongst employees, including working from home and performance of **regular testing**. In addition, training was provided to employees in the context of **health prevention** during the year.
Finally, the **Consorcio Acea** and the **Consorcio Acea Lima Norte** provided training to employees in 2021 regarding **health prevention** and aimed at making them aware of the vaccine in order to contain the spread of Covid-19.

GRI CONTENT INDEX: REPORTING PRINCIPLES, UNIVERSAL STANDARDS AND MATERIAL TOPIC-SPECIFIC STANDARDS

The Sustainability Report has been prepared **in accordance with the GRI Standards: Comprehensive option.** The GRI Content Index includes the Universal Standards (series 100) and the Material Topic-Specific Standards (series 200, 300 and 400).
Specifically, the index contains:

- reference to the **reporting principles** (GRI 101: Foundation 2016 (Reporting Principles));
- definition of the **56 standards of the general disclosure** (GRI 102: General Disclosures 2016) and of the **26 material topics** amongst the **Specific Standards** (Series GRI 200: Economic, GRI 300: Environmental, and GRI 400: Social) and **relative indicators**, with indication of the sections and pages of the document, where it is possible to consult them, or responses to indicators, and reporting of any omissions or inapplicability of certain indicators included in material topics. It should be noted that with reference to the 2021 financial year, the 2020 edition of the specific material standard "Waste" (GRI 306) has been adopted;
- the scope of each topic (amongst the Material Topic-Specific Standards), i.e. its significance within the organisation (Group or company associated with specific businesses) or outside of it (e.g. supply chain, collective significance).

Finally, the right column of the Content Index indicates the main correspondences with topics covered by Italian Legislative Decree no. 254/2016.

GRI CONTENT INDEX

GRI Standards	definition of GRI Standards notes (responses or reports of omissions or inapplicability) sections and reference pages	Alignment with Legislative Decree no. 254/2016
UNIVERSAL STANDARDS		
GRI 101: FOUNDATION 2016 (REPORTING PRINCIPLES)		
GRI 102: GENERAL DISCLOSURES 2016		
	ORGANIZATIONAL PROFILE	
GRI 102: General Disclosures 2016	**102-1 Name of the organization.** Acea SpA *Corporate identity* page 22.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-2 Activities, brands, products, and services. *Corporate identity* pages 22, 23, 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, Italy	**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 22.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-5 Ownership and legal form. *Corporate Identity* page 32-33.	**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 22 f., 32; *Relations with stakeholders* pages 84-87 and Table no. 15, 104.	**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 22 Table no. 6, 32 Table no. 7; *Relations with stakeholders* pages 148 Table no. 38, 172.	**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 146-148, 149-150, 151 Table no. 39.	**Art. 3 paragraph, 2 letter d):** social aspects and aspects relating to staff management
	102-9 Description of the organization's supply chain. *Corporate Identity* pages 24-27; *Relations with stakeholders* pages 141 f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model

	102-10 Significant changes to the organization's size, structure, ownership, or supply chain (including: changes in the location of, or changes in operations, including facility openings, closings, and expansions; changes in the share capital structure and other capital formation, maintenance, and alteration operations; changes in the location of suppliers, the structure of the supply chain, or relationships with suppliers etc.). *Corporate Identity* pages 32-33; *Relations with stakeholders* page 142.	**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 65-75, 76 Table no. 12; *Relations with stakeholders* pages 158, 160 f., 180; *Relations with the environment* pages 205, 223.	**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). *Joining the United Nations Global Compact* pages 18-19; *Corporate Identity* pages 38, 40-41, 43, 76 Table no. 12; *Relations with stakeholders* pages 135, 141, 167, 178 ff; *Relations with the environment* pages 188 ff, 194 f.	**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 178 f.; *Relations with the environment* pages 188 f.	**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 the stakeholders* page 4; *Corporate Identity* pages 24-27, 38-43; *Relations with stakeholders* pages 130 f., 135, 179, 180 f.; *Relations with the environment* pages 188, 191.	**Art. 3 paragraph 7:** the responsibility to guarantee that the report is (...) compliant rests with the directors
	102-15 Description of key impacts, risks, and opportunities. *Corporate identity* pages 24-27, 32, 38-43, 64, 65-72 and Table no. 10, 74 f.; *Relations with stakeholders* pages 109, 176 f.; *Relations with the environment* pages 189 f., 211 ff.	**Art. 3 paragraph 1, letter c):** the main risks generated or suffered; **paragraph 2, letter c):** the impact (...) on the environment as well as on health and safety
	ETHICS AND INTEGRITY	
GRI 102: General Disclosures 2016	**102-16 Description of the organization's values, principles, standards, and norms of behavior.** *Corporate Identity* pages 40-41, 43, 62, 69, 81; *Relations with stakeholders* pages 140 ff.	**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 62 Chart no. 14, 69.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **paragraph 2, letter e)**: regarding human rights, the measures adopted to prevent breaches thereof and measures to avoid conduct and actions that are in any case discriminatory
	GOVERNANCE	
	102-18 Governance structure of the organization, including committees of the highest governance body. Committees responsible for decision-making on economic, environmental, and social topics. *Corporate Identity* pages 62 and Chart no. 14, 63 Table no. 8, 64.	**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 powers to the Chief Executive Officer, who, in the context of the corporate macrostructure established by the same Board, confers powers and proxies to management, in accordance with the missions and responsibilities of the different structures. The standard practice for any type of assignment of powers, and therefore for economic, environmental and social areas, is based on analysis of the requirement/need for such assignment.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	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). Within Acea, there are operational structures managing the individual topics, including the Administration, Finance and Control department, for economic data, environmental safeguards for the Operating Companies, and structures appointed to manage the main social topics, such as Human Resources, Procurement and Logistics, Customer Care etc. Regarding ESG areas as a whole, from the perspective of sustainability, the Parent Company has the the Investor Relations & Sustainability Department, both reporting to the Chief Executive Officer, which promote, coordinate and develop sustainability topics both at the level of the Holding Company and subsidiaries, supporting an integrated Group perspective.	**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 has been sent to participate in meetings of the governance bodies, contributing its specific information and knowledge during the meetings. *Corporate Identity* pages 40-41, 62-64, 65; *Relations with stakeholders* page 172.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model

GRI 102: General Disclosures 2016	**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 62 and Chart no. 14, 63 and 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* page 63 and 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 corporate bodies, Acea ensures balanced representation of genders, as set out in Law no. 120/2011, adopted in its own By-laws, and guarantees the presence of Independent Directors, governed by the same By-laws and current regulations. Gender diversity of the Governance Body and the Committees is an important element, in tempering "single-mindedness" as well as for the different ways in which men and women exercise their leadership. Selection processes involve shareholders who, in accordance with the recommendations of the Governance Code, are guided in the choice of candidates to propose in the lists by the guidelines provided by the Board of Directors of Acea, having received the opinion of the Appointments Committee and taking into account the results of self-assessment, on the size and composition of the administrative body. *Corporate identity* pages 63 f.	**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 conflicts of interest in Acea is monitored employing corporate governance systems and procedures (Management, Organisation and Control Model, Code of Ethics, Procedure for Related-Party Transactions, and Independent Directors). These tools act in different contexts where conflicts of interest could arise: in relations between controlling shareholders and minority shareholders, between Acea and Related Parties, and between Acea and the Public Administration. *Corporate identity* page 62.	**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 11; *Corporate Identity* pages 40-41, 43, 62-64, 75.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	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 11; *Corporate Identity* pages 40-41, 62 and Chart no. 14, 63-64.	**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. Non-executive Directors receive a fixed fee, set by the Shareholders' Meeting on the basis of the commitment requested of them. *Corporate Identity* pages 62 chart no. 14, 63-64, 76; Relations with stakeholders pages 167 f.	**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 11; *Corporate Identity* pages 43, 44-61, 62-64, 65-74, 75.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-30 Highest governance body's role in reviewing the effectiveness of the organization's risk management processes for economic, environmental, and social topics. *Disclosing sustainability: methodological note*page 11; *Corporate Identity* pages 44-61, 62 and Chart no. 14, 63. 65-74.	**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 11; *Corporate Identity* pages 43, 44-61, 62 and Chart no. 14.	**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 11; *Corporate Identity* page 64.	**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 performed by the Control and Risks Committee, to which the Internal Audit Function manager periodically reports, which interacts with the Board of Directors. The activities performed and results of activity of the Supervisory Body (pursuant to Italian Legislative Decree no. 231/01), which may identify the risk of liability for the Company, are subject to information flows to the BoD. The Chief Executive Officer, also in his role as Director in Charge of the Internal Control and Risk Management System, provides constant updates to the Board on developments in management and the existence of any potentially critical situations. *Corporate Identity* page 69-72 and Table no. 10, 76.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model

GRI 102: General Disclosures 2016	**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* page 69-72 and Table no. 10, 76.	**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. It is noted that within Acea, for the Top Management, Executives Holding Key Positions and for managerial roles with greater impact on Group business, the clawback clause applies, establishing the right to request return of the variable components of remuneration, both short-term and medium/long-term, in the event that these components have been paid on the basis of conduct of a malicious nature and/or due to serious misconduct. There are no agreements that set out fixed indemnities or clauses aimed at safeguarding the management of the Group in the event of termination of their employment, and reference should be made to the provisions established by the Collective Labour Agreement (CCNL) for Executives of Public Utility Service Companies and the "Executive Exodus Management" Policy in this regard. The "Executive Exodus Management" Policy refers to the Collective Labour Agreement (CCNL) considers the short and long-term fixed and variable components on a monthly basis. The Chief Executive Officer is entitled to receive the maximum amounts provided for by the policy. The long-term incentive system Long Term Incentive Plan (LTIP) and short-term annual (MBO) incentive system is linked, as well as to targets of an economic/financial nature, also to environmental targets and those with an impact on sustainability, through a composite sustainability indicator. *Corporate Identity* pages 62 f. and Chart no. 14, 65; *Relations with stakeholders* page 167.	**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. In 2021, no external consulting companies were involved in processes for the determination of remuneration. *Corporate identity* pages 62 f., 65.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	102-37 Stakeholders' involvement in remuneration. *Corporate identity* page 65.	**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 relationship between the highest role and the median employee for 2021 is given by the remuneration multiple of 14.81, compared with a median value of 19.99 for peer companies. See also the *Report on the remuneration policy and on the fees paid - 2021*, available on the Acea Group website (www.gruppo.acea.it). *Corporate identity* page 65.	**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. Average gross annual remuneration, calculated on the basis of full-time employees, unlike other top roles, saw a stable trend, with a slight increase of approximately 1% between 2020 and 2021.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model
	STAKEHOLDER ENGAGEMENT	
	102-40 List of stakeholder groups engaged by the organization. *Disclosing sustainability: methodological note* pages 12-13; *Corporate Identity* pages 77-80; *Relations with stakeholders* pages 88-94, 97, 99, 105, 108-111, 118 f., 122, 129 ff., 134 f., 140, 144 ff., 148, 156 ff., 159 f., 161, 166, 170, 173 f., 177-181; *Relations with the environment* pages 189 f.	**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 156.	**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 12-13; *Corporate Identity* pages 38, 77-80; *Relations with stakeholders* pages 88-94, 99 f., 109 f., 118 f., 122, 129 ff., 133 ff., 140, 144 ff., 148, 156 ff., 159, 161, 163, 166, 170, 173 f., 178 f., 180, 181.	**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 12-13; *Corporate Identity* pages 38-39, 43, 64, 77-80; *Relations with stakeholders* pages 88-94, 97, 99, 105 f., 109 f., 111, 119 f., 121, 122 ff., 125, 129-135, 140, 144 ff., 148, 156, 158 f., 161, 162, 163, 166 ff., 169-171, 173 f., 177 ff., 180 f.; *Relations with the environment* pages 188 f., 219.	**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 12-13; *Corporate Identity* pages 24-27, 38-43, 68, 77-80; *Relations with stakeholders* pages 88-94 and Tables nos 16 e 17, 99, 110 f., 118 f., 122, 135, 140, 144 ff., 148, 156 f., 158 f., 161, 166 ff., 170, 173 f., 178, 180 f.; *Relations with the environment* pages 188 f., 194 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model

	REPORTING PRACTICE	
GRI 102: General Disclosures 2016	**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.** In addition to the data requested, highlighted in the methodological note, sometimes the scope varies by default. This change, again reported in the text, is primarily correlated to the different business sectors (and companies that belong to them) reported, or, in residual cases, the centralised management of certain data, which, on the basis of the activities managed under service, does not cover the entire scope of reporting. *Disclosing sustainability: Methodological note*, page 15 and Table no. 2, and note 19; *Relations with stakeholders* pages 84, 145; *Relations with the environment* pages 199, 205, 208.	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries
	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 12-13, 14, 15, 17; *Corporate Identity* pages 24-27, 38-43; *GRI Content Index* pages 246-261.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model **Art. 4 paragraph 1:** to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	102-47 List of the material topics identified in the process for defining report content. *Disclosing sustainability: methodological note* pages 12-13, 14-15 and Table no. 1; *GRI Content Index* pages 246-261.	**Art. 4 paragraph 1:** to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	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 recalculation or groupings that require changes to the data published in 2020 are appropriately flagged and justified in the report. *Disclosing sustainability: methodological note*, page 15; *Relations with stakeholders* page 88; *Relations with the environment* pages 225 f. Table no. 68.	**Art. 3 paragraph 3:** the information (...) is provided with a comparison with the information 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 14 Table no. 1, 15, 16 Table no. 3; *Relations with stakeholders* page 124 and Chart no. 31; *Environmental accounts* pages 266, 269.	**Art. 3 paragraph 3:** the information (...) is provided with a comparison with the information provided in previous years
	102-50 Reporting period for the information provided (for example, the fiscal or calendar year). *Disclosing sustainability: methodological note* page 11.	**Art. 2 paragraph 1:** public interest bodies prepare a disclosure for each financial year **Art. 3 paragraph 3:** the information (...) is provided with a comparison with the information provided in previous years
	102-51 Date of the most recent previous report. *Disclosing sustainability: methodological note* page 10.	**N.A.**
	102-52 Reporting cycle (for example, annual or biennial). *Disclosing sustainability: methodological note* page 10.	**Art. 2 paragraph 1:** public interest bodies prepare a disclosure for each financial year
	102-53 Contact point for questions regarding the report or its contents. *Disclosing sustainability: methodological note* page 17.	**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 11; *GRI Content Index* page 246.	**Art. 3 paragraph 3:** reporting standards 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 246-261.	**Art. 3 paragraph 3:** reporting standards 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 11; *Opinion Letter* pages 299 ff.	**Art. 3 paragraph 10:** (...) verification of the non-financial statement

MATERIAL TOPIC-SPECIFIC STANDARDS		
GRI 200: ECONOMIC		
TOPIC	**ECONOMIC PERFORMANCE**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 24-27, 32, 38-43, 67 Table no. 9, 70 ff. and Table no. 10. Topic Boundary: Acea Group	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 32, 38-43, 44-61, 67-72 and Tables nos 9 e 10.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the non-financial company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 32, 38-43, 67-72 and Tables nos 9 e 10.	**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 32 Table no. 7, 77-80, 81 f.; *Relations with stakeholders* pages 154, 172, 174.	**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 24-27, 32, 43, 72; *Relations with the environment* pages 188 ff., 217, 219.	**Art. 3 paragraph 1, letter c):** the impact (...) on the environment
	201-3 Defined benefit plan obligations and other retirement plans. *Relations with stakeholders* page 154 f. and Table no. 42.	**Art. 3 paragraph, 1 letter d):** social aspects and aspects relating to staff management
	201-4 Financial assistance received from government. *Corporate identity* page 81 note 40.	**N.A.**
TOPIC	**INDIRECT ECONOMIC IMPACTS**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 24-27, 39-41, 67-72 and Table no. 10, 77-80; *Relations with stakeholders* pages 94 ff., 140 ff. 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. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 39-41, 44-61, 67-72 and Table no. 10, 77-80; *Relations with stakeholders* pages 94 ff., 106, 135 ff., 140 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the non-financial company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 39-41, 67-72 and Table no. 10, 77-80; *Relations with stakeholders* pages 94 ff., 106, 135 ff., 140 ff.	**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* page 77-80; *Relations with stakeholders* pages 94 ff., 96 Table no. 18, 97 f., 100, 105 ff. and Table no. 25, 108, 110 f., 135 ff., 180 and Chart no. 48; *Relations with the environment* page 197.	**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* page 77-80; *Relations with stakeholders* pages 85 f., 94 ff., 96 Table no. 18, 97 f., 100, 105, 108, 110 f., 131 f., 135 ff., 139, 140 ff., 143 Tables nos 36 e 37; *Relations with the environment page* 202.	**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 24-27, 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 139 ff. 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. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 41-43, 44-61, 67-72 and Table no. 10; *Relations with stakeholders* pages 139 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 139 ff.	**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.** There is no specific preferential strategy for local suppliers, although, particularly for sourcing of works, the prevalence of local suppliers arises naturally. *Relations with stakeholders* pages 142, 143 Table no. 37.	**Art. 3 paragraph 1, letter b):** fundamental indicators of non-financial performance
TOPIC	**ANTI-CORRUPTION**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 41-43, 67-72 and Table no. 10. Topic Boundary: Acea Group.	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 41-43, 44-61, 67-72 and Tables nos 9 e 10, 76; *Relations with stakeholders* page 164.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Tables nos 9 e 10, 76; *Relations with stakeholders* page 164.	**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 69.	**Art. 3 paragraph 1, letter c):** the main risks generated or suffered **Art. 3 paragraph 2, letter f):** anti-corruption and bribery measures
	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* 164.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model: **paragraph 2, letter f):** fight against both active and passive corruption
	205-3 Confirmed incidents of corruption and actions taken (total number and nature of confirmed incidents of corruption, etc.). No instances of corruption were recorded.	**Art. 3 paragraph 2, letter f):** anti-corruption and bribery measures
TOPIC	**ANTI-COMPETITIVE BEHAVIOR**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 41-43, 65, 67-72 and Table no. 10; *Relations with stakeholders* pages 140 ff., 175. Topic Boundary: Acea Group	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 41-43, 44-61, 65, 67-72 and Tables nos 9 e 10; *Relations with stakeholders* pages 140 ff., 164, 175.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 65, 67-72 and Tables nos 9 e 10; *Relations with stakeholders* pages 140 ff., 164, 175.	**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 175 f.	**Art. 3 paragraph 1, letter b):** fundamental indicators of non-financial performance

GRI 300: ENVIRONMENTAL		
TOPIC	**MATERIALS**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 24-27, 41-43, 67-72 and Table no. 10, 74; *Relations with the environment* pages 191, 217; *Environmental accounts page* 266. Topic Boundary: main Group companies	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 41-43, 44-61, 67-72 and Tables nos 9 e 10, 74, 76 Table no. 12; *Relations with the environment* pages 191, 217; *Environmental accounts* page 266.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Tables nos 9 e 10, 74, 76 Table no. 12; *Relations with the environment* pages 191, 217; *Environmental accounts* page 266.	**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 217 and Table no. 59, 222 Table no. 64; *Environmental accounts* pages 266, 275, 276, 277.	**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* pages 217 and Table no. 59.	**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 24-27, 39-41, 43, 67-72 and Table no. 10, 74; *Relations with the environment* pages 188 ff., 191 ff., 199 ff., 206 f., 217 ff. 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. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 39-41, 43, 44-61, 67-72 and Tables nos 9 e 10, 74, 76 Table no. 12; *Relations with stakeholderspage* 164; *Relations with the environment* pages 188 ff., 191 ff., 199 ff., 206 f., 216, 217 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 39-41, 43, 67-72 and Tables nos 9 e 10, 74, 76 Table no. 12; *Relations with stakeholders* page 164; *Relations with the environment* pages 188 ff., 191 ff., 199 ff., 206 f., 216, 217 ff.	**Art. 3 paragraph 1, letter b):** the policies implemented 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 206 f., 217 ff. and Tables nos 60 e 61.	**Art. 3 paragraph 2, letter a):** use of energy resources
	302-2 Energy consumption outside of the organization. *Relations with the environment* page 219.	**Art. 3 paragraph 2, letter a):** use of energy resources
	302-3 Energy intensity. *Relations with the environment* pages 217, 219.	**Art. 3 paragraph 2, letter a):** use of energy resources
	302-4 Reduction of energy consumption. *Relations with the environment* pages 203, 206 f., 219 f. and Table no. 63.	**Art. 3 paragraph 2, letter a):** 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 can be considered applicable.	**Art. 3 paragraph 2, letter a):** use of energy resources
TOPIC	**WATER**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 24-27, 39-41, 43, 67-72 and Table no. 10, 74; *Relations with stakeholders* pages 105, 108 ff., 111; *Relations with the environment* pages 188 ff., 191 ff., 196 ff., 209, 211 ff., 213, 221 ff. Topic Boundary: main Group companies, suppliers, customers	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 39-41, 43, 44-61, 67-72 and Tables nos 9 e 10, 74, 76 Table no. 12; *Relations with stakeholders* pages 105 f., 108 ff., 111; *Relations with the environment* pages 188 ff., 191 ff., 196 ff., 209, 211 ff., 213, 221 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 39-41, 43, 67-72 and Tables nos 9 e 10, 74, 76 Table no. 12; *Relations with stakeholders* pages 105 f., 108 ff., 111; *Relations with the environment* pages 188 ff., 191 ff., 196 ff., 209, 211 ff., 213, 221 ff.	**Art. 3 paragraph 1, letter b):** the policies implemented by the company (...) and the results achieved through them

GRI 303: Water and effluents 2018	**303-1 Interactions with water as a shared resource.** *Relations with stakeholders* pages 105 f., 108 ff., 111, 130; *Relations with the environment* pages 188, 196 ff. and Table no. 47, 209, 211 ff., 214 and Table no. 57, 221 ff. and Table no. 64; *Environmental accounts* pages 271-274.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company **Art. 3 paragraph 2, letter c):** the impact (...) on the environment
	303-2 Management of water discharge-related impacts. *Relations with stakeholders* pages 109 ff., 111; *Relations with the environment* pages 209-211, 213, 221 ff.; *Environmental accounts* pages 271-274.	**Art. 3 paragraph 2, letter c):** the impact (...) on the environment
	303-3 Water withdrawal. *Relations with the environment* pages 196 ff. and Table no. 47, 209, 221 ff. and Table no. 64; *Environmental accounts* pages 271-274, 275.	**Art. 3 paragraph 2, letter a):** use of water resources
	303-4 Water discharge. *Relations with stakeholders* pages 111; *Relations with the environment* page 209, 213 and Table no. 55, 214 and Table no. 57, 215, 221 ff.; *Environmental accounts* page 273.	**Art. 3 paragraph 2, letter a):** use of water resources; **letter c):** the impact (...) on the environment
	303-5 Water consumption. *Relations with the environment* pages 211 ff., 221 ff.; *Environmental accounts* pages 271-274.	**Art. 3 paragraph 2, letter a):** use of water resources
TOPIC	**BIODIVERSITY**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 24-27, 41-43, 67-72 and Table no. 10, 74; *Relations with the environment* pages 191 ff. Topic Boundary: main Group companies	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 41-43, 67-72 and Tables nos 9 e 10, 74, 76 Table no. 12; *Relations with stakeholders* page 111; *Relations with the environment* pages 191 ff., 194 f., 213.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Tables nos 9 e 10, 74, 76 Table no. 12; *Relations with stakeholders* page 111; *Relations with the environment* pages 191 ff., 194 f.	**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 191 f., 193 and Chart no. 49, 196 ff.	**Art. 3 paragraph 2, letter c):** the impact (...) on the environment
	304-2 Significant impacts of activities, products, and services on biodiversity. *Relations with stakeholders* page 109 ff.; *Relations with the environment* pages 191 ff., 194 f., 196 ff., 203.	**Art. 3 paragraph 2, letter c):** the impact (...) on the environment
	304-3 Habitats protected or restored. During the reporting period, there were no cases of restoration (offsetting) of natural habitats. *Relations with the environment* pages 194 f., 196 ff.	**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 191 f., 193 and Chart no. 50.	**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 24-27, 39-41, 43, 67-72 and Table no. 10, 74; *Relations with the environment* pages 188 ff., 191 ff., 206 f., 217 f., 223 ff. Topic Boundary: main Group companies, suppliers, customers	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 39-41, 43, 44-61, 67-72 and Tables nos 9 e 10, 74, 76 Table no. 12; *Relations with stakeholders* pages 106, 133; *Relations with the environment* pages 188 ff., 191 ff., 206 f., 217 f., 223 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 39-41, 43, 67-72 and Tables nos 9 e 10, 74, 76 Table no. 12; *Relations with stakeholders* pages 106, 133; *Relations with the environment* pages 188 ff., 191 ff., 206 f., 217 f., 223 ff.	**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 Environment Operations and Water Operations and in 2021 equalled 330,386 t. *Relations with the environment* pages 224, 225 f. and Table no. 68; *Environmental accounts* pages 277 f., 280.	**Art. 3 paragraph 2, letter b):** Greenhouse-gas emissions
	305-2 Energy indirect (Scope 2) GHG emissions. *Relations with the environment* pages 225 f. and Table no. 68; *Environmental accounts* pages 277 f.	**Art. 3 paragraph 2, letter b):** Greenhouse-gas emissions
	305-3 Other indirect (Scope 3) GHG emissions. *Relations with the environment* pages 225 f. and Table no. 68.	**Art. 3 paragraph 2, letter b):** Greenhouse-gas emissions

GRI 305: Emissions 2016	**305-4 GHG emissions intensity.** *Relations with the environment* pages 225 f. and Table no. 68.	**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 203, 219 f. and Table no. 63, 225 f. and Table no. 68.	**Art. 3 paragraph 2, letter b):** Greenhouse-gas emissions
	305-6 Emissions of ozone-depleting substances (ODS). *Relations with the environment* page 224; *Environmental Accounts* pages 275, 276.	**Art. 3 paragraph 2, letter b):** Greenhouse-gas emissions
	305-7 Nitrogen oxides (NOx), sulphur oxides (SOx) and other significant air emissions. *Relations with the environment* page 223 Table no. 65; *Environmental Accounts* pages 277 f.	**Art. 3 paragraph 2, letter b):** polluting atmospheric emissions
TOPIC	**WASTE**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 24-27, 39-41, 43, 67-72 and Table no. 10, 74; *Relations with stakeholders* pages 120 f.; *Relations with the environment* pages 188 ff., 191 ff., 205 ff., 208, 227-231; *Environmental accounts* page 266. Topic Boundary: main Group companies	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 39-41, 43, 44-61, 67-72 and Tables nos 9 e 10, 76 Table no. 12, 74; *Relations with stakeholders* pages 120 f.; *Relations with the environment* pages 188 ff., 191 ff., 205 ff., 208, 215, 227-231; *Environmental accounts* page 266.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 39-41, 43, 67-72 and Tables nos 9 e 10, 74, 76 Table no. 12; *Relations with stakeholders* pages 120 f.; *Relations with the environment* pages 188 ff., 191 ff., 205 ff., 208, 215, 227-231; *Environmental accounts* page 266.	**Art. 3 paragraph 1, letter b):** the policies implemented by the company (...) and the results achieved through them
GRI 306: Waste 2020	**306-1 Waste generation and significant waste-related impacts** *Relations with the environment* pages 227-231;	**Art. 3 paragraph 2, letter a):** use of water resources
	306-2 Management of significant waste-related impacts. *Relations with the environment* pages 227-231; *Environmental accounts* pages 277-280.	**Art. 3 paragraph 2, letter c):** the impact (...) on the environment
	306-3 Waste generated. *Relations with the environment* pages 227 Table no. 69, 228 Table no. 70, 230 Table no. 71, 231 and Table no. 72.	**Art. 3 paragraph 2, letter c):** the impact (...) on the environment
	306-4 Waste diverted from disposal. *Relations with the environment* pages 207, 227 Table no. 69, 228 Table no. 70, 230 Table no. 71, 231 and Table no. 72.	**Art. 3 paragraph 2, letter c):** the impact (...) on the environment
	306-5 Waste directed to disposal. *Relations with the environment* pages 227 Table no. 69, 228 Table no. 70, 230 Table no. 71, 231 and Table no. 72.	**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 224-27, 41-43, 67-72 and Table no. 10; *Relations with the environment* pages 191 f. Topic Boundary: main Group companies	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 41-43, 44-61, 67-72 and Tables nos 9 e 10, 76 Table no. 12; *Relations with stakeholders* pages 164 f.; *Relations with the environment* pages 191 f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Tables nos 9 e 10, 76 Table no. 12; *Relations with stakeholders* pages 157; *Relations with the environment* pages 164 f., *Relations with the environment* pages 191 f.	**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.** *Corporate Identity* page 69; *Relations with stakeholders* page 175 f.; *Relations with the environment* page 191.	**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 24-27, 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 140 ff.; *Relations with the environment* pages 219, 225. 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. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 41-43, 44-61, 67-72 and Table no. 10, 76 Table no. 12; *Relations with stakeholders* pages 140 ff., 144 f.; *Relations with the environment* pages 219, 225.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company

GRI 103: Management approach 2016	**103-3 Evaluation of the management approach.** *Corporate Identity* pages 41-43, 67-72 and Table no. 10, 76 Table no. 12; *Relations with stakeholders* pages 140 ff., 144 f.; *Relations with the environment* pages 219, 225.	**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 141 f., 144 f.; *Relations with the environment* page 219.	**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, supply and subcontracting chains
	308-2 Actual and potential negative environmental impacts in the supply chain and actions taken. *Relations with stakeholders* pages 144 f.; *Relations with the environment* pages 219, 225.	**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, supply and subcontracting chains; **paragraph 2, letter c):** the impact (...) on the environment
GRI 400: SOCIAL		
TOPIC	**EMPLOYMENT**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 24-27, 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 149, 163 ff. Topic Boundary: main Group companies.	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 41-43, 44-61, 67-72 and Table no. 10; *Relations with stakeholders* pages 144 ff., 153 f., 161, 163 ff., 167, 171.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 149 ff., 153 f., 161, 167, 171.	**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 149 ff., 152 Table no. 40.	**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 167.	**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 accordance with the Consolidated Law on supporting maternity and paternity (Italian Legislative Decree 151/2001 as amended), which governs leave, rest days, days off for specific reasons and economic support for female and male workers connected with maternity, paternity of children, adopted children and fostered children. The law prohibits any discrimination for reasons related to gender, with particular reference to any less favourable treatment on the basis of being pregnant, maternity and paternity. It establishes mandatory maternity leave for a period of five months and guarantees the work post during this period, imposing a prohibition on dismissal. It also establishes the reintegration of the employee into the activities performed prior to the leave period or equivalent activities, with fines applicable for employers contravening these rules. Therefore, 100% of employees making use of this type of leave maintain their post and return to work. The employees who took leave for parenthood in 2021 numbered 301, of which 130 were men and 171 women. All of these, after the leave period, returned to work and are still employed.	**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	**LABOUR-MANAGEMENT RELATIONS**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 156 ff. Topic Boundary: main Group companies.	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 41-43, 44-61, 67-72 and Table no. 10; *Relations with stakeholders* pages 156 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 156 ff.	**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* pages 156 f.	**Art. 3 paragraph 2, letter d):** methods of dialogue with trade unions
TOPIC	**OCCUPATIONAL HEALTH AND SAFETY**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 24-27, 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 140 ff., 146 ff., 157 ff., 160. 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. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 41-43, 44-61, 67-72 and Tables nos 9 e 10, 75, 76 Table no. 12; *Relations with stakeholders* pages 140 ff., 146 ff., 157 ff., 160, 164.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Tables nos 9 e 10, 75, 76 Table no. 12; *Relations with stakeholders* pages 140 ff., 144 f., 146 ff., 157 ff., 160, 164.	**Art. 3 paragraph 1, letter b):** the policies implemented by the company (...) and the results achieved through them
GRI 403: Occupational Health and Safety 2018	**403-1 Occupational health and safety management system.** *Corporate Identity* page 75; *Relations with stakeholders* pages 146 ff., 156, 157 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	403-2 Hazard identification, risk assessment, and incident investigation. *Relations with stakeholders* pages 147, 157 ff., 160 Table no. 43.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company; **letter c):** the main risks generated or suffered (...) deriving from the business, its products, services or commercial relations, including, where relevant, supply and subcontracting chains; **Art. 3 paragraph 2, letter c):** the impact (...) on health and safety; **letter d):** aspects relating to staff management
	403-3 Occupational health services. *Relations with stakeholders* pages 157 ff., 160 f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company; **Art. 3 paragraph 2, letter c):** the impact (...) on health and safety; **letter d):** aspects relating to staff management
	403-4 Worker participation, consultation, and communication on Occupational health and safety. Acea observes the indications of Italian Legislative Decree no. 81/2008 on health and safety in the workplace. 100% of workers are represented in formal health and safety commissions (composed of representatives from management and workers), through appointed figures. *Relations with stakeholders* pages 140 f., 147, 156 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company; **Art. 3 paragraph 2, letter c):** the impact (...) on health and safety; **letter d):** aspects relating to staff management (...) and the methods of dialogue with trade unions
	403-5 Worker training on occupational health and safety. *Relations with stakeholders* pages 146 ff., 159.	**Art. 3 paragraph 2, letter c):** the impact (...) on health and safety; **letter d):** aspects relating to staff management
	403-6 Promotion of worker health. *Relations with stakeholders* pages 156 ff., 170.	**Art. 3 paragraph 2, letter c):** the impact (...) on health and safety; **letter d):** aspects relating to staff management
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships. Not applicable	**Art. 3 paragraph 2, letter c):** the impact (...) on health and safety;
	403-8 Workers covered by an occupational health and safety management system. *Relations with stakeholders* page 157.	**Art. 3 paragraph 2, letter c):** the impact (...) on health and safety; **letter d):** aspects relating to staff management
	403-9 Work-related injuries. *Relations with stakeholders* pages 147, 157 f. and Chart no. 46.	**Art. 3 paragraph 2, letter c):** the impact (...) on health and safety; **letter d):** aspects relating to staff management
	403-10 Work-related ill health. *Relations with stakeholders* pages 147, 161.	**Art. 3 paragraph 2, letter c):** the impact (...) on health and safety; **letter d):** aspects relating to staff management

TOPIC		
	TRAINING AND EDUCATION	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 24-27, 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 161 f., 163 ff. Topic Boundary: main Group companies.	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 41-43, 44-61, 67-72 and Table no. 10; *Relations with stakeholders* pages 161 f., 163 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 161 ff.	**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 165 and Table no. 44.	**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 159, 161 ff., 167.	**Art. 3 paragraph 2, letter d):** aspects relating to staff management
	404-3 Percentage of employees receiving regular performance and career development reviews. In 2021, in the context of the Human Resources Management System in force, all personnel of Group Companies within the scope of reporting (100%) were subject to evaluation. *Relations with stakeholders* pages 167 f.	**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 24-27; 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 154 f., 169 ff. Topic Boundary: main Group companies.	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 44-61, 67-72 and Table no. 10; *Relations with stakeholders* pages 154 f., 169 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 154 f., 169 ff.	**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 representation of the different age brackets for members of the governance bodies, considering these to include the BoD, Board of Statutory Auditors and SB, it is noted that 36% of members are in the 30-50 years bracket, and the remaining 64% are in the over-50 bracket. *Corporate Identity page* 63; *Relations with stakeholders* pages 150, 151 Table no. 39, 153. Table no. 41, 169 ff.	**Art. 3 paragraph 2, letter d):** 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. *Relations with stakeholders* page 154.	**Art. 3 paragraph 2, letter d):** 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 41-43, 67-72 and Table no. 10; *Relations with stakeholders* page 169. Topic Boundary: main Group companies.	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 41-43, 44-61, 67-72 and Tables nos 9 e 10; *Relations with stakeholders* page 169.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Tables nos 9 e 10; *Relations with stakeholders* page 169.	**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 69; *Relations with stakeholders* page 171.	**Art. 3 paragraph 2, letter d):** social aspects and 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 41-43, 67-72 and Table no. 10, 77-80; *Relations with stakeholders* pages 88-94, 94 ff., 110 f., 129 f., 174 f., 176 f. 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. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 41-43, 44-61, 67-72 and Table no. 10, 76 Table no. 12, 77-80; *Relations with stakeholders* pages 88-94, 94 ff., 105, 108, 110 f., 129 f., 131, 174 f., 176 f.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Table no. 10, 76 Table no. 12, 77-80; *Relations with stakeholders* pages 88-94, 94 ff., 105, 108, 129 f., 174 f., 176 f.	**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 have initiatives in place for stakeholder engagement. *Disclosing sustainability: methodological note* pages 12-13; *Corporate Identity* pages 75 f. and Table no. 12, 77-80; *Relations with stakeholders* pages 88-94, 97, 105, 108, 110 f., 123, 129 ff., 131, 135, 139 ff., 144 f., 179; *Relations with the environment* page 189.	**Art. 3 paragraph 2, letter c):** the impact (...) on the environment as well as on health and safety
	413-2 Operations with significant actual and potential negative impacts on local communities. *Corporate Identity* page 77-80; *Relations with stakeholders* pages 131, 176; Relations with the environment page 191.	**Art. 3 paragraph 2, letter c):** the impact (...) on the environment as well as 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 24-27, 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 140 ff. 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. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 41-43, 44-61, 67-72 and Table no. 10; *Relations with stakeholders* pages 140 ff., 144 f., 146 f., 148.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 140 ff., 146 f., 148.	**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 141, 144 f., 146 f.	**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, supply and subcontracting chains; **paragraph 2, letter c):** the impact (...) on health and safety
	414-2 Negative social impacts in the supply chain and actions taken. *Relations with stakeholders* pages 144 f., 146 f.	**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 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 174 ff. Topic Boundary: Acea Group.	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 41-43, 44-61, 67-72 and Table no. 10; *Relations with stakeholders* pages 174 ff.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 174 ff.	**Art. 3 paragraph 1, letter b):** the policies implemented 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 175.	**Art. 3 paragraph 2, letter f):** anti-corruption and bribery measures
TOPIC	**CUSTOMER HEALTH AND SAFETY**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 111, 176 f.; *Relations with the environment* pages 209-211. 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. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 41-43, 44-61, 67-72 and Table no. 10, 75, 76 Table no. 12; *Relations with stakeholders* pages 109 ff., 111, 176 f.; *Relations with the environment* pages 209-211.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Table no. 10, 75, 76 Table no. 12; *Relations with stakeholders* pages 111, 176 f.; *Relations with the environment* pages 209-211.	**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 75 f. and Table no. 12; *Relations with stakeholders* pages 106 Table no. 26, 109, 111, 132; *Relations with the environment* pages 209-211.	**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 191.	**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 24-27, 41-43, 67-72 and Table no. 10; *Relations with stakeholders* pages 88-94, 94 ff., 99, 101-104, 105, 118 f.,122 f., 125, 148, 175. 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. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 24-27, 41-43, 44-61, 67-72 and Table no. 10, 75, 76 Table no. 12; *Relations with stakeholders* pages 88-94, 94 ff., 99, 101-104 and Tables nos 22-24, 105, 111-117, 118 f., 121, 122 f., 125, 133, 148, 175.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 67-72 and Table no. 10, 75, 76 Table no. 12; *Relations with stakeholders* pages 88-94, 94 ff., 99, 101-104, 105, 118 f., 122 f., 125, 148, 175.	**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 GRI international indicator, on the basis of the reference to "services" in addition to products, is indicated, adapting it to the national situation and operations of a multiutility company, both in terms of the main parameters of quality of water distributed and in relation to performance of a commercial, contractual and technical nature for the services managed in the water and energy sector, which are subject to regulation by the national industry authority (ARERA). *Relations with stakeholders* pages 94 ff., 99 and Table no. 21, 101-104 and Tables nos 22-24, 105, 108 f. Table no. 27, 109 ff., 111-117 Tables nos 28-32, 117 f., 121, 122, 124, 125; *Relations with the environment* pages 209-211.	**Art. 3 paragraph 1, letter b):** fundamental indicators of non-financial performance
	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 94 ff., 99 and Table no. 21, 101-104 and Tables nos 22-24, 111-117 Tables nos 28-32, 119, 125, 175 f.	**Art. 3 paragraph 1, letter b):** fundamental indicators of non-financial performance
	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 148, 175 f.	**Art. 3 paragraph 1, letter b):** fundamental indicators of non-financial performance
TOPIC	**CUSTOMER PRIVACY**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 41-43, 65 f., 67-72 and Table no. 10; *Relations with stakeholders* page 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. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated

GRI 103: Management approach 2016	**103-2 The management approach and its components.** *Corporate Identity* pages 41-43, 44-61, 65 f., 67-72 and Table no. 10; *Relations with stakeholders* pages 122, 164.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 65 f., 67-72 and Table no. 10; *Relations with stakeholders* pages 122, 164.	**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, there were 150 new requests regarding utilisation of rights pursuant to Arts 15-22 of Regulation (EU) 679/2016 - GDPR (requests for updating, erasure, modification and refusal of consent etc.), for which a dedicated procedure has been launched. 5 instances saw the involvement of the Antitrust Authority; for 1 the relative filing was communicated, 3 are pending and another resulted in an inspection carried out in December 2021 of a Group company and for which the procedure is in progress. The Group has not recorded any events involving the theft of information on customer data, nor has it received any news of violations of significant personal data.	**Art. 3 paragraph 1, letter b):** fundamental indicators of non-financial performance
TOPIC	**SOCIO ECONOMIC COMPLIANCE**	
GRI 103: Management approach 2016	**103-1 Explanation of the material topic and its boundary.** *Corporate Identity* pages 41-43, 65 f., 67-72 and Table no. 10; *Relations with stakeholders* pages 99, 101-104, 141, 175. Topic Boundary: main Group companies.	**Art. 4 paragraph 1:** the consolidated statements include the data of the parent company and its fully consolidated subsidiaries. (...) to the degree necessary to ensure the understanding of the group's business, its performance, results, and the impact it generated
	103-2 The management approach and its components. *Corporate Identity* pages 41-43, 44-61, 65 f., 67-72 and Table no. 10; *Relations with stakeholders* pages 99, 101-104, 111 ff., 119, 125, 134, 141, 175.	**Art. 3 paragraph 1, letter a):** the corporate management and organisation model; **letter b):** policies implemented by the company
	103-3 Evaluation of the management approach. *Corporate Identity* pages 41-43, 65 f., 67-72 and Table no. 10; *Relations with stakeholders* pages 99, 101-104, 111 ff., 125, 141, 175.	**Art. 3 paragraph 1, letter b):** the policies implemented 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 99 note 54, 119, 141, 175; *Relations with the environment* page 191.	**Art. 3 paragraph 1, letter b):** the policies implemented by the company (...) and the results achieved through them

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ENVIRONMENTAL ACCOUNTS

SCOPE

The scope of the *Environmental Accounts* is consistent with the reporting scope of the *Sustainability Report* (*Consolidated Non-Financial Statement* pursuant to Legislative Decree no. 254/2016), as defined in the *Methodological Note*.
The water Companies in which Acea has an investment: Acque, Publiacqua and Umbra Acque - consolidated in the Financial Statements with the equity method - are marginally included in the Environmental Accounts and only relative to the aspects which are specifically signalled in the text. Please see the chapter *Water Company data sheets and overseas activities* (outside the scope of the NFS). In 2021, Berg and Demap were included in the NFS scope. In this regard, the data for the three-year period have been updated to facilitate comparability[174].

The *Environmental Accounts*, integral part of the *Sustainability Report*, combines and presents systematically the information and environmental performance data of the principal Companies of the Group.
The data is divided into "product systems" pertaining to the energy, "environment" and "water fields", according to the Life Cycle Assessment approach (standard ISO Series 14040), which assesses the entire life cycle of the systems.
The report comprises **about 500 items and parameters monitored** which quantify the physical flows generated by the activities and some performance indicators.

The substances used by the Group - whether natural, like water or not natural, like *chemicals* - the "products", emissions, effluents and waste related to the activities managed, are reported for the three-year period and are attributable to **producing and distributing energy**, for **collecting and distributing drinking water**, for **purification** and for all the processes connected to **waste management**, including **waste-to-energy**. Every use of resources is reduced to a minimum in terms of quantity and every substance is selected carefully in terms of quality, safety and environmental sustainability.

For the three areas – Energy, Environment, and, Water – the **renewable and non-renewable** resources used are illustrated. In particular, among the renewable re- sources listed we highlight water and the biomasses used for the production of compost.
In the *Explanatory Notes*, we provide additional information regarding the **quality of the data presented**, in particular, whether it was **measured**, **estimated** or **calculated**, and the principal items of the *Environmental Accounts*, indicated in the tables and in the text by a number in brackets, including a brief description.

PRODUCT SYSTEMS

ENERGY SEGMENT

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

ENVIRONMENT SEGMENT

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

WATER SEGMENT

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

The data are provided for the 2019-2021 three-year period and aggregated in three homogeneous categories:

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

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

174 The Berg, Demap, Aquaser, Acea Innovation and Ecogena companies are present in the Environmental Accounts, and precisely in *Resources* (*fuel used by the main group companies for transport and heating*) and in *Emissions* (*the emissions of carbon dioxide from transport and packaging*). In fact, they cannot be present in the other product systems (according to ISO 14040) as they do not have a product cycle system that can be reported.

PRODUCTS – ENERGY SEGMENT

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

ELECTRICITY – GENERATION (*)	u. m.	2019	2020	2021	Δ% 2021/2020
summary data					
total gross electricity produced (1) = (3+11+14+19)	**GWh**	**919.61**	**916.44**	**1,008.85**	**10.1**
total net electricity produced (2) = (10+13+18+21)	**GWh**	**854.85**	**846.56**	**931.20**	**10.0**
from fossil fuels (thermoelectric) (5 + 0.57x 15San Vittore del Lazio +0.57x 16 Terni)	GWh	*269.10 29.3% of (1)*	*291.27 31.8% of (1)*	*310.63 30.8% of (1)*	*6.6*
from renewable sources (hydroelectric, photovoltaic, biodegradable portion of waste and biogas) (4+11+0.43x15San Vittore del Lazio+0.43 x 16 Terni +19)	GWh	*650.50 70.7% of (1)*	*625.17 68.2% of (1)*	*698.22 69.2% of (1)*	*11.7*
Acea production – hydroelectric and thermoelectric					
total gross electricity produced (3) = (4+5)	**GWh**	**516.23**	**468.41**	**542.44**	**15.8**
total gross hydroelectric energy (4)	**GWh**	**425.95**	**376.25**	**434.70**	**15.5**
A. Volta Castel Madama	GWh	*26.17*	*22.45*	*28.99*	*29.1*
G. Ferraris Mandela	GWh	*0.00*	*5.02*	*18.42*	*267.0*
G. Marconi Orte	GWh	*57.06*	*53.72*	*70.31*	*30.9*
Sant'Angelo	GWh	*162.05*	*116.58*	*146.11*	*25.3*
Salisano	GWh	*178.42*	*176.84*	*167.62*	*-5.2*
Other minor	GWh	*2.24*	*1.65*	*3.26*	*97.3*
total gross thermoelectric energy (5)	**GWh**	**90.29**	**92.16**	**107.74**	**16.9**
from diesel *Montemartini power plant (**)*	GWh	1.36	1.49	1.65	10.9
from natural gas *Tor di Valle plan – CAR*	GWh	88.93	90.67	106.09	17.0
total losses of electricity (6) = (7+8+9)	**GWh**	**12.19**	**12.74**	**13.21**	**3.7**
self consumption hydro plants (7)	GWh	*2.40*	*2.43*	*2.19*	*-10.2*
self consumption thermo plants (Tor di Valle, Montemartini) (8)	GWh	*5.27*	*5.04*	*5.40*	*7.2*
first processing losses (9)	GWh	*4.52*	*5.27*	*5.63*	*6.7*
total net electricity produced by Acea Produzione (10) = (3-6)	**GWh**	**504.04**	**455.67**	**529.23**	**16.1**
Acea production – photovoltaic					
gross photovoltaic electrical energy (11)	**GWh**	**26.38**	**74.96**	**78.61**	**4.9**
total electricity losses including own consumption (12)	GWh	2.29	3.98	3.38	-15.1
net photovoltaic energy (13) = (11-12)	**GWh**	**24.09**	**70.98**	**75.23**	**6.0**
Acea Ambiente - waste-to-energy					
total gross electricity produced (14) = (15)+(16)	**GWh**	**357.20**	**346.15**	**356.41**	**3.0**
San Vittore del Lazio plant (15)	GWh	*276.27*	*269.38*	*267.74*	*-0.6*
Terni plant (16)	GWh	*80.93*	*76.77*	*88.67*	*15.5*
self consumption + losses from first processing (17)	**GWh**	**49.12**	**44.95**	**45.64**	**1.5**
San Vittore del Lazio plant	GWh	*41.12*	*37.30*	*36.83*	*-1.3*
Terni plant	GWh	*8.00*	*7.65*	*8.81*	*15.2*
total net electricity produced (18) = (14-17)	**GWh**	**308.08**	**301.20**	**310.77**	**3.2**
Acea Ambiente - Biogas					
total gross electricity produced from biogas (19)	**GWh**	**19.79**	**26.91**	**31.39**	**16.6**
Orvieto plant	GWh	*19.79*	*17.56*	*13.99*	*-20.3*
Aprilia plant	GWh	*0.0*	*4.84*	*12.32*	*154.6*
Monterotondo Marittimo plant	GWh	*0.0*	*4.51*	*5.07*	*12.4*
self consumption (20)	**GWh**	**1.16**	**8.20**	**15.43**	**88.2**
Orvieto plant	GWh	*1.16*	*1.09*	*0.89*	*-18.3*
Aprilia plant	GWh	*0.0*	*3.48*	*9.59*	*175.9*
Monterotondo Marittimo plant	GWh	*0.0*	*3.63*	*4.94*	*36.3*
total electricity transferred in network (21) = (19-20)	**GWh**	**18.63**	**18.71**	**15.96**	**-14.7**

(*) 2020 data has been rectified in as much as the figure for energy produced by hydroelectric plants was certified as definitive.
(**) The Montemartini power plant is maintained operational but in reserve mode.

THERMAL ENERGY – GENERATION, DISTRIBUTION AND SALES	u. m.	2019	2020	2021	Δ% 2021/2020
Acea Produzione					
gross thermal energy produced Tor di Valle power station (22)	**GWht**	**95.92**	**94.00**	**98.67**	**5.0**
total losses of thermal energy (23)	GWht	29.47	27.71	23.94	-13.6
distribution losses	GWht	*20.66*	*20.90*	*20.37*	*-2.6*
production losses	GWht	*8.80*	*6.81*	*3.57*	*-47.6*
net thermal energy sold (24) =(22-23)	**GWht**	**66.45**	**66.29**	**74.73**	**12.7**

ELECTRICITY – TRANSPORT AND SALE	u. m.	2019	2020	2021	Δ% 2021/2020
in Rome and Formello - summary data					
supply from Acea Group (25)	**GWh**	**2.65**	**2.29**	**3.47**	**51.5**
electricity from the market (26)	**GWh**	**10,606.69**	**9,667.68**	**9,826.70**	**1.6**
from Single Buyer	GWh	*2,537.45*	*2,509.36*	*2,230.42*	*-11.1*
from importation	GWh	*n/a*	*70.81*	*78.56*	*10.9*
from wholesalers + other producers	GWh	*8,069.24*	*7,087.51*	*7,517.72*	*6.1*
electricity requested by the network (27) =(25+26) = (28+29+30+31+32)	**GWh**	**10,609.35**	**9,669.97**	**9,830.17**	**1.7**
distribution, transport and commercial losses (28)	GWh	*741.14 7.0% of (27)*	*563.70 5.8% of (27)*	*593.35 6.0% of (27)*	*5.3*
uses for own transmission and distribution (29)	GWh	*39.47*	*35.80*	*30.71*	*-14.2*
net electricity transferred to third parties (30)	GWh	*16.45*	*94.87*	*102.19*	*7.7*
net electricity conveyed from Acea to clients of the open market (31)	**GWh**	**7,615.16**	**6,998.47**	**7,410.22**	**5.9**
net electricity sold by Acea Energia to clients of the open market on distribution company grid (Areti)	GWh	*6,119.50*	*5,594.36*	*5,909.37*	*5.6*
net electricity sold by other sellers to clients of the open market on distribution company grid (Areti)	GWh	*1,495.66*	*1,404.12*	*1,500.85*	*6.9*
net electricity sold to managed clients (32)	**GWh**	**2,197.13**	**1,977.12**	**1,693.70**	**-14.3**
sale in Italy - summary data					
net electricity sold by Acea Energia on the open market – including sale on Rome (33)	**GWh**	**3,825.82**	**4,571.96**	**6,074.57**	**32.9**
net electricity sold by Acea Energia in Italy (free market + greater protection) (34) = (32+33)	**GWh**	**6,022.95**	**6,549.08**	**7,768.27**	**18.6**

GAS - SALES	u. m.	2019	2020	2021	Δ% 2021/2020
gas sold by Acea Energia in Italy (35)	**MSm³**	**108.38**	**139.89**	**174.68**	**24.9**

PUBLIC LIGHTING	u. m.	2019	2020	2021	Δ% 2021/2020
luminous flux to Rome (36)	**Mlumen**	**2,002**	**2,010**	**2,021**	**0.5**

CONTROLS AND MEASUREMENTS	u. m.	2019	2020	2021	Δ% 2021/2020
measurement and control activity (37)	**no.**	**375**	**505**	**431**	**-14.7**
electro-magnetic field measurements	no.	*26*	*22*	*41*	*86.4*
noise measurements	no.	*20*	*21*	*34*	*61.9*
PCB chemical analyses	no.	*68*	*65*	*69*	*6.2*
waste classification	no.	*40*	*26*	*23*	*-11.5*
transformer diagnostics	no.	*200*	*356*	*253*	*-28.9*
other	no.	*21*	*15*	*11*	*-26.7*

PRODUCTS - ENVIRONMENT SEGMENT

The data refers to the plants of **Acea Ambiente, Acque Industriali** and, from 2021, **Berg.** For Acea Ambiente, these are the three composting plants (located in Aprilia, Monterotondo Marittimo and Sabaudia), the waste management centre of Orvieto and the chemical/physical and biological treatment plant for non-hazardous liquid waste and treatment of sewage waste at Chiusi, acquired by Acea Ambiente through the merger of the Bio Ecologia Company in May 2021. For Acque Industriali the data refers to the liquid waste disposal plants located in the Tuscan provinces of Pisa (Pontedera and Pisa-San Jacopo), Florence (Empoli-Pagnana) and Siena (Poggibonsi). Berg only has one facility where waste storage, disposal and treatment is carried out. The data relating to the Bio Ecologia and Berg plants[175], included for the first time in the Environment Accounts, are reported with a three-year outlook.
After the revamping work of recent years, **the Aprilia and Monterotondo Marittimo plants** have both implemented a new **anaerobic digestion section**; these are to be added to the one with the same name in Orvieto.
The Sabaudia plant has undergone revamping/maintenance since 2016, and operations were resumed in August 2018. Since 31.10.2019, they have been suspended again to allow other revamping works; the plant was shut down for the whole of 2021. **The Aprilia plant,** which suffered from the vicissitudes of a preventive seizure, since 2019 was able to operate continuously achieving conditions close to full operation and under the control of the judicial custodian as in the previous year. Thanks to the actions taken by the Company, and specifically the complete closure of biofilters and creation of 3 chimneys for atmospheric emissions, the plant was released on 18 March 2021.
In February 2020, **the San Jacopo plant** interrupted its activities; an application to renew the authorisation was presented and the first service conference was held; we are waiting to establish any subsequent interventions on the plant.

NON-HAZARDOUS WASTE DISPOSED AND RECOVERED – ORVIETO PLANT	u. m.	2019	2020	2021	Δ% 2021/2020
total incoming waste (38) = (39)+(40)	**t**	**99,910**	**106,477**	**108,361**	**1.8**
waste sent for treatment (39)	**t**	**65,674**	**73,216**	**67,155**	**-8.3**
waste sent to the anaerobic digester and aerobic treatment	*t*	*43,958*	*34,200*	*32,855*	*-3.9*
sent for aerobic treatment or just shredding	*t*	*21,716*	*39,016*	*34,299*	*-12.1*
waste sent directly to landfill (40)	**t**	**34,236**	**33,261**	**41,207**	**23.9**
waste sent to landfill after treatment (41)	**t**	**22,438**	**34,427**	**31,239**	**-9.3**
waste recovered (42)	**t**	**64**	**80**	**52**	**-35.1**
quality compost (43)	**t**	**5,240**	**4,618**	**3,559**	**-22.9**
reduction due to stabilisation (44) = (38) – (40 +41+42+43)	**t**	**37,933**	**34,091**	**32,304**	**-5.2**

COMPOST PRODUCTION	u. m.	2019	2020	2021	Δ% 2021/2020
total incoming organic waste (45) = (46+47+48)	**t**	**53,419.28**	**115,473.21**	**141,506.00**	**22.5**
incoming sludge (46)	**t**	**8,809.26**	**14,945.10**	**26,912.42**	**80.1**
Aprilia plant	*t*	*3,644.44*	*4,441.74*	*9,005.22*	*102.7*
Monterotondo Marittimo plant	*t*	*585.74*	*10,503.36*	*17,907.20*	*70.5*
Sabaudia plant	*t*	*4,579.08*	*0.00*	*0.00*	-
incoming green (47)	**t**	**10,459.84**	**25,317.15**	**26,184.14**	**3.4**
Aprilia plant	*t*	*5,287.70*	*12,926.64*	*14,529.62*	*12.4*
Monterotondo Marittimo plant	*t*	*1,839.96*	*12,390.51*	*11,654.52*	*-5.9*
Sabaudia plant	*t*	*3,332.18*	*0.00*	*0.00*	-
organic fraction of municipal solid waste and other agrifood waste (48)	**t**	**34,150.18**	**75,210.96**	**88,409.44**	**17.5**
Aprilia plant	*t*	*32,588.90*	*53,395.48*	*60,274.56*	*12.9*
Monterotondo Marittimo plant	*t*	*1,561.28*	*21,815.48*	*28,134.88*	*29.0*
quality compost (49) (*)	**t**	**9,330.36**	**13,869.00**	**24,185.00**	**74.4**
Aprilia plant	*t*	*6,756.00*	*9,340.00*	*12,500.00*	*33.8*
Monterotondo Marittimo plant	*t*	*0.00*	*4,529.00*	*11,685.00*	*158.0*
Sabaudia plant	*t*	*2,574.36*	*0.00*	*0.00*	-
non-compostable material for disposal (50)	**t**	**6,753.22**	**11,615.87**	**11,813.09**	**1.7**
Aprilia plant	*t*	*6,149.06*	*7,807.11*	*7,365.30*	*-5.7*
Monterotondo Marittimo and Sabaudia plants	*t*	*604.16*	*3,808.76*	*4,447.79*	*16.8*
reduction through stabilisation (51) = (46+47-49-50) (*)	**t**	**37,335.7**	**89,988.3**	**105,507.9**	**17.2**

(*) The quantities of compost produced in 2020 were adjusted, as they had estimated for the previous report, and consequently also the figures relating to the reduction due to stabilisation.

175 The Demap company, owner of a plant authorised to process 75,000 tonnes of plastics per year, also falls within the NFS 2021 reporting scope. Information on Demap is included in *"Relations with the environment"*.

LIQUID WASTE AND WASTE WATER DISPOSAL - BIO ECOLOGIA PLANT	u. m.	2019	2020	2021	Δ% 2021/2020
liquid waste (52)	**t**	**71,617**	**68,501**	**92,792**	**35.5**
waste water treated (53)	**m^3**	**280,118**	**284,826**	**148,862**	**-47.7**

ANALYTICAL DETERMINATIONS ON WASTE AND ON QUALITY COMPOST	u. m.	2019	2020	2021	Δ% 2021/2020
total analytical determinations (54) (*)	**no.**	**122**	**118**	**118**	**-**
analytical determinations on compost - Orvieto plant	*no.*	*13*	*11*	*10*	*-9.1*
analytical determinations on compost - Aprilia, Monterotondo Marittimo and Sabaudia plants	*no.*	*30*	*41*	*48*	*17.1*
analytical determinations on waste - Orvieto plant	*no.*	*79*	*59*	*67*	*13.6*

(*) The 2020 figure has been adjusted.

LIQUID WASTE DISPOSAL AND INDUSTRIAL WATER TREATMENT (*)	u. m.	2019	2020	2021	Δ% 2021/2020
total incoming waste (55) = (56+57+58+59)	**t**	**132,988.4**	**111,090.5**	**92,381.1**	**-16.8**
incoming sludge (56)	**t**	**48,765.8**	**34,827.7**	**24,520.8**	**-29.6**
Pagnana plant	*t*	*14,118.8*	*14,642.6*	*10,574.5*	*-27.8*
Pontedera plant	*t*	*9,351.2*	*5,915.6*	*8,896.1*	*50.4*
Poggibonsi plant	*t*	*14,984.3*	*13,262.3*	*5,050.3*	*-61.9*
San Jacopo plant	*t*	*10,311.5*	*1,007.2*	*0.0*	*-*
liquid waste (57)	**t**	**17,310.05**	**10,379.2**	**10,649.9**	**2.6**
Pagnana plant	*t*	*8,345.2*	*3,994.5*	*3,832.0*	*-4.1*
Pontedera plant	*t*	*8,964.9*	*6,384.7*	*6,817.9*	*6.8*
sewage waste and others (58)	**t**	**14,399.6**	**12,131.8**	**7,627.2**	**-37.1**
Pagnana plant	*t*	*9,778.6*	*8,700.0*	*1,331.0*	*-84.7*
Pontedera plant	*t*	*4,150.1*	*2,890.5*	*6,156.4*	*113.0*
Poggibonsi plant	*t*	*437.5*	*531.2*	*139.8*	*-73.7*
San Jacopo plant	*t*	*33.3*	*10.1*	*0.0*	*-*
leachate (59)	**t**	**52,513.0**	**53,751.8**	**49,583.2**	**-7.8**
Pagnana plant	*t*	*27,308.5*	*28,048.4*	*30,338.1*	*8.2*
Pontedera plant	*t*	*25,204.4*	*25,703.4*	*19,245.1*	*-25.1*
Poggibonsi plant	*t*	*0.0*	*0.0*	*353.7*	*-*
ammonium sulphate produced (60)	**kg**	**311,904**	**255,040**	**219,670.0**	**-13.9**
Pagnana plant	*kg*	*136,400*	*57,460*	*141,930.0*	*147.0*
Pontedera plant	*kg*	*175,504*	*197,580*	*77,740*	*-60.7*

TREATED AND DISCHARGED WATER - INDUSTRIAL WATER (*)	u. m.	2019	2020	2021	Δ% 2021/2020
treated and discharged water (61)	**m^3**	**139,398**	**117,789**	**93,916**	**-20.3**
Pagnana plant	*m^3*	*71,265*	*64,685*	*55,655*	*-14.0*
Pontedera plant	*m^3*	*37,884*	*34,576*	*30,483*	*-11.8*
Poggibonsi plant	*m^3*	*22,099*	*17,725*	*7,778*	*-56.1*
San Jacopo plant	*m^3*	*8,150*	*803*	*0*	*-*

(*) Some of the 2020 figures have been updated following consolidation.

LIQUID WASTE AND SOLIDS DISPOSAL - BERG (*)	u. m.	2019	2020	2021	Δ% 2021/2020
total incoming waste (62) = (63+64)	**t**	**139,171.28**	**141,865.41**	**133,090.69**	**-6.2**
solid waste (63)	**t**	**1,249.97**	**384.20**	**226.32**	**-41.1**
liquid waste (64)	**t**	**137,921.31**	**141,481.21**	**132,864.37**	**-6.1**

(*) The Berg plant, in addition to waste disposal, brokered approximately 10,500 t of waste in 2021.

PRODUCTS - WATER SEGMENT

The water data **summarized at national level** includes the principal water Companies of the Acea Group: Acea Ato 2 and Acea Ato 5 (Latium), Gesesa and GORI (Campania), Umbra Acque (Umbria), Acque, Publiacqua and AdF (Tuscany). The details of the water balances are presented only for the Companies in the reporting scope of the *Consolidated Non-Financial Statement* (NFS, pursuant to Legislative Decree No. 254/2016): Acea Ato 2, Acea Ato 5, GORI AdF and Gesesa.

Please see the chapter *Water Companies data sheets and overseas activities* for the water balance sheets of the other Companies of the Group not in the scope of the NFS.
The Loss Assessment was also carried out this year for the entire three-year period, according to Resolution ARERA 917/17 R/IDR. In particular, ARERA procedures establish that water losses are calculated on the entire scope of the aqueduct system (and not only on the distribution network) and include apparent losses.

SUMMARISED WATER DATA OF THE MAIN GROUP COMPANIES IN ITALY (*)	u. m.	2019	2020	2021	Δ% 2021/2020
total drinking water collected from the environment or from other systems and fed into the aqueduct systems (65)	**Mm³**	**1,372.6**	**1,355.8**	**1,317.8**	**-2.8**
total drinking water supplied and billed (66)	**Mm³**	**628.0**	**629.5**	**632.3**	**0.4**

(*) Some figures for the 2019-2020 two year period have been updated following consolidation. Some 2021 items were estimated and will be consolidated in the months following publication.

SUMMARY WATER DATA OF THE COMPANIES OPERATING IN THE NFS SCOPE: ACEA ATO 2, ACEA ATO 5, GORI, GESESA AND AdF (*)	u. m.	2019	2020	2021	Δ% 2021/2020
total drinking water collected from the environment or from other systems and fed into the aqueduct systems (67)	**Mm³**	**1,079.9**	**1,074.0**	**1,039.9**	**-3.2**
total drinking water supplied (68)	**Mm³**	**474.9**	**479.5**	**481.5**	**0.6**

(*) Some figures for the 2019-2020 two year period have been updated following consolidation. The 2021 figures are estimated and will be consolidated with the subsequent reporting.

WATER BALANCES OF THE COMPANIES OPERATING IN THE NFS SCOPE (*)	u. m.	2019	2020	2021	Δ% 2021/2020
Acea Ato 2 for Ato 2 – Lazio Centrale (Rome + municipalities acquired as at 31/12/2021)					
drinking water collected from the environment or from other systems and fed into the aqueduct systems (69)	**Mm³**	**691.0**	**691.1**	**667.8**	**-3.4**
surface (lakes and rivers)	*Mm³*	*0.0*	*0.0*	*0.0*	*-*
from wells	*Mm³*	*86.2*	*89.6*	*87.0*	*-2.9*
from springs	*Mm³*	*598.2*	*595.3*	*575.1*	*-3.4*
from other aqueduct systems	*Mm³*	*6.5*	*6.2*	*5.7*	*-8.1*
total drinking water leaving the aqueduct system (70) = (71+72+73+74)	**Mm³**	**382.4**	**398.1**	**401.8**	**0.9**
total drinking water supplied and billed in the ATO 2 network (71)	**Mm³**	**329.0**	**332.4**	**331.6**	**-0.2**
measured volume of water delivered to users	*Mm³*	*299.3*	*307.3*	*306.6*	*-0.2*
volume consumed by users and not measured	*Mm³*	*29.7*	*25.1*	*25.0*	*-0.4*
total drinking water authorised and not billed in the network (72)	**Mm³**	**12.2**	**18.2**	**22.4**	**23.1**
measured unbilled authorised consumption	*Mm³*	*0.0*	*0.4*	*0.5*	*25.0*
unmeasured unbilled authorised consumption	*Mm³*	*12.2*	*17.8*	*22.0*	*23.6*
drinking water exported to other systems (73)	**Mm³**	**41.3**	**46.8**	**46.4**	**-0.9**
measured drinking water losses (74)	**Mm³**	**0.0**	**0.7**	**1.4**	**100.0**
loss assessment according to ARERA Resolution 917/17 R/IDR					
water losses (75)-	**Mm³**	**308.5**	**293.0**	**266.0**	**-9.2**
water loss percentages (76)-	**%**	**44.7**	**42.4**	**39.8**	**-6.1**
Acea Ato 5 for Ato 5 – Southern Latium - Frosinone (86 municipalities)					
drinking water collected from the environment or from other systems and fed into the aqueduct systems (77)	**Mm³**	**121.9**	**119.8**	**115.8**	**-3.3**
from wells	*Mm³*	*63.1*	*59.3*	*55.6*	*-6.2*
from springs	*Mm³*	*45.2*	*44.8*	*46.0*	*2.7*
from other aqueduct systems	*Mm³*	*13.6*	*15.7*	*14.2*	*-9.5*
total drinking water leaving the aqueduct system (78) =-(79+80+81)	**Mm³**	**29.1**	**37.9**	**38.8**	**2.4**
total drinking water dispensed and billed in the network (79)	**Mm³**	**21.6**	**24.6**	**26.5**	**7.7**
measured volume of water delivered to users	*Mm³*	*17.6*	*18.6*	*19.4*	*4.3*
volume consumed by users and not measured	*Mm³*	*4.0*	*6.0*	*7.1*	*18.3*
total drinking water authorised and not billed in the network (80)	**Mm³**	**0.6**	**6.8**	**6.9**	**1.5**

measured unbilled authorised consumption	*Mm³*	*0.0*	*0.0*	*0.0*	*-*
unmeasured unbilled authorised consumption	*Mm³*	*0.6*	*6.8*	*6.9*	**1.5**
drinking water exported to other systems (81)	**Mm³**	**6.8**	**6.6**	**5.4**	**-18.2**
loss assessment according to ARERA Resolution 917/17 R/IDR					
water losses (82)	**Mm³**	**92.8**	**81.9**	**77.1**	**-5.9**
water loss percentages (83)	**%**	**76.2**	**68.4**	**66.5**	**-2.8**
Gesesa – Ato Calore Irpino - Benevento (21 municipalities)					
drinking water collected from the environment or from other systems and fed into the aqueduct systems (84)	**Mm³**	**17.6**	**19.0**	**19.4**	**2.3**
from wells	*Mm³*	*6.6*	*7.4*	*6.0*	*-18.7*
from springs	*Mm³*	*2.4*	*2.1*	*3.2*	*49.8*
drinking water collected from other aqueduct systems	*Mm³*	*8.7*	*9.5*	*10.2*	*7.0*
total drinking water leaving the aqueduct system (85) = (86+87+88)	**Mm³**	**7.6**	**7.7**	**8.2**	**5.9**
total drinking water dispensed and billed in the network (86)	**Mm³**	**7.6**	**7.6**	**8.0**	**5.6**
measured volume of water delivered to users	*Mm³*	*7.1*	*6.0*	*n/a*	*-*
volume consumed by users and not measured	*Mm³*	*0.5*	*1.6*	*n/a*	*-*
total drinking water authorised and not billed in the network (87)	**Mm³**	**0.0**	**0.0**	**0.0**	**-**
drinking water exported to other systems (88)	**Mm³**	**0.0**	**0.1**	**0.1**	**-**
loss assessment according to ARERA Resolution 917/17 R/IDR					
water losses (89)	**Mm³**	**10.0**	**11.3**	**11.2**	**-1.0**
water loss percentages (90)	**%**	**56.9**	**59.4**	**57.8**	**-2.7**
GORI – Sarnese-Vesuviano District (74 municipalities)					
drinking water collected from the environment or from other systems and fed into the aqueduct systems (91)	**Mm³**	**189.7**	**184.0**	**176.0**	**-4.3**
from wells	*Mm³*	*60.7*	*59.6*	*50.4*	*-15.5*
from springs	*Mm³*	*2.5*	*2.4*	*2.0*	*-18.0*
drinking water collected from other aqueduct systems	*Mm³*	*126.5*	*121.9*	*123.6*	*1.4*
total drinking water leaving the aqueduct system (92) = (93+94)	**Mm³**	**88.8**	**87.6**	**88.7**	**1.3**
total drinking water dispensed and billed in the network (93)	**Mm³**	**88.0**	**86.9**	**87.2**	**0.3**
measured volume of water delivered to users	*Mm³*	*82.9*	*80.6*	*81.4*	*1.1*
volume consumed by users and not measured	*Mm³*	*5.1*	*6.3*	*5.7*	*-9.3*
total drinking water authorised and not billed in the network (94)	**Mm³**	**0.4**	**0.4**	**1.2**	**177.0**
measured unbilled authorised consumption	*Mm³*	*0.0*	*0.0*	*0.0*	*-*
unmeasured unbilled authorised consumption	*Mm³*	*0.4*	*0.4*	*1.2*	*177.0*
drinking water exported to other systems (95)	**Mm³**	**0.3**	**0.3**	**0.4**	**22.8**
loss assessment according to ARERA Resolution 917/17 R/IDR					
water losses (96)	**Mm³**	**101.0**	**96.3**	**87.3**	**-9.4**
water loss percentages (97)	**%**	**53.2**	**52.4**	**49.6**	**-5.3**
AdF - Optimal Territorial Conference 6 Ombrone (55 Municipalities)					
drinking water collected from the environment or from other systems and fed into the aqueduct systems (98)	**Mm³**	**59.7**	**60.0**	**60.9**	**1.5**
surface water (**)	*Mm³*	*1.1*	*1.0*	*1.1*	*7.7*
from wells	*Mm³*	*20.1*	*17.9*	*17.9*	*-*
from springs	*Mm³*	*37.7*	*40.5*	*41.3*	*2.0*
from other aqueduct systems	*Mm³*	*0.8*	*0.6*	*0.6*	*-*
total drinking water leaving the aqueduct system (99) = (100+101+102+103)	**Mm³**	**32.3**	**34.5**	**37.1**	**7.6**
total drinking water dispensed and billed in the network (100)		**28.7**	**28.1**	**28.2**	**0.3**
measured volume of water delivered to users	*Mm³*	*28.7*	*28.1*	*28.2*	*0.3*
volume consumed by users and not measured	*Mm³*	*0.0*	*0.0*	*0.0*	*-*
total drinking water authorised and not billed in the network (101)	**Mm³**	**0.1**	**2.7**	**4.9**	**78.5**
measured unbilled authorised consumption	*Mm³*	*0.0*	*0.0*	*0.00*	*-*
unmeasured unbilled authorised consumption	*Mm³*	*0.1*	*2.7*	*4.9*	*78.5*
drinking water exported to other systems (102)	**Mm³**	**1.6**	**1.6**	**1.5**	**-7.9**
measured drinking water losses (103)	**Mm³**	**1.9**	**2.1**	**2.6**	**24.7**
loss assessment according to ARERA Resolution 917/17 R/IDR					
water losses (104)	**Mm³**	**27.4**	**25.5**	**23.8**	**-6.8**
water loss percentages (105)	**%**	**45.8**	**42.5**	**39.0**	**-8.2**

(*) Some figures for the 2019-2020 two year period have been updated following consolidation. The 2021 figures are estimated and will be consolidated with the subsequent reporting.
(**) This is fresh water, apart from the 1.2% of the amount drawn from marine sources.

TOTAL WASTE WATER TREATED BY THE MAIN COMPANIES OF THE GROUP IN ITALY – SUMMARY DATA	u. m.	2019	2020	2021	Δ% 2021/2020
waste water treated in the main treatment plants of the main Group companies in Italy (*) (106)	Mm³	853.7	914.4	980.8	7.3

(*) Some Group company data for 2020 have been adjusted/consolidated.

TOTAL WASTE WATER TREATED BY THE COMPANIES OPERATING IN THE NFS SCOPE (ACEA ATO 2, ACEA ATO 5, GORI, AdF AND GESESA - SUMMARY DATA)	u. m.	2019	2020	2021	Δ% 2021/2020
waste water treated in the main treatment plants of Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa (*) (107)	Mm³	692.1	713.7	778.7	9.1

(*) Gesesa Company estimated the figure for the first time in 2020, having started to install the first flow meters during the same year.

WASTE WATER TREATED BY ACEA ATO 2	u. m.	2019	2020	2021	Δ% 2021/2020
waste water treated in the main treatment plants (108)	Mm³	514.1	512.2	516.4	0.8
Rome South	*Mm³*	*286.4*	*284.9*	*290.1*	*1.8*
Rome North	*Mm³*	*91.5*	*93.7*	*88.5*	*-5.6*
Rome East	*Mm³*	*90.9*	*92.8*	*97.2*	*4.8*
Rome Ostia	*Mm³*	*29.8*	*30.6*	*29.5*	*-3.4*
CoBIS	*Mm³*	*6.6*	*6.7*	*6.8*	*1.9*
Fregene	*Mm³*	*8.8*	*3.5*	*4.2*	*20.5*
other – Municipality of Rome	Mm³	9.7	8.7	9.2	6.5
other – outside the Municipality of Rome	Mm³	76.0	76.0	75.9	-0.1
total waste water treated by Acea Ato 2 (109)	Mm³	599.8	596.9	601.5	0.8
WASTE WATER TREATED BY ACEA ATO 5	**u. m.**	**2019**	**2020**	**2021**	**Δ% 2021/2020**
waste water treated in the main treatment plants (110)	Mm³	21.3	21.2	25.0	18.1
WASTE WATER TREATED BY GORI	**u. m.**	**2019**	**2020**	**2021**	**Δ% 2021/2020**
Total waste water treated (111)	Mm³	45.2	70.1	124.0	76.8
WASTE WATER TREATED BY AdF	**u. m.**	**2019**	**2020**	**2021**	**Δ% 2021/2020**
waste water treated in the main treatment plants (112)	Mm³	16.8	16.3	16.6	1.9
waste water treated in other plants	Mm³	9.0	7.0	9.3	33.4
total waste water treated by AdF (113)	Mm³	25.8	23.3	25.9	11.3
WASTE WATER TREATED BY GESESA	**u. m.**	**2019**	**2020**	**2021**	**Δ% 2021/2020**
waste water treated in the main treatment plants (114)	Mm³	n/a	2.2	2.3	3.7

ANALYTICAL DETERMINATIONS ON DRINKING WATER AND WASTE WATER OF THE MAIN GROUP COMPANIES IN ITALY – SUMMARY DATA (*)	u. m.	2019	2020	2021	Δ% 2021/2020
analytical determinations on total drinking water – main Group companies (115)	no.	1,456,316	1,523,028	1,472,131	-3.3
analytical determinations on total waste water - main Group companies (116)	no.	495,921	448,829	483,526	7.7

(*) Some Group company data for 2020 have been adjusted/consolidated.

ANALYTICAL DETERMINATIONS ON DRINKING WATER AND WASTE WATER OF THE COMPANIES OPERATING IN THE NFS SCOPE: ACEA ATO 2, ACEA ATO 5, GORI, AdF AND GESESA - SUMMARY DATA	u. m.	2019	2020	2021	Δ% 2021/2020
analytical determinations on drinking water of Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa (117)	no.	729,983	769,888	738,488	-4.1
analytical determinations on waste water of Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa (118)	no.	288,863	252,160	274,478	8.9
ANALYTICAL DETERMINATIONS ACEA ATO 2	**u. m.**	**2019**	**2020**	**2021**	**Δ% 2021/2020**
analytical determinations on Acea Ato 2 drinking water (119)	no.	365,728	365,633	346,164	-5.3
analytical determinations on Acea Ato 2 waste water (120)	no.	170,641	124,625	127,417	2.2
ANALYTICAL DETERMINATIONS ACEA ATO 5	**u. m.**	**2019**	**2020**	**2021**	**Δ% 2021/2020**
analytical determinations on Acea Ato 5 drinking water (121)	no.	123,790	116,327	105,430	-9.4
analytical determinations on Acea Ato 5 waste water (122)	no.	41,616	43,812	40,636	-7.2
GESESA ANALYTICAL DETERMINATIONS	**u. m.**	**2019**	**2020**	**2021**	**Δ% 2021/2020**
analytical determinations on Gesesa drinking water (123)	no.	8,428	9,372	11,955	27.6
analytical determinations on Gesesa waste water (124)	no.	5,514	5,736	11,448	99.6
GORI ANALYTICAL DETERMINATIONS	**u. m.**	**2019**	**2020**	**2021**	**Δ% 2021/2020**
analytical determinations on GORI drinking water (125)	no.	109,363	141,288	136,156	-3.6
analytical determinations on GORI waste water (126)	no.	21,027	25,499	43,270	69.7
AdF ANALYTICAL DETERMINATIONS	**u. m.**	**2019**	**2020**	**2021**	**Δ% 2021/2020**
analytical determinations on AdF drinking water (127)	no.	122,674	137,268	138,783	1.1
analytical determinations on AdF waste water (128)	no.	50,065	52,488	51,707	-1.5

RESOURCES USED - ENERGY SEGMENT

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

GENERATION, TRANSPORT AND SALE OF ELECTRICITY AND HEAT, PUBLIC LIGHTING (*)	u. m.	2019	2020	2021	Δ% 2021/2020
natural gas					
electricity and heat generation (129) = (130+131)	Nm³ x 1,000	25,828	25,148	28,033	11.5
thermoelectric and heat production (130)	Nm³ x 1,000	22,468	22,272	23,912	7.4
Tor di Valle – high-efficiency cogeneration (CAR)	*Nm³ x 1,000*	*22,468*	*22,272*	*23,912*	*7.4*
waste-to-energy (131)	Nm³ x 1,000	3,359	2,876	4,122	43.3
San Vittore del Lazio waste-to-energy plant	*Nm³ x 1,000*	*3,029*	*2,486*	*3,764*	*51.4*
Terni waste-to-energy plant	*Nm³ x 1,000*	*331*	*390*	*358*	*-8.4*
diesel for thermoelectric generation					
thermoelectric production (132)	l x 1,000	630	639	707	10.6
Montemartini power plant	*l x 1,000*	*574*	*587*	*647*	*10.2*
Terni and San Vittore del Lazio plants	*l x 1,000*	*56*	*52*	*60*	*15.3*
RDF (Refuse-Derived Fuel) processed					
San Vittore del Lazio waste-to-energy plant (133)	t x 1,000	340.531	319.122	307.391	-3.7
waste-to-energy paper mill pulper					
Terni waste-to-energy plant (134)	t x 1,000	94.092	90.215	99.730	10.5

biogas for the production of electricity					
composting and waste management plants (135)	**Nm³ x 1,000**	**11,491**	**17,153**	**18,166**	**5.9**
Orvieto plant	*Nm³ x 1,000*	*11,491*	*10,867*	*9,131*	*-16.0*
Aprilia plant	*Nm³ x 1,000*	*0*	*3,621*	*6,411*	*77.0*
Monterotondo Marittimo plant	*Nm³ x 1,000*	*0*	*2,665*	*2,623*	*-1.6*
water					
derivation from hydroelectric production (136)	**Mm³**	**3,458**	**2,926**	**3,894**	**33.1**
process water (137)	**Mm³**	**0.25**	**0.18**	**0.17**	**-8.3**
water for civilian/sanitary uses (138)	**Mm³**	**0.27**	**0.30**	**0.33**	**11.7**
miscellaneous materials					
dielectric mineral oil in operation (139)	**t**	**10,004**	**10,138**	**10,045**	**-0.9**
dielectric mineral oil - reintegrations	t	0.76	1.19	1.19	-
SF6 in operation (140)	**t**	**21.94**	**22.29**	**22.31**	**0.1**
SF6 - replenishment	t	0.40	0.37	0.30	-19.8
cooling fluids (HCFC type) in operation (141)	**t**	**1.49**	**1.68**	**1.78**	**5.7**
cooling fluids (HCFC type) - reintegrations	t	0.00007	0.00035	0.00000	-
miscellaneous chemicals (142)	**kg**	**9,944,328**	**9,788,481**	**10,895,640**	**11.3**
sodium chloride	*kg*	*13,000*	*9,000*	*9,000*	*0.0*
sodium hydroxide (caustic soda)	*kg*	*256,470*	*247,640*	*173,260*	*-30.0*
sodium bicarbonate	*kg*	*7,181,660*	*7,140,770*	*8,333,700*	*16.7*
hydrochloric acid	*kg*	*253,200*	*255,680*	*216,270*	*-15.4*
ammonia solution	*kg*	*560,340*	*598,950*	*526,850*	*-12.0*
activated carbon	*kg*	*511,520*	*468,160*	*673,040*	*43.8*
carbamine	*kg*	*631,040*	*228,820*	*190,220*	*-16.9*
other (for TLR e waste-to-energy)	*kg*	*537,098*	*839,461*	*773,300*	*-7.9*
miscellaneous oils and greases/lubricants (143)	**kg**	**34,387**	**37,844**	**28,433**	**-24.9**
electricity					
consumption for electrical distribution (144) = (28)	*GWh*	*741.14*	*563.70*	*593.35*	*5.3*
consumption for electricity production (145) = (1)-(2)	*GWh*	*64.76*	*69.87*	*77.66*	*11.1*
consumption for offices (50% of the electricity consumed by the Parent Company) (146)	*GWh*	*5.75*	*5.13*	*5.38*	*4.9*
other consumption (147)	*GWh*	*1.22*	*1.32*	*1.33*	*0.7*
other personal uses (148)	*GWh*	*39.47*	*35.80*	*30.71*	*-14.2*
total (149) = (144+145+146+147+148)	**GWh**	**852.33**	**675.82**	**708.43**	**4.8**
public lighting					
consumption for Public Lighting (150)	**GWh**	**70.08**	**66.96**	**67.33**	**0.5**

(*) Some figures for the 2020-2021 two-year period have been adjusted for consolidation.

RESOURCES USED - ENVIRONMENT SEGMENT

The data on the resources refers to the three composting plants of Acea Ambiente located in Aprilia, Monterotondo Marittimo and Sabaudia, the waste management plant of Orvieto, the Bio Ecologia, the Berg plant and four of Acque Industriali's plants in Pontedera, Pagnana, Poggibonsi and San Jacopo.

WASTE MANAGEMENT – ORVIETO PLANT	u. m.	2019	2020	2021	Δ% 2021/2020
miscellaneous chemicals (151)	**t**	**140.9**	**87.0**	**99.2**	**14.1**
electricity (152)	**GWh**	**4.722**	**4.398**	**4.476**	**1.8**
diesel (153)	**l**	**245,735**	**229,533**	**262,762**	**14.5**
process water (154)	**m³**	**5,574**	**4,792**	**6,041**	**26.1**
water for civilian/sanitary uses (155)	**m³**	**1,180**	**1,230**	**1,055**	**-14.2**

COMPOST PRODUCTION	u. m.	2019	2020	2021	Δ% 2021/2020
miscellaneous chemicals (posting plants of Aprilia, Monterotondo Marittimo and Sabaudia) (156)	t	41.48	540.45	1,694.72	213.6
electricity (composting plants of Aprilia, Monterotondo Marittimo and Sabaudia) (157)	GWh	3.942	4.039	2.266	-43.9
diesel (composting plants of Aprilia, Monterotondo Marittimo and Sabaudia) (158)	l x 1,000	170.47	220.73	286.31	29.7
locally produced biogas (composting plants of Aprilia and Monterotondo Marittimo) (159)	Nm^3	176,614	6,286,431	9,034,615	43.7
process water (composting plants of Aprilia, Monterotondo Marittimo and Sabaudia) (*) (160)	m^3	16,562	28,928	38,406	32.8
water for civil use (composting plants of Aprilia, Monterotondo Marittimo and Sabaudia) (161)	m^3	1,480	2,330	2,650	13.7

(*) The 2020 figure was rectified following actual recorded consumption.

DISPOSAL OF INDUSTRIAL WASTE WATER (AI), BERG AND BIO ECOLOGIA PLANT (*)	u. m.	2019	2020	2021	Δ% 2021/2020
miscellaneous chemicals (AI plants - Pagnana, Pontedera and Poggibonsi, Berg and Bio Ecologia plant) (162)	t	2,487.9	2,728.8	2,184.1	-20.0
electricity (AI plants - Pagnana, Pontedera Poggibonsi, San Jacopo - Berg and Bio Ecologia plant) (163)	GWh	3.325	3.159	3.023	-4.3
methane (AI plants) (164)	Sm^3	30,307	25,079	38,315	52.8
diesel fuel (Berg and Bio Ecologia plant) (164 B)	l	10,515	8,436	6,775	-19.7
BTZ (Basso Tenore di Zolfo - Low Sulphur Content) combustible Oil (Pontedera plant) (165)	t	0.045	0.049	0.031	-36.7
LPG (Pontedera plant)	t	-	-	18.361	-
process water (AI plants - Pagnana, Pontedera Poggibonsi, San Jacopo - Berg and Bio Ecologia plant) (166)	m^3	53,523	50,183	48,576	-3.2
water for civil use (AI plants - Pagnana, Pontedera Poggibonsi, San Jacopo - Berg and Bio Ecologia plant) (167)	m^3	743	747	619	-17.1

(*) The figures for 2019-2020 have been restated to include those of Berg and of the Bio Ecologia plant.

RESOURCES USED - WATER SEGMENT

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

COLLECTION, SUPPLY AND DISTRIBUTION OF DRINKING AND NON-DRINKING WATER (*)	u. m.	2019	2020	2021	Δ% 2021/2020
reagents for purification and disinfection (168)	t	3,587.4	3,689.0	4,560.7	23.6
reagents for chemical analyses (169)	t	1.50	1.65	1.55	-6.1
gas for chemical analyses (170)	MNm^3	6.06	5.79	6.30	8.8
cooling fluids (HCFC type) in operation (171) = (141)	t	1.49	1.68	1.78	5.7
cooling fluids (HCFC type) - reintegrations	t	0.00007	0.00035	0.00000	-
total electricity consumed (172)	GWh	416.17	482.80	446.52	-7.5
water pumping plants (173)	*GWh*	*409.12*	*476.28*	*439.65*	*-7.7*
offices/personal use (50% of energy consumed by the Parent Company) (174) = (146)	*GWh*	*5.75*	*5.13*	*5.38*	*4.9*
chemical laboratory (175)	*GWh*	*1.29*	*1.40*	*1.49*	*6.8*
drinking water					
total drinking water consumed (176)	Mm^3	1.80	2.31	2.12	-8.2
civilian/sanitary uses	*Mm^3*	*1.63*	*2.14*	*1.92*	*-10.3*
offices (50% of the drinking water consumed by the Parent Company)	*Mm^3*	*0.17*	*0.17*	*0.20*	*18.0*
non-drinking water					
total non-drinking water consumed (176 A)	Mm^3	*n/a*	0.48	2.16	353.7
process uses	*Mm^3*	*n.a.*	*0.48*	*2.16*	*353.7*

(*) Some figures for the 2019-2020 two-year period have been adjusted following consolidation.

(**) It is water recovered from treatment plants.

WASTEWATER TREATMENT (*)	u. m.	2019	2020	2021	Δ% 2021/2020
miscellaneous materials and natural resources					
reagents for purification waste water (177)	**t**	**12,188**	**14,262**	**16,716**	**17.2**
polyelectrolyte for sludge dehydration	*t*	*2,305*	*2,507*	*2,472*	*-1.4*
sodium hypochlorite for final disinfection	*t*	*2,761*	*3,981*	*4,244*	*6.6*
ferric chloride for sludge dehydration	*t*	*497*	*462*	*1,008*	*118.2*
peracetic acid	*t*	*3,673*	*4,075*	*5,382*	*32.1*
other (anti-foaming etc.)	*t*	*2,412*	*3,153*	*3,478*	*10.3*
reagent kit for on-site controls (178)	**no.**	**53,856**	**113,136**	**100,461**	**-11.2**
oil and fat (179)	**t**	**13.6**	**9.3**	**16.1**	**72.3**
electricity					
sewerage and purification (180)	**GWh**	**251.3**	**250.7**	**270.2**	**7.7**
fuels					
methane for processes (dryers and other processes) (181)	**Nm³ x 1,000**	**2,868.8**	**3,058.8**	**3,485.2**	**13.9**
diesel for processes and generators (182)	**l x 1,000**	**111.8**	**226.5**	**69.0**	**-69.5**
petrol for processes and generators (183)	**l x 1,000**	**n/a**	**2.6**	**3.4**	**32.1**
biogas produced and consumed on site (184)	**Nm³ x 1,000**	**2,382.5**	**5,320.7**	**3,282.3**	**-38.3**

(*) Some figures for the 2019-2020 two-year period have been adjusted following consolidation

FUEL USED BY THE MAIN GROUP COMPANIES FOR TRANSPORT AND HEATING

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

TYPE OF FUEL (*)	u. m.	2019	2020	2021	Δ% 2021/2020
transport (Group car fleet)					
petrol (185)	**l x 1,000**	**122.6**	**225.3**	**562.1**	**149.5**
diesel (186)	**l x 1,000**	**3,501.1**	**3,461.8**	**3,452.1**	**-0.3**
methane (186 B)	**Nm³ x 1,000**	**0.0**	**0.6**	**0.7**	**22.1**
LPG (187)	**l x 1,000**	**5.1**	**18.6**	**24.5**	**31.8**
heating					
diesel (188)	**l x 1,000**	**1.9**	**0.9**	**0.0**	**-**
methane (189)	**Nm³ x 1000**	**419.6**	**387.3**	**408.4**	**5.5**
LPG (190)	**l x 1,000**	**30.1**	**33.9**	**25.9**	**-23.5**

(*) Some figures for the 2019-2020 two-year period have been adjusted following consolidation and for the inclusion of new companies in the NFS scope.

EMISSIONS AND WASTE - ENERGY SEGMENT

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

ATMOSPHERIC EMISSIONS	u. m.	2019	2020	2021	Δ% 2021/2020
CO_2 (191) = (192+193+194+195) (*)	**t**	**338,410**	**396,232**	**379,025**	**-4.3**
Acea Produzione (192)	*t*	*48,506*	*45,773*	*51,567*	*12.7*
Areti – SF6 replenishment (193)	*t*	*9,400*	*8,695*	*6,975*	*-19.8*
HCFC replenishment (194)	*t*	*0.0*	*0.7*	*0.0*	*-*
waste-to-energy (195)	*t*	*280,504*	*341,763*	*320,483*	*-6.2*
NOx (196) = (197+198)	**t**	**188.19**	**190.67**	**198.11**	**3.9**
Acea Produzione (197)	*t*	*17.44*	*20.83*	*26.05*	*25.1*
waste-to-energy (198)	*t*	*170.75*	*169.84*	*172.06*	*1.3*
CO (199) = (200+201)	**t**	**7.02**	**8.34**	**7.68**	**-8.0**
Acea Produzione (200)	*t*	*4.19*	*6.12*	*4.13*	*-32.5*
waste-to-energy (201)	*t*	*2.83*	*2.22*	*3.55*	*59.8*

SO_2 (202) = (203+204)	**t**	**0.33**	**0.90**	**1.60**	**78.3**
Acea Produzione (203)	*t*	*0.02*	*0.02*	*0.02*	*-*
waste-to-energy (204)	*t*	*0.31*	*0.88*	*1.57*	*79.7*
powders (205) = (206+207)	**t**	**0.60**	**0.60**	**0.74**	**23.6**
Acea Produzione (206)	*t*	*0.03*	*0.03*	*0.03*	*-*
waste-to-energy (207)	*t*	*0.57*	*0.57*	*0.71*	*24.4*
HCl (208)	**t**	**2.92**	**3.12**	**3.07**	**-1.4**
HF (209)	**t**	**0.12**	**0.06**	**0.08**	**23.4**
organic carbon (210)	**t**	**1.99**	**1.07**	**0.58**	**-45.5**

(*) Some figures from the previous two-year period have been adjusted after the final calculations, in particular, the ETS data after certification.

OTHER EMISSIONS AND WASTE	u. m.	2019	2020	2021	Δ% 2021/2020
wastewater treated (211)	**Mm^3**	**0.0300**	**0.0241**	**0.0200**	**-17.1**
electrical fields at 50 Hz	**kV**	**monitored** commitment to maintain the value below the legal limit			
magnetic fields at 50 Hz	**µT**	**monitored** commitment to maintain the value below the legal limit			
noise	**dB**	**monitored** commitment to maintain the value below the legal limit			
luminous flux dissipated	**Mlumen**	commitment to design the plants in order to limit to the utmost the emission value dissipated upwards			

WASTE (*)	u. m.	2019	2020	2021	Δ% 2021/2020
hazardous waste - excluding waste-to-energy area (212)	**t**	**1,268.9**	**854.0**	**1,705.0**	**99.6**
production energy own area	*t*	*1,268.1*	*853.4*	*1,704.4*	*99.7*
proportion for the activities performed by the Parent Company (**)	*t*	*0.8*	*0.6*	*0.6*	*-*
hazardous waste from waste-to-energy (213)	**t**	**73,202.0**	**64,885.4**	**64,672.5**	**-0.3**
non-hazardous waste – excluding waste-to-energy area (214)	**t**	**1,167.0**	**902.8**	**1,257.5**	**39.9**
production energy own area	*t*	*1,118.9*	*874.4*	*1,223.4*	*39.9*
proportion for the activities performed by the Parent Company (**)	*t*	*48.1*	*28.4*	*34.1*	*19.9*
non-hazardous waste from waste-to-energy (215)	**t**	**24,239.3**	**22,633.3**	**28,092.9**	**24.1**

(*) Some figures from the previous two-year period have been adjusted after the final calculations.

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

EMISSIONS AND WASTE - ENVIRONMENT SEGMENT

The data refers to the three composting plants of Acea Ambiente located in Aprilia, Monterotondo Marittimo and Sabaudia, the waste management plant of Orvieto, the Bio Ecologia plant, Berg and four of Acque Industriali's plants in Pontedera, Pagnana, Poggibonsi and San Jacopo.

ORVIETO WASTE, COMPOST PLANTS (*)	u. m.	2019	2020	2021	Δ% 2021/2020
hazardous waste - composting plants of Aprilia, Monterotondo Marittimo and Sabaudia including leachate (216)	**t**	**1.2**	**3,672.5**	**221.2**	**-94.0**
non-hazardous waste – composting plants of Aprilia, Monterotondo Marittimo and Sabaudia including leachate (217)	**t**	**14,821.2**	**24,762.1**	**40,469.1**	**63.4**
hazardous waste Orvieto plant (218)	**t**	**12.7**	**11.4**	**12.3**	**7.8**
non-hazardous waste Orvieto plant including leachate (219)	**t**	**21,635.0**	**20,237.1**	**23,608.1**	**16.7**

(*) Some of the 2020 figures have been updated after the final calculations.

BIO ECOLOGIA PLANT	u. m.	2019	2020	2021	Δ% 2021/2020
hazardous waste Bio Ecologia plant (220)	**t**	**3.3**	**6.7**	**5.7**	**-14.5**
non-hazardous waste Bio Ecologia plant (221)	**t**	**6,136.8**	**5,996.0**	**6,330.6**	**5.6**

ATMOSPHERIC EMISSIONS – ORVIETO AND COMPOST PLANTS	u.m.	2019	2020	2021	Δ% 2021/2020
CO_2 (222)	t	1,265	1,349	1,644	21.9
particles (223)	t	0.001	0.274	0.473	72.8
total organic compounds (TOC) (224)	t	0.011	0.927	1.049	13.1
ammonia (225)	t	0.001	3.711	3.933	6.0
volatile inorganic compounds (SIV) (226)	t	0.062	1.941	0.420	-78.3

ATMOSPHERIC EMISSIONS - BIO ECOLOGIA PLANT	u.m.	2019	2020	2021	Δ% 2021/2020
CO_2 (227)	t	2.1	1.8	2.3	27.8

INDUSTRIAL WASTE WATER	u.m.	2019	2020	2021	Δ% 2021/2020
hazardous waste Pagnana plant (228)	t	0.02	0.11	0.35	218.2
non-hazardous waste of Pagnana, Pontedera, Poggibonsi and San Jacopo (229)	t	3,124.5	2,516.8	1,470.5	-41.6

ATMOSPHERIC EMISSIONS – INDUSTRIAL WATER	u.m.	2019	2020	2021	Δ% 2021/2020
CO_2 (230)	t	201.5	204.2	229.6	12.4
Hydrogen Sulphide (231)	t	0.012	0.019	0.014	-27.8
ammonia (232)	t	0.019	0.038	0.011	-71.5

BERG'S WASTE	u.m.	2019	2020	2021	Δ% 2021/2020
hazardous waste (233)	t	2,930.5	1,077.7	613.7	-43.1
non-hazardous waste (234)	t	3,085.3	2,901.1	2,526.9	-12.9

ATMOSPHERIC EMISSIONS – BERG	u.m.	2019	2020	2021	Δ% 2021/2020
CO_2 (235)	t	26.1	20.0	16.0	-20.0
particles (236)	t	0.069	0.121	0.045	-63.0
organic carbon (237)	t	0.149	1.253	0.816	-34.8
hydrogen sulphide and mercaptans (238)	t	0.261	0.001	0.001	-
ammonia (239)	t	0.161	0.037	0.124	238.1

EMISSIONS AND WASTE - **WATER SEGMENT**

The data refers to the Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa water Companies. The figures have been partially reorganised to respond to the new version of the GRI 306 Waste 2020 Standard.

WASTE PRODUCED (*)	u. m.	2019	2020	2021	Δ% 2021/2020
specific process waste from treatment of waste water (**)					
total purification sludge (240) = (241+242+243+244+245)	t	132,190	125,850	152,791	21.4
Acea Ato 2 purification sludge (241)	*t*	*100,298*	*78,934*	*66,416*	*-15.9*
Acea Ato 5 purification sludge (242)	*t*	*11,352*	*9,408*	*13,803*	*46.7*
GORI purification sludge (243)	*t*	*10,586*	*29,246*	*65,635*	*124.4*
Gesesa purification sludge (244)	*t*	*979*	*969*	*699*	*-27.9*
AdF purification sludge (245)	*t*	*8,975*	*7,292*	*6,238*	*-14.5*

total sand and slabs from purification (246) = (247+248+249+250+251)	**t**	**11,126**	**12,907**	**14,178**	**9.9**
Acea Ato 2 sand and slabs (247)	*t*	*7,789*	*9,494*	*8,334*	*-12.2*
Acea Ato 5 sand and slabs (248)	*t*	*87*	*101*	*225*	*122.0*
GORI sand and slabs (249)	*t*	*2,289*	*2,515*	*4,597*	*82.8*
Gesesa sand and slabs (250)	*t*	*39*	*71*	*10*	*-85.7*
AdF sand and slabs (251)	*t*	*921*	*724*	*1,012*	*39.7*
other waste from treatment (252)					
other Acea Ato 2	*t*	*1,386*	*1,137*	*1,886*	*65.9*
other Acea Ato 5	*t*	*5,955*	*6,524*	*5,441*	*-16.6*
other GORI	*t*	*46*	*80*	*148*	*83.9*
other Gesesa	*t*	*0*	*0*	*0*	*-*
other AdF	*t*	*0*	*0*	*0*	*-*
extra process waste					
total hazardous waste (253) = (254+255+256+257+25+259)	**t**	**91.3**	**175.2**	**309.4**	**76.6**
Acea Elabori (254)	*t*	*19.7*	*15.9*	*16.6*	*4.4*
Acea Ato 2 (255)	*t*	*34.3*	*82.9*	*188.8*	*127.7*
Acea Ato 5 (256)	*t*	*2.0*	*0.9*	*0.4*	*-58.1*
GORI (257)	*t*	*16.2*	*33.7*	*51.0*	*51.6*
AdF (258)	*t*	*18.3*	*41.2*	*52.0*	*26.1*
Proportion for the activities performed by the Parent Company (259) (**)	*t*	*0.78*	*0.63*	*0.59*	*-7.3*
total non-hazardous waste (260) = (261+262+263+264+265+266)	**t**	**2,747**	**5,665**	**1,748**	**-69.1**
Acea Ato 2 and Elabori (261)	*t*	*1,022*	*2,363*	*1,059*	*-55.2*
Acea Ato 5 (262)	*t*	*34*	*43*	*26*	*-39.9*
GORI (263)	*t*	*1,227*	*213*	*129*	*-39.2*
Gesesa (264)	*t*	*0*	*0*	*0*	*-*
AdF (265)	*t*	*416*	*3,017*	*499*	*-83.5*
Proportion for the activities performed by the Parent Company (266) (***)	*t*	*48*	*28*	*34*	*19.9*
other emissions and waste					
CO_2 from dryers and generators (267)	**t**	**6,893**	**6,979**	**7,486**	**7.3**
CO_2 from HCFC replenishment (268)	**t**	**0.0**	**0.7**	**0.0**	**-**
noise	**dB**	**monitored** commitment to maintain the value below the legal limit			
Odours		**monitored** commitment to maintain the value below the limit of perception and in the areas adjacent to the treatment plants			

(*) Some of the 2019 and 2020 figures have been updated after the final calculations.
(**) All process waste is non-hazardous apart from 87 t of oil mixtures produced by GORI.
(***) The portion is equal to 50% of the waste produced by the Parent Company.

EMISSIONS OF CARBON DIOXIDE FROM TRANSPORT AND PACKAGING

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

GROUP COMPANIES (*)	u. m.	2019	2020	2021	Δ% 2021/2020
transport					
CO_2 (269)	**t**	**9,550**	**9,705**	**10,533**	**8.5**
heating					
CO_2 (270)	**t**	**940**	**872**	**881**	**1.0**

(*) Some figures for the 2019-2020 two-year period have been adjusted following consolidation and for the inclusion of new companies in the NFS scope.

KEY ENVIRONMENTAL PERFORMANCE INDICATORS (KPI) – ENERGY SEGMENT

Environmental Key Performance Indicators.

INDICATOR	u. m.	2019	2020	2021
energy used for the processes (*)				
A consumption in the distribution of electricity	TJoule (GWh)	1,188.4 (330.1)	1,076.7 (299.1)	1,090.4 (302.9)
B consumption in the production of electricity (145)		233.1 (64.8)	251.5 (69.9)	279.6 (77.7)
C heat lost in the district heating network (23)		106.1 (29.5)	99.8 27.7	86.2 (23.9)
D consumption for Public Lighting (150)		252.3 (70.1)	241.1 (67.0)	242.4 (67.3)
E environment Segment consumption (152+157)		43.2 (12.0)	41.7 (11.6)	35.2 (9.8)
F water distribution (172-174)		1,477.5 (410.4)	1,719.6 (477.7)	1,588.1 (441.1)
G water purification (180)		904.8 (251.3)	902.7 (250.7)	972.5 (270.2)
H electricity for offices (Item 146+174)		41.4 (11.5)	36.9 (10.3)	38.7 (10.8)
I consumption for heating offices		16.2 (4.5)	15.1 (4.2)	15.6 (4.3)
L water area dryer consumption		106.7 (29.6)	113.8 (31.6)	129.7 (36.0)
M layoffs		126.5 (35.1)	128.3 (35.7)	142.6 (39.6)
total consumption = indirect consumption + consumption through mobility + heating		**4,496.2 (1,248.9)**	**4,627.2 (1,285.3)**	**4,621.0 (1,283.6)**
EMISSIONS, EFFLUENTS AND WASTE				
greenhouse-gas emissions (CO_2) (191+222+230+267+268+269+270)	t	357,432	415,356	399,811
emissions of SO_2, NOx and other significant gasses by type				
NOx (196)	t	188.19	190.67	198.11
CO (199)	t	7.02	8.34	7.68
SO_2 (171)	t	0.33	0.90	1.60
NOx /thermoelectric production	g/kWh	0.42	0.44	0.43
CO_2/thermoelectric production	g/kWh	735	884	802
CO_2/Acea Produzione thermoelectric production	g/kWh	537	497	479
CO_2/Acea Produzione total production	g/kWh	89	84	83
CO_2/gross total production	g/kWh	357.8	422.9	368.8
SO_2/thermoelectric production	g/kWh	0.0	0.0	0.0
PRODUCTS AND SERVICES: electricity				
performance of the electrical production process of Acea Produzione				
gross average performance thermoelectric production (calculation 1)	%	40.7	41.9	40.3
Tor di Valle power plant (electrical performance cogeneration only)		41.2	42.4	40.6
Montemartini power plant		24.3	26.1	26.3
gross average thermoelectric production out included thermal energy recovered (calculation 2)		69.6	70.2	70.1
gross average performance hydroelectric production (calculation 3)		79.2	83.5	82.4
gross average performance overall production (calculation 4)		72.5	76.1	75.3
gross average total production performance including thermal energy recovered (calculation 5)		77.5	81.1	80.1

performance of the electrical production process - waste-to-energy plants				
San Vittore del Lazio				
SRF produced/gross energy produced	kt/GWh	1.233	1.185	1.148
gross performance SRF conversion into electricity (calculation 6)	**kWh/kg SRF**	**0.81**	**0.84**	**0.87**
electrical output (calculation 7)	**%**	**19.2**	**19.2**	**20.2**
total waste produced/hours worked	t/h	3.36	3.18	3.28
Terni				
gross performance pulper conversion into electricity (calculation 8)	**kWh/kg pulper waste**	**0.86**	**0.85**	**0.89**
electrical output (calculation 9)	**%**	**11.1**	**10.5**	**11.9**
total waste produced/hours worked	t/h	1.7	1.7	1.7
performance of the electrical production process - photovoltaic energy				
average efficiency photovoltaic modules	**%**	**14.0**	**14.0**	**14.0**
other indicators (territory, public lighting, controls, losses)				
protection of the territory (total length of HV cable lines/(length of overhead HV lines + cable lines) x 100	**%**	**46.3**	**46.3**	**47.0**
public lighting illumination efficiency (36)/(150)	**Lumen/kWh**	**28.6**	**30.0**	**30.0**
average performance of installed lamps (36)/ (electrical power)	**Lumen/W**	**127.9** (15,653 kW)	**127.9** (15,716 kW)	**127.8** (15,809 kW)
specific consumption per lamp (150)/(No. lamps)	**kWh/ No. lamps**	**310.46** (225,730)	**295.46** (226,635)	**295.77** (227,635)
percentage of roads illuminated (**)	**% (km of roads illuminated/ total km of roads)**	**88.8** (6,316/7,110)	**89.1** (6,338/7,110)	**89.6** (6,368/7,110)
no. operating and laboratory checks /GWh net electricity sold (37)/(32)	**No./GWh**	**0.17**	**0.26**	**0.25**
reintegrations of SF6/km electricity distribution network	**kg/km**	**0.0128**	**0.0118**	**0.0094**
total loss of electrical energy (28)/(27) (***)	**% energy requested**	**7.0**	**5.8**	**6.0**

(*) The figures for the 2019-2020 two-year period have been updated to include the new companies in the 2021 NFS scope.

(**) Estimate.

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

KEY ENVIRONMENTAL PERFORMANCE INDICATORS (KPI) – WATER SEGMENT

Environmental Key Performance Indicators.

INDICATOR (*)	u. m.	2019	2020	2021
carbon footprint				
WATER SERVICE				
total CO_2/m^3 of water supplied (integrated water services) (**)	**$kgCO_2/m^3$**	**0.50**	**0.51**	**0.46**
CO_2/m^3 of water supplied (water distribution process)	**$kgCO_2/m^3$**	**0.31**	**0.33**	**0.29**
CO_2/m^3 of water treated (purification process)	**$kgCO_2/m^3$**	**0.13**	**0.12**	**0.11**
PRODUCT: DRINKING WATER				
Acea Ato 2 network				
specific electricity consumption per input in the water network (energy consumption of the Acea Ato 2 network)/(69)	**kWh/m^3**	**0.259**	**0.275**	**0.262**
intensity of the checks on drinking water distributed (119)/(70)	**$No./Mm^3$**	**956**	**918**	**861**
drinking water additive index (169 – Acea Ato 2 network)/(70)	**g/m^3**	**7.1**	**7.2**	**8.9**

Acea Ato 5 network				
specific electricity consumption per input in the water network (energy consumption of the Acea Ato 5 network)/(73)	kWh/m³	0.492	0.514	0.491
intensity of the checks on drinking water distributed (121)/(78)	No./Mm³	4,259	3,068	2,721
drinking water additive index (169 – Acea Ato 5 network)/(78)	g/m³	9.7	7.4	7.1
GORI network				
specific electricity consumption per input in the water network (energy consumption of GORI network)/(91)	kWh/m³	0.664	1.001	0.955
intensity of the checks on drinking water distributed (125)/(92)	No./Mm³	1,232	1,613	1,534
drinking water additive index (169 – GORI network)/(92)	g/m³	2.3	2.2	2.5
Gesesa network				
specific electricity consumption per input in the water network (energy consumption of Gesesa network)/(84)	kWh/m³	0.559	0.534	0.476
intensity of the checks on drinking water distributed (123)/(85)	No./Mm³	1,110	1,213	1,462
drinking water additive index (169 Gesesa network)/(85)	g/m³	8.3	7.3	4.4
AdF network				
specific electricity consumption per input in the water network (energy consumption of AdF network)/(98)	kWh/m³	0.547	0.485	0.476
intensity of the checks on drinking water distributed (127)/(99)	No./Mm³	3,797	3,975	3,736
drinking water additive index (169 – AdF network)/(98)	g/m³	10.2	9.0	11.7
SERVICE: WASTE WATER TREATMENT				
Acea Ato 2				
disposed of sludge (241)	t	100,298	78,934	66,416
sand and slabs removed (247)	t	7,789	9,494	8,334
COD input	t	207,914	173,392	143,568
COD removed	t	188,327	159,487	127,527
efficiency of COD removal	%	91	92	89
SST input	t	134,685	100,637	91,904
SST removed	t	124,417	93,172	84,461
efficiency of SST removal	%	92	93	92
efficiency of BOD removal	%	88	90	90
total N input (like NH4+NO2+NO3+ organic)	t	18,433	17,993	15,611
total N removed	t	14,333	13,925	11,649
efficiency of N removal	%	78	77	75
Acea Ato 2 waste water additivation index	g/m³	12.0	15.4	17.4
Acea Ato 2 specific consumption of electricity by purification process	kWh/m³	0.299	0.282	0.281
Acea Ato 5				
disposed of sludge (242)	t	11,352	9,408	13,803
sand and slabs removed (248)	t	87	101	225
COD input	t	13,506	19,341	11,382
COD removed	t	12,407	18,182	10,457
efficiency of COD removal	%	92	89	92
total N input	t	1,136	1,219	922
total N removed	t	757	827	610
efficiency of N removal ($NH4^+$)	%	67	69	66
SST input	t	8,364	10,349	6,167
SST removed	t	7,940	9,993	5,854
efficiency of SST removal	%	95	96	95
Acea Ato 5 additivation index	g/m³	33.2	33.6	28.8
Acea Ato 5 specific consumption of electricity by purification process	kWh/m³	0.830	0.755	0.682

GORI				
disposed of sludge (243)	t	10,586	29,246	65,635
sand and slabs removed (249)	t	2,289	2,515	4,597
COD input	t	7,579	25,650	44,206
COD removed	t	6,376	24,245	42,314
efficiency of COD removal	%	84	95	96
total N input	t	944	3,310	4,519
total N removed	t	714	3,159	4,303
efficiency of N removal (NH_4^+)	%	76%	95%	95%
SST input	t	3,438	6,967	17,118
SST removed	t	2,777	5,932	14,717
efficiency of SST removal	%	81	85	86
GORI additivation index	g/m³	54.6	36.9	34.7
GORI specific consumption of electricity by purification process	kWh/m³	0.634	0.584	0.464
Gesesa (***)				
disposed of sludge (244)	t	979.0	969.5	698.6
sand and slabs removed (250)	t	39.3	71.3	10.2
COD input	t	n/a	349	366
COD removed	t	n/a	307	341
efficiency of COD removal	%	n/a	88.1	93.3
total N input	t	n/a	30	13
total N removed	t	n/a	15	9
efficiency of N removal (NH_4^+)	%	n/a	48.2	71.9
SST input	t	n/a	76	28
SST removed	t	n/a	44	22
efficiency of SST removal	%	n/a	57.1	77.7
Gesesa additive index	g/m³	n/a	42.3	47.3
Gesesa specific consumption of electricity by purification process	kWh/m³	n/a	0.849	0.958
AdF				
disposed of sludge (245)	t	8,975	7,292	6,238
sand and slabs removed (251)	t	921	724	1,012
COD input	t	8,120	9,172	7,377
COD removed	t	7,516	8,587	6,792
efficiency of COD removal	%	92.6	93.6	92.1
total N input	t	852	866	889
total N removed	t	574	562	628
efficiency of N removal (NH_4^+)	%	81.1	79.7	81.7
SST input	t	2,656	4,008	3,303
SST removed	t	2,512	3,872	3,107
efficiency of SST removal	%	94.6	96.6	94.1
AdF additive index	g/m³	65.9	74.0	75.7
AdF specific consumption of electricity by purification process	kWh/m³	0.929	1.018	0.950

(*) Some figures for the 2019-2020 two-year period have been adjusted following consolidation.

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

(***) Water purification efficiency data is estimated. Water purification indicators are available from 2020, when the company installed the first waste water flow meters at the main treatment plants.

KEY ENVIRONMENTAL PERFORMANCE INDICATORS (KPI) – ENVIRONMENT SEGMENT

Environmental Key Performance Indicators.

INDICATOR (*)	u. m.	2019	2020	2021
non-hazardous waste disposed in landfill/total incoming waste (40+41) / (38)	t/t	0.57	0.64	0.67
waste disposed of in landfill/energy consumed net of photovoltaic energy (40+41)/(152)	t/MWh	12.00	15.39	16.19
compost produced/incoming waste (43+ 49) / (38 + 45)	t/t	0.10	0.08	0.11
compost produced/consumed electrical energy (43+49)/(152+157)	kg/kWh	1.68	2.19	4.12
consumed electrical energy/incoming liquid waste in the Bio Ecologia plant	kg/kWh	0.02	0.02	0.01
consumed electrical energy/incoming waste in the Pagnana plant (163 – Pagnana's share)/(56+57+58+59 - Pagnana)	kWh/kg	0.004	0.004	0.005
consumed electrical energy/incoming waste in the Pontedera plant (163 - Pontedera's share)/ (56+57+58+59 - Pontedera)	kWh/kg	0.004	0.011	0.012
consumed electrical energy/incoming waste in the Poggibonsi plant (163 - Poggibonsi's share)/ (56+57+58+59 - Poggibonsi)	kWh/kg	0.003	0.003	0.009
consumed electrical energy/incoming waste in the Berg plant (163 Berg's share)/(62)	kWh/kg	0.009	0.009	0.009
chemicals consumed/incoming waste in the Bio Ecologia plant (162 – Bio Ecologia portion)/(52)	kg/t	5.57	6.26	3.71
chemicals used/incoming waste at the Pagnana plant (162 - Pagnana's share)/ (56+57+58+59 - Pagnana)	kg/t	7.59	5.13	7.04
chemicals used/incoming waste at the Pontedera plant (162 - Pontedera's share)/ (56+57+58+59 - Pagnana)	kg/t	11.65	15.33	11.19
chemicals used/incoming waste at the Poggibonsi plant (162 - Poggibonsi's share)/(56+57+58+59 - Poggibonsi)	kg/t	7.04	8.11	14.11
chemicals used/incoming waste at the Berg plant (162 - Berg's share)/(62)	kg/t	6.99	9.00	7.38

(*) Some figures for the 2019-2020 two-year period have been adjusted following consolidation.

ENVIRONMENTAL COMPLIANCE

INDICATOR	u. m.	2019	2020	2021
COMPLIANCE – MAIN GROUP COMPANIES				
penalties paid for non-conformities related to rules/agreements of an environmental nature	€	139,964	151,620	314,649
COMPLIANCE WITH COMPANY IN NFS SCOPE				
penalties paid for non-conformities related to rules/agreements of an environmental nature	€	121,150	49,523	249,562

DESCRIPTION OF THE CALCULATIONS USED TO DETERMINE THE ELECTRICAL GENERATION EFFICIENCY

CALCULATION 1

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

where:
$\text{Energy}_{thermoelectric}$ = gross electricity produced with the thermoelectric cycle

$$\text{Energy}_{diesel}\ (\text{kWh}) = \frac{\text{diesel (l)} \times 0.835 \times \text{LHV}_d \left(\frac{\text{kcal}}{\text{kg}}\right)}{860 \left(\frac{\text{kcal}}{\text{kWh}}\right)}$$

$$\text{Energy}_{methane}\ (\text{kWh}) = \frac{\text{methane (Nm}^3\text{)} \times \text{LHVm} \left(\frac{\text{kcal}}{\text{Nm}^3}\right)}{860 \left(\frac{\text{kcal}}{\text{kWh}}\right)}$$

LHV_g = about 10,000 kcal/kg (Lower Heating Value of diesel fuel)
LHV_m about 8,500 kcal/Nm^3 (Lower Heating Value of methane)
860 = energy conversion factor from kcal to kWh
0.835 = specific gravity of diesel fuel (kg/l)

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

CALCULATION 2

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

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

$$\text{Energy}_{diesel}\ (\text{kWh}) = \frac{\text{diesel (l)} \times 0.835 \times \text{LHV}_d \left(\frac{\text{kcal}}{\text{kg}}\right)}{860 \left(\frac{\text{kcal}}{\text{kWh}}\right)}$$

$$\text{Energy}_{methane}\ (\text{kWh}) = \frac{\text{methane (Nm}^3\text{)} \times \text{LHVm} \left(\frac{\text{kcal}}{\text{Nm}^3}\right)}{860 \left(\frac{\text{kcal}}{\text{kWh}}\right)}$$

LHV_g = Lower Heating Value of diesel fuel
LHV_m = Lower Heating Value of methane
860 = energy conversion factor from kcal to kWh
0.835 = specific gravity of diesel fuel (kg/l)

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

CALCULATION 3

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

where:
$3.6\ \text{x}10^{9}$ = conversion factor of hydropower from joules to MWh
m = derived water for hydroelectric production
9.8 = acceleration of gravity at sea level
h = height of water fall (exposed surface - turbine)
$\text{Energy}_{hydroelectric}$ = energy produced in the hydroelectric cycle

CALCULATION 4

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

where:
E_i = total amount of hydroelectric energy produced
E_T = total amount of thermoelectric energy produced
η_i = hydroelectric efficiency
η_T = thermoelectric efficiency
efficiency (average) = average production efficiency

CALCULATION 5

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

where:
E_i = total amount of hydroelectric energy produced
E_T = total amount of energy (thermoelectric and thermal) produced
η_i = hydroelectric efficiency
η_T = efficiency (thermoelectric + thermal)
efficiency (average) = average production efficiency

CALCULATION 6

$$\text{Recovery efficiency } (\frac{\text{kWh}}{\text{kg}}) = \frac{\text{Gross electricity produced (kWh)}}{\text{SRF (kg)}}$$

Gross electricity produced (kWh) = gross electricity produced in San Vittore

CALCULATION 7

$$\text{Electrical efficiency} = \frac{\text{Gross electricity produced (kWh)}}{\text{Internal SRF energy (kWh)} + \text{Internal methane energy (kWh)}}$$

where:

Electrical energy produced = electrical energy produced in San Vittore del Lazio

$$\text{Internal methane energy} = \frac{CH_4\ (Sm^3) \times PCI_m\ (\frac{kcal}{Sm^3})}{860\ (\frac{kcal}{kWh})}$$

LHV_m = average Lower Heating Value of methane

860 = energy conversion factor from kcal to kWh

$$\text{Internal SRF energy (kWh)} = \frac{SRF\ (kg) \times LHV_{SRF}\ (\frac{kcal}{kg})}{860\ (\frac{kcal}{kWh})}$$

LHV_{SRF} = average Lower Heating Value of the SRF

860 = energy conversion factor from kcal to kWh

CALCULATION 8

$$\text{Recovery efficiency}\ (\frac{kWh}{kg}) = \frac{\text{Gross electricity produced (kWh)}}{\text{paper mill pulp}}$$

Gross electricity (kWh) = electricity produced in Terni

CALCULATION 9

$$\text{Efficiency} = \frac{\text{Gross electricity produced (kWh)}}{\text{Internal paper mill pulp energy (kWh)+internal methane energy (kWh)}}$$

where:

Electricity produced = Electricity produced in Terni = (figure 16)

$$\text{Internal methane energy (kWh)} = \frac{CH_4\ (Sm^3) \times PCI_m\ (\frac{kcal}{Sm^3})}{860\ (\frac{kcal}{kWh})}$$

LHV_m = LHV methane = average Lower Heating Value of methane

860 = energy conversion factor from kcal to kWh

$$\text{Internal paper mill pulp energy (kWh)} = \frac{\text{Paper mill pulp} \times LHV_p\ (\frac{kcal}{kg})}{860\ (\frac{kcal}{kWh})}$$

LHV_p = LHV paper mill pulp - average Lower Heating Value of paper mill pulp

860 = energy conversion factor from kcal to kWh

EXPLANATORY NOTES TO THE ENVIRONMENTAL ACCOUNTS

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

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

The numerical data have been divided into the three categories:

- estimated;
- calculated;
- measured.

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

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

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

ADDITIONAL INFORMATION ON THE NUMERICAL DATA PROVIDED IN THE ENVIRONMENTAL ACCOUNTS

PRODUCTS – ENERGY SEGMENT

item no.	explanation – comment
1	Gross total energy produced by Acea Ambiente and Acea Produzione. The figure is calculated.
2	Electricity produced net of the losses due to just the production phase. The figure is calculated.
3=4+5	Total electricity produced, inclusive of the losses, by the Acea Produzione power plants. Includes thermoelectric and hydroelectric energy. The figure is measured with an uncertainty of less than ± 0.5%.
6=7+8+9	Losses of electricity attributable to just the production phase of the Acea Produzione power plants. Includes: the self-consumption (thermal and hydro) and the losses of initial transformation. The figure is measured with an uncertainty of less than ± 0.5%.
10	Electricity produced by the Acea Produzione power plants net of the losses. The figure is calculated.
11	Gross energy produced by photovoltaic installations. The figure is measured with an uncertainty of less than ± 0.5%.
12	Total losses during photovoltaic generating phase, due in particular to joule effect (dissipation during heating) in the equipment. Estimated figure.
13	Net photovoltaic electricity made available by the generating installations. The figure is calculated.
14=15+16	Electricity produced by the Waste-to-Energy installations: waste-to-energy of San Vittore del Lazio and waste-to-energy of Terni of Acea Ambiente. We wish to specify that the fuel used in the two installations (SRF – solid recovered fuel – for San Vittore del Lazio and paper mill pulp for the Terni plant) is composed of both biodegradable organic material, neutral on the balance of the CO_2, and by non-biodegradable organic substance (plastic, resins, etc.). In 2021, the renewable share for the San Vittore del Lazio plant was equal to 43.0%, the Terni incinerator share to 43.4%.
17	Self-consumption of the two waste-to-energy plants of San Vittore del Lazio and Terni + initial transformation losses. The figure is measured with an uncertainty of less than ± 0.5%.
18	Electricity produced by the two waste-to-energy plants of San Vittore del Lazio and Terni, net of the self-consumption and initial transformation losses. The figure is calculated.
19	Electrical energy produced from biogas by the waste management plant in Orvieto and, from 2020, the two composting plants of Aprilia and Monterotondo Marittimo (Acea Ambiente). The figure is calculated.
20	Self-consumption of biogas production plants, including small dissipations. The figure is measured with an uncertainty of less than ± 5%.
21	Net electricity produced from biogas and transferred to the network. The figure is measured with an uncertainty of less than ± 5%.
22	Thermal energy produced in the cogeneration plant of Tor di Valle including losses. The figure is measured with an uncertainty of ± 2%, near the delivery piping of the generators.
23	Losses of thermal energy of the district heating systems, due to: thermal dissipation, losses on the network, technical releases for maintenance operations, thermal reintegrations of the heat accumulation systems. The figure is calculated as the difference between the thermal energy produced and that actually supplied to the clients (invoiced).
24	Net thermal energy supplied to final clients. The figure, calculated, is obtained from the consumption invoiced.
25	Electricity supplied to Acea Produzione to Acea Energy with inter-Group exchange. The figure is marginal as a result of the choice made by the Acea Group to sell the electricity produced in Borsa (Stock Exchange) or through bilateral agreements.

26	Electricity supplied by the Single Purchaser and Market, including the amount imported subject to recalculation in relation to the ARERA DCO 492/2019/R/eel. The figure is measured with an uncertainty of ± 0.5%.
27	Energy requested on the electrical distribution network of Rome and Formello by all the client connected (open market + managed service). The figure is estimated.
28	Losses of electricity that occur during the distribution and transmission phase. They are attributable to: losses of transformation and transport, fraud and incorrect measurements. The figure is estimated.
29	Personal use of electricity for the implementation of the distribution activities. The figure is estimated.
30	This is electricity sold to distribution companies. The increase is a consequence of two new closed distribution systems powered by Areti from July 2019. The figure is measured with an uncertainty of ± 0.5%.
31	Total net electricity conveyed to final clients of the open market connected to the electrical distribution network of Rome and Formello. Includes both the quota of electricity sold by Acea Energia, and that sold by other operators active on the open market. The figure is measured with an uncertainty of ± 5% according to Standard CEI 13-4.
32	Net electricity transferred to managed final clients. The decrease is the result of the progressive passage of managed service clients to the open market. In other words, it is a direct consequence of the deregulation process of the electricity market in effect in Italy since 1999 (Italian Legislative Decree no. 79/99). The figure is estimated based on the consumption invoiced.
33	Net electricity sold by Acea ENERGIA on the open market nationally. The figure is estimated.
34	Net electricity sold by Acea nationally on the open market and the standard service. The figure is calculated.
35	Natural gas sold by Acea on the national market. The figure is calculated.
36	Luminous flux supplied by the Public Lighting system in Rome. The figure, calculated, is the product of the number of lamps installed and the relative value of "rated" luminous flux.
37	Total number of measurements/controls performed in favour of the energy segment, in particular, of Acea Produzione and Areti. The figure is calculated as the sum of the individual determinations carried out by the competent laboratories.

PRODUCTS – ENVIRONMENT SEGMENT

item no.	explanation – comment
38	Total incoming waste. They are the quantities arriving at the Orvieto plant which include: unsorted municipal solid waste, organic fraction, green, non-hazardous industrial waste. The figure is calculated.
39	Waste partly sent for shredding only, partly just for aerobic treatment, partly both to the anaerobic digester and the aerobic treatment. The figure is calculated.
40	Waste disposed directly in landfill. The figure is measured with an uncertainty of ± 1%.
41	Waste disposed of in landfill after treatment. The figure is measured with an uncertainty of ± 1%.
42	Waste recovered and not sent to landfill. It is glass, paper and cardboard, iron and plastic. The figure is calculated.
43	Compost produced at the Orvieto plant. Thanks to the combination of the anaerobic and aerobic processes, the product is Quality Compost. The figure is measured with an uncertainty of ± 1%.
44	Reduction due to stabilisation. This represents the loss of mass due to the natural transformations of the material and the loss of water through evaporation. The figure is calculated.
45	Total incoming organic waste. They are the amounts arriving at the plants of Aprilia, Monterotondo Marittimo and Sabaudia, which include: sludge, green and organic fraction. The Monterotondo Marittimo plant, which had suspended deliveries in 2018, was restarted in 2019 after work on the construction of a new anaerobic digestion section, the Aprilia plant, placed under preventive seizure in 2017 by the Latina Public Prosecutor's Office for aspects related to odorous emissions, thanks to the activities taken and, in particular, to the complete closure of the biofilters and creation of the 3 chimneys for atmospheric emissions, was released on 18 March 2021.
46	Incoming sludge. It is the quantity of sludge entering the composting plants of Aprilia, Monterotondo Marittimo and Sabaudia. The trend of increasing amounts depends on the resumption, after revamping, of the contributions at the Monterotondo Marittimo plant. The figure is measured with an uncertainty of ± 1%.
47	Incoming green. It is the quantity of green matter coming from the parks, woods or other areas arriving at the plants of Aprilia, Monterotondo Marittimo and Sabaudia. The figure is measured with an uncertainty of ± 1%.
48	Organic fraction of municipal solid waste (OFMSW) entering the composting plant of Aprilia and OFMSW and other agrifood waste arriving at the Monterotondo Marittimo plant. The figure is calculated.
49	Quality Compost. It is the quantity of quality compost produced at the Aprilia, Monterotondo Marittimo and Sabaudia plants. The compost estimate is made based on the quantities transported daily for maturation or to the final storage areas. Due to process losses, at the time of sale the compost may be less than estimated. Compost at Sabaudia is zero because the plant is at a standstill awaiting authorisation for revamping.

50	Non-compostable material for disposal. It is the non-biodegradable material (for example plastics) which is separated from the compostable material sent for disposal. The figure is measured with an uncertainty of ± 1%.
51	Reduction due to stabilisation. This represents the loss of mass due to the natural transformations of the material and the loss of water through evaporation. The figure is calculated.
52	Liquid waste. Represents the quantity of liquid waste coming into the Bio Ecologia plant. The figure is measured with an uncertainty of ± 1%.
53	Total waste water treated in the Bio Ecologia treatment plant. The figure is measured with an uncertainty of ± 1%.
54	Total analytical determinations. They represent the total of analytical determinations made at the following plants: Orvieto, Aprilia, Monterotondo Marittimo and Sabaudia. The figure is calculated.
55	Total incoming waste. These are the amounts arriving at Acque Industriali's plants at Pagnana, Pontedera, Poggibonsi and San Jacopo. The figure is calculated.
56	Incoming sludge. Represents the quantity of incoming sludge at Acque Industriali's plants at Pagnana, Pontedera, Poggibonsi and San Jacopo. The figure is measured with an uncertainty of ± 1%.
57	Liquid waste. Represents the quantity of liquid waste coming into the Pagnana and Pontedera plants. The figure is calculated.
58	Sewage and other waste. Represents the quantity of sewage and other non-hazardous waste. The figure is calculated.
59	Leachate Represents the quantity of leachate coming into the Pagnana and Pontedera plants. The figure is measured with an uncertainty of ± 1%.
60	Ammonium Sulphate produced. Represents the quantity of quality of Ammonium Sulphate produced at the Pagnana and Pontedera plants. The figure is estimated.
61	Water treated before discharging at the Pontedera, Pagnana, Poggibonsi and San Jacopo plants. Some of these also include water that is consumed for industrial and/or civil use inasmuch as distinct flow meters before discharge are not always present. At San Jacopo, the water that is produced is input into the biological treatment plant of Acque SpA.
62	Total incoming waste. They are the quantities arriving at the Berg plant. The figure is calculated.
63	Solid incoming waste. They are the quantities arriving at the Berg plant. The figure is calculated.
64	Liquid incoming waste. They are the quantities arriving at the Berg plant. The figure is calculated.

PRODUCTS – WATER SEGMENT

item no.	explanation – comment
65	Total drinking water collected from the environment or from other systems and fed into the aqueduct systems. This is the total amount of water collected from the following Group Companies: Acea Ato 2, Acea Ato 5, Gesesa, GORI, AdF, Acque, Publiacqua, Umbra Acque. The figure is calculated.
66	Total drinking water supplied and invoiced to the respective clients by the Companies listed under line number 60. The figure is estimated.
67	Total drinking water collected from the environment or from other systems and fed into the aqueduct systems. This is the sum of the water taken from the Companies Acea Ato 2, Acea Ato 5, GORI, Gesesa, AdF. The figure is calculated.
68	Total drinking water supplied and invoiced to the respective clients by the Companies listed under line number 62. The figure is estimated.
69	Total drinking water collected from the environment or other systems by Acea Ato 2 and released into the aqueduct system of the "Ambito Territoriale Ottimale 2" of Lazio Centrale. The figure is measured with an uncertainty of ± 3%.
70	Total amount of drinking water leaving the Acea Ato 2 aqueduct system. This is the sum of drinking water supplied and billed, drinking water authorised and not billed, water exported to other systems and measured drinking water losses. The figure is calculated.
71	Total drinking water supplied and billed (in other words measured at the meters, where present) to the customers connected to the Acea Ato 2 network.
72	Total drinking water authorised and not billed in the Acea Ato 2 network. The figure is estimated.
73	Total amount of drinking water exported to other aqueduct systems by Acea Ato 2. The 2020 figure is estimated and may undergo consolidation after publication.
74	Total Acea Ato 2 drinking water losses. The figure is measured with an uncertainty of ± 3%
75	Water losses - Acea Ato 2 network. This is the amount of water lost in the network distribution, calculated as the water collected from the environment or from other systems and fed into the network, from which the total water leaving the aqueduct system is subtracted.
76	Acea Ato 2 water losses as a percentage is equal to the value of water losses expressed as a percentage of the total withdrawn. They correspond to item M1b of ARERA Resolution 917/17 R/IDR.
77, 78, 79, 80, 81	Respectively: quantity of water collected from the environment and fed into the aqueduct system, leaving the system, supplied and billed, authorised and not billed, exported to other aqueduct systems, by Acea Ato 5.

82	Water losses - Acea Ato 5 network. This is the amount of water lost in the network distribution, calculated as the water collected from the environment or from other systems and fed into the network, from which the total water leaving the aqueduct system is subtracted.
83	Acea Ato 5 water losses as a percentage is equal to the value of water losses expressed as a percentage of the total withdrawn. They correspond to item M1b of ARERA Resolution 917/17 R/IDR.
84, 85, 86, 87, 88	Respectively: quantity of water collected from the environment and fed into the aqueduct system, leaving the system, supplied and billed, authorised and not billed, exported to other aqueduct systems, by Gesesa.
89	Water leaks - Gesesa network. This is the amount of water lost in the network distribution, calculated as the water collected from the environment or from other systems and fed into the network, from which the total water leaving the aqueduct system is subtracted.
90	Gesesa water losses as a percentage is equal to the value of water losses expressed as a percentage of the total withdrawn. They correspond to item M1b of ARERA Resolution 917/17 R/IDR.
91, 92, 93, 94, 95	Respectively: quantity of water collected from the environment and fed into the aqueduct system, leaving the system, supplied and billed, authorised and not billed, exported to other aqueduct systems, by GORI.
96	Water leaks - GORI network. This is the amount of water lost in the network distribution, calculated as the water collected from the environment or from other systems and fed into the network, from which the total water leaving the aqueduct system is subtracted.
97	GORI water losses as a percentage is equal to the value of water losses expressed as a percentage of the total withdrawn. They correspond to item M1b of ARERA Resolution 917/17 R/IDR.
98, 99, 100, 101, 102	Respectively: quantity of water collected from the environment and fed into the aqueduct system, leaving the system, supplied and billed, authorised and not billed, exported to other aqueduct systems, by AdF.
103	Total AdF drinking water losses. The figure is measured with an uncertainty of ± 3%
104	Water losses - Acea AdF network. This is the amount of water lost in the network distribution, calculated as the water collected from the environment or from other systems and fed into the network, from which the total water leaving the aqueduct system is subtracted.
105	AdF water losses as a percentage is equal to the value of water losses expressed as a percentage of the total withdrawn. They correspond to item M1b of ARERA Resolution 917/17 R/IDR.
106	Total treated waste water in the main treatment plants of the following water Companies of the Group: Acea Ato 2, Acea Ato 5, Gesesa, GORI, AdF, Umbra Acque, Publiacqua, Acque. The figure is calculated.
107	Total amount of waste water treated in the main treatment plants of the water companies in the NFS scope: Acea Ato 2, Acea Ato 5, GORI AdF and Gesesa.
108	Total waste water sent to the principal treatment plants of Acea Ato 2 and treated. The total figure is calculated.
109	Total waste water send to the treatment plants and treated by Acea Ato 2, including the quantities treated in the small plants of the municipalities of Rome and in those outside the municipalities of Rome. The total figure is calculated.
110	Total waste water sent to the main treatment plants and treated by Acea Ato 5. The figure is calculated.
111	Total amount of waste water sent to the main treatment plants of GORI and treated. The substantial increase in the quantities treated in the last few years is linked to the management transfer of several treatment plants from the Campania region. In particular, two large treatment plants were transferred in 2021. The total figure is calculated.
112	Total amount of waste water sent to the main treatment plants and treated by AdF. For 2019, this is water treated in treatment plants for a PE >20,000; for 2020-2021 it is the water treated in treatment plants for a PE > 10,000. The figure is calculated.
113	Total amount of waste water used in treatment plants and treated by AdF, including the quantities treated in minor plants.
114	Estimated amount of waste water, for the first time in 2020, used and treated in the main treatment plants of Gesesa and treated. The estimate is based on the value of invoicing in 2020; in 2020 the first flow meters were installed.
115	Number of analytical determinations conducted overall on the drinking water by the main Companies of the Acea Group. The figure is calculated.
116	Number of analytical determinations conducted overall on the waste water by the main Companies of the Acea Group. The figure is calculated.
117	Number of analytical determinations conducted overall on the drinking water by Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa.
118	Number of analytical determinations conducted overall on the waste water by Acea Ato 2, Acea Ato 5, GORI, AdF and Gesesa.
119	Number of analytical determinations conducted overall on the drinking water by Acea Ato 2.
120	Number of analytical determinations conducted overall on the waste water by Acea Ato 2.
121	Number of analytical determinations conducted overall on the drinking water by Acea Ato 5.

122	Number of analytical determinations conducted overall on the waste water by Acea Ato 5.
123	Number of analytical determinations conducted overall on the drinking water by Gesesa.
124	Number of analytical determinations conducted overall on the waste water by Gesesa.
125	Number of analytical determinations conducted overall on the drinking water by GORI.
126	Number of analytical determinations conducted overall on the waste water by GORI.
127	Number of analytical determinations conducted overall on drinking water by Gesesa.
128	Number of analytical determinations conducted overall on waste water by Gesesa.

RESOURCES USED – ENERGY SEGMENT

item no.	explanation – comment
129 = 130 + 131	Total quantity of natural gas used to generate the electricity and heat at the Acea Produzione plants and at the waste-to-energy plants of Acea Ambiente. The figures expressed in normal cubic metres (volume at 0°C and 1 Atm), is measured with an uncertainty of ± 0.5%. Estimated figure.
130	Total quantity of natural gas used in the Tor di Valle power plant.
131	Total quantity of natural gas used by waste-to-energy plants. The figure is measured with an uncertainty of about 2%.
132	Total quantity of diesel used to generate electricity at the Montemartini power plant (turbogas) and for operations at the waste-to-energy plants of Terni and, for a small part, of San Vittore del Lazio. The consumption of the Montemartini power plant is significant during those years when the power plant produces more electricity in order to fulfil the normal scheduled periodic tests, and to conduct extraordinary maintenance. The figure is measured with an uncertainty of ± 2%.
133	Quantity of RDF (Refuse-Derived Fuel) sent for waste-to-energy processing in the San Vittore del Lazio plant. The figure is measured with an uncertainty of ± 1%.
134	Quantity of paper mill pulp sent to waste-to-energy in the Terni plant. The figure is measured with an uncertainty of ± 1%.
135	Amount of biogas produced for the purpose of producing electrical energy. A minimal part is not used and burned in a flame. The figure is measured with an uncertainty of ± 1%.
136	Total water derived from surface resources and aqueducts (as in the case of the hydroelectric power plant of Salisano) for the production of hydroelectric energy. The figure is calculated.
137	Total quantity of water used in the industrial processes. The various contributions are due to: reintegration for losses in the district heating network; various uses in the waste-to-energy plants of San Vittore del Lazio and Terni (of water from aqueducts, wells and recovery of first and second rain recovery). The figure is calculated as the sum of the various contributions.
138	Quantity of aqueduct water used by the Companies included in the energy segment, for civilian/sanitary uses. It is consumption of Acea Produzione and Areti of the waste-to-energy plants and 50% of the consumption of the Holding Company. The figure, calculated, refers to the consumption invoiced.
139	It represents the total quantity of dielectric mineral oil present in the primary and secondary substations. The figure also includes the amount of oil present in the Petersen coils installed in certain primary substations. The data related to the reintegrations is estimated. The total quantity of new dielectric mineral oil released into the production circuit (transformers, capacitors, storage deposits etc.) includes both the Areti and the Acea Produzione data. The figure is estimated.
140	It represents the total quantity of gaseous insulation (SF_6) in the Areti plants. The figure is estimated. The figure referred to the reintegrations, also estimated, represents the total quantity of SF_6 released ex-novo into the production circuit during the year.
141	It represents the total quantity of cooling fluids in operation. The reintegrations represent the quantity of cooling fluids used for the maintenance of the air-conditioning equipment, during which the gas in operation is recovered and replaced with the new one. The data refer to the previous year compared to the year as they are based on ISPRA annual statements following the publication of the *Sustainability Report*. Both figures are calculated by attributing all the gas supplied overall by the Parent Company to the energy segment and the water segment in equal parts (50%).
142	Total chemical substances used in the electrical and thermal generating process in the Acea Produzione power plants and the waste-to-energy plants of Acea Ambiente. The figure is calculated.
143	Quantity of lubricating oils and fats used by Acea Produzione. The figure is measured with an uncertainty of ± 0.5%.
144	The figure matches Item 28.
145	Matches the difference between Items 1 and 2.
146	Electricity consumed by the processes not directly connected to the production phase (offices). The figure is calculated at 50% of the electricity consumed overall by the parent company. The remaining 50% is attributed as consumption to the water area.
147	Consumption of electricity at other sites and plants, including the consumption of the waste-to-energy plants (Terni and San Vittore del Lazio). The figure is estimated.

148	Other uses of the electricity in the energy segment. The figure is calculated.
149	Total electricity consumer by the product systems included in the energy area. The figure is calculated.
150	Total electricity consumed for public lighting in the municipality of Rome. The figure is calculated based on the consistencies of the installations in operation during the year.

RESOURCES USED – ENVIRONMENT SEGMENT

item no.	explanation – comment
Orvieto plant	
151	Total chemical substances used at the Orvieto plant. The figure is calculated.
152	Electricity consumed in the Orvieto plant. The figure is measured with an uncertainty of ± 1%.
153	Total quantity of diesel consumed at the Orvieto plant. The figure is measured with an uncertainty of ± 2%.
154	Quantity of water consumed at the Orvieto plant. It is specified that this resource comes partly from roofs (rainwater) and partly from the riverbed (river water). The figure is estimated.
155	Quantity of water used for civilian purposes in the plant region of Orvieto. It is supplied by tanker trucks since the plant is not connected to the aqueduct. The figure is estimated.
Compost production	
156	Total chemical substances used at the Aprilia, Monterotondo Marittimo and Sabaudia plants. The figure is calculated.
157	Electricity consumed at the Aprilia, Monterotondo Marittimo and Sabaudia plants. The figure is measured with an uncertainty of ± 1%.
158	Total quantity of diesel fuel consumed at the Aprilia, Monterotondo Marittimo and Sabaudia plants. The figure is measured with an uncertainty of ± 2%.
159	Quantity of biogas produced at the new Aprilia and Monterotondo plants. The final objective is to produce electricity. From 2020 production at Monterotondo and Aprilia has practically reached capacity. The figure is measured with an uncertainty of ± 1%.
160	Quantity of water consumed at the Aprilia, Monterotondo Marittimo and Sabaudia plants. The quantities of water recycled are included. The figure is estimated.
161	Quantity of water used for civil purposes in the composting plants of Aprilia, Monterotondo Marittimo and Sabaudia. The value is partially estimated.
Liquid waste disposal and industrial water treatment at Berg and the Bio Ecologia plant	
162	Total chemical substances used at Acque Industriali's plants in Pagnana, Pontedera and Poggibonsi, and at Berg and the Bio Ecologia plant. Any fluctuations that may be evident in the figure from one year to the next depend on the chemical composition of incoming waste. Greater chemical complexity can require a greater consumption of chemicals for treatment prior to disposal. The figure is calculated.
163	Electricity consumed at Acque Industriali's plants in Pagnana, Pontedera, Poggibonsi and San Jacopo, and at Berg and the Bio Ecologia plant. The figure is measured with an uncertainty of ± 1%.
164	Quantity of methane consumed at the Pagnana plant. The figure is measured with an uncertainty of ± 1%.
165	Amount of BTZ (Basso Tenore di Zolfo - Low Sulphur Content) combustible Oil at the Pontedera plant. The figure is measured with an uncertainty of ± 2%.
166	Amount of water consumed at Acque Industriali's plants in Pagnana, Pontedera, Poggibonsi and San Jacopo, and at Berg and the Bio Ecologia plant.
167	Amount of water used for civil purposes at Acque Industriali's plants in Pagnana, Pontedera, Poggibonsi and San Jacopo, and at Berg and the Bio Ecologia plant.

RESOURCES USED – WATER SEGMENT

item no.	explanation – comment
168	The figure represents the sum of the consumption of reagents for the purification and disinfection of water for Acea Ato 2, Acea Ato 5, GORI and Gesesa. In particular, they are sodium hypochlorite, used as disinfectant at the request of the Health Authorities, aluminium polychloride, caustic soda and ozone. The figure is calculated.
169	Total quantity of chemical reagents used by the Company Acea Elabori *to carry out the official duties, namely the analytical checks for the Companies of the Acea Group*. The figure is measured.
170	Total volume of pure gases for analysis, used by Acea Elabori. The figure is measured.
171	It represents the total quantity of cooling fluids in operation. The reintegrations indicate the quantity of cooling fluids used for the maintenance of the air-conditioning equipment, during which the gas in operation is recovered and replaced with the new one. The data refer to the previous year compared to the year as they are based on ISPRA annual statements following the publication of the *Sustainability Report*. Both figures are calculated by attributing all the gas supplied overall by the Parent Company to the energy segment and the water segment in equal parts (50%).

172	Total energy consumed in the water area. The figure is calculated.
173	Electricity used for the drinking water and non-potable water pumping stations. The figure is measured with an uncertainty of ± 1%.
174	Electricity consumed by the processes not directly connected to the production phase (offices). The figure is calculated at 50% of the electricity consumed overall by the parent company.
175	Electricity used by Acea Elabori. It includes all the energy related to the various fields of activity of the Company, not only the analytical laboratory activities. The figure is calculated.
176	This is the amount of drinking water for civil/sanitary uses at the offices of Acea S.p.A. (calculated at 50% of the water consumed overall by the Parent Company) and for Acea Ato 2, Acea Ato 5, GORI and Gesesa. The figure is calculated.
176 A	Quantity of water for process uses in Acea Ato 2 and Acea Ato 5. From 2021, only 1.4% of the quantity produced by Acea Ato 5 is drinking water; the remaining amount is water recovered from treatment plants. The figure is calculated.
177	Total quantity of *chemicals* used in the purification process of waste water including: polyelectrolytes, sodium hypochlorite, iron chloride, lime. The figure is calculated.
178	Total number of reagent kits purchased from the Acea Ato 2 waste water treatment plants for additional controls beyond analytical testing. The use of the kits responds to the need of the laboratories connected to the treatment plants to be able to carry out complex analyses in a simple, fast manner. Acea Ato 2 uses photometers and rapid analysis systems for all the parameters of interest and to perform reliable monitoring of waste water legal limits.
179	Total quantity of lubricating oil and fat used for the equipment of the water area (pumps, centrifuges, motors etc.). The figure is calculated.
180	Electricity used to run the waste water treatment plants and to operate the sewerage network. The figure is measured with an uncertainty of ± 1%.
181	Amount of methane used in the treatment processes (for example in the dryers of Acea Ato 2 and GORI and for the treatment of sludge through thermochemical hydrolysis in the treatment plants of AdF). The figure is measured with an uncertainty of ± 2%.
182	Amount of diesel used in the purification and other (for example in the Ostia desiccator of Acea Ato 2 processes and for water, sewage and purification generators). The figure is measured with an uncertainty of ± 2%.
183	Quantity of petrol used in purification processes and generators. The figure is measured with an uncertainty of ± 2%.
184	Quantity of biogas produced and consumed on site. The figure is measured with an uncertainty of ± 2%.

FUELS USED BY THE GROUP (TRANSPORT AND HEATING)

item no.	explanation – comment
185	Total amount of petrol used for the main Companies of the Acea Group car fleet. Since 2019 the data comes from the calculations of the Group's Energy managers. In 2020, the increase is mainly due to the increase of the number of petrol powered vehicles in GORI and to the increase in consumption in Acea Ato 2. For the conversions from the unit of volume (litres) to that of mass (kg) a density value of 0.73 kg/l was used (source: Defra, conversion factors 2020).
186	Total amount of diesel used for the main Companies of the Acea Group car fleet. Since 2019 the data comes from the calculations of the Group's Energy managers. For the conversions from the unit of volume (litres) to that of mass (kg) a density value of 0.84 kg/l was used (source: Defra, conversion factors 2020). The figure includes the fuel consumed by Aquaser's vehicles.
186 B	Total amount of methane used for the main Companies of the Acea Group car fleet. The data comes from the calculations of the Group's Energy managers.
187	Total amount of LPG (Liquefied Petroleum Gas) used for the main Companies of the Acea Group car fleet. For the conversions from the unit of volume (litres) to that of mass (kg) a density value of 0.55 kg/l was used.
188	Total quantity of diesel used for heating work areas and for the supply of the generators. The figure is measured with an uncertainty of ± 0.5%.
189	Total quantity of natural gas used for heating the work spaces. The figure is measured with an uncertainty of ± 0.5%.
190	Total quantity of LPG (Liquefied Petroleum Gas) used to heat the work spaces. The figure is measured with an uncertainty of ± 0.5%.

EMISSIONS AND WASTE – ENERGY SEGMENT

item no.	explanation – comment
191	Total quantity of carbon dioxide released into the atmosphere as a result of generating thermoelectric energy from fossil fuels and from the waste-to-energy process of SRF and pulper. Includes the equivalent CO_2 estimated on the basis of the replenishment of SF_6 and HCFC refrigerants. Estimated figure.
192	Quantity of carbon dioxide released into the atmosphere by the Acea Produzione power plants. The figure for the year preceding reporting is corrected in the year of publication, after ETS certification. The figure is calculated in accordance with current legislation.

193	Quantity of equivalent CO_2 estimated based on the of SF_6, replenishment, considering that 1 t of this gas has a heating power 23,500 times that of the CO_2 (source: GHG Protocol - IPCC Fifth Assessment Report).
194	Quantity of equivalent CO_2 estimated on the basis of refrigerant fluid replenishments (HCFCs), considering that 1 t of gas has a heating capacity of about 700-2,500 times that of CO_2. The value depends on the specific type of gas (source: GHG Protocol - IPCC Fifth Assessment Report; for gas mixtures the factor is calculated on the primary source). Half of the emissions are allocated to the energy segment and half to the water segment, as is the case for the quantities of refrigerant fluids (HCFCs). The figure coincides with item No. 249. For 2021, the figure is zero as there were no reintegrations in the year.
195	Quantity of carbon dioxide released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure for 2020 was recorded following the issue of the ETS certificate. The figure is measured.
196	Total quantity of nitrogen oxides (NO + NO_2) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels, and from SRF and waste-to-energy processes. Their presence in traces of the emissions is due to undesired secondary reactions which occur at high temperature between the nitrogen and the oxygen of the air. The figure is calculated.
197	Total quantity of nitrogen oxides (NO + NO_2) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels in the Acea Produzione power plants. The figure is calculated.
198	Quantity of nitrogen oxides (NO + NO_2) released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
199	Total quantity of carbon oxide (CO) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels and the waste-to-energy process. The existence of the pollutant in the emissions is due to incomplete fuel reaction and represents a symptom of deterioration in the performance of the combustion reaction. The figure is calculated.
200	Total quantity of carbon oxide (CO) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels in the Acea Produzione power plants. The figure is calculated.
201	Quantity of carbon oxide (CO) released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
202	Total quantity of sulphur dioxide (SO_2) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels and from the waste-to-energy process of SRF and paper mill pulp. The use of methane and diesel with low sulphur con- tent in the power plants enables this type of emission to be contained. The figure is calculated.
203	Quantity of sulphur oxide (SO_2) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels in the Acea Produzione power plants. The figure is calculated.
204	Quantity of sulphur dioxide (SO_2) released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
205	Total quantity of powders (microscopic particles with average aerodynamic diameter equal or less than 10 thousand of a millimetre) released into the atmosphere as a result of generating thermoelectric energy from fossil fuels and from the SRF and pulper waste-to-energy processes. Basically, it is amorphous unburned carbon, with traces of other compounds of various composition, obtained as sub-product of the combustion when it achieved completely. The figure is calculated.
206	Quantity of powders released into the atmosphere as a result of generating thermoelectric energy from fossil fuels in the Acea Produzione power plants. The figure is calculated.
207	Quantity of powders released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
208	Quantity of hydrochloric acid (HCl) released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
209	Quantity of hydrofluoric acid (HF) released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
210	Quantity of organic carbon released into the atmosphere by the Acea Ambiente waste-to-energy plants. The figure is calculated.
211	Total quantity of waste water, treated, resulting from the thermoelectric energy production activities. The figure is measured with an uncertainty of ± 2%.
212	Total quantity of hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by the main Companies of the Group excluding the waste-to-energy area. The 2020 figure decreased due to the Covid-19 pandemic and in particular because no HV/MV transformers were changed. The figure is measured with an uncertainty of ± 2%.
213	Hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by the waste-to-energy area. It is essentially light ashes and slag resulting from the incineration processes. The figure is measured with an uncertainty of ± 2%.
214	Total quantity of non-hazardous waste (pursuant to Italian Legislative Decree no. 152/06) disposed of by the main Companies of the Group excluding the waste-to-energy area. The figure is measured with an uncertainty of ± 2%.
215	Non-hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by the waste-to-energy area. It is essentially heavy ashes and slag resulting from the incineration processes. The figure is measured with an uncertainty of ± 2%.

EMISSIONS AND WASTE – ENVIRONMENT SEGMENT

item no.	explanation – comment
216	Hazardous waste (pursuant to Legislative Decree no. 152/06) produced by the Aprilia, Monterotondo Marittimo and Sabaudia plants. The increase is due to the almost fully operational restart of the Monterotondo Marittimo and Aprilia plants. The figure is calculated.
217	Non-hazardous waste (pursuant to Legislative Decree no. 152/06) produced by the Aprilia, Monterotondo Marittimo and Sabaudia plants. The increase is due to the almost fully operational restart of the Monterotondo Marittimo and Aprilia plants. The figure is calculated.
218	Hazardous waste (pursuant to Legislative Decree no. 152/06) produced by the Orvieto plant. The figure is measured with an uncertainty of ± 2%.
219	Non-hazardous waste (pursuant to Legislative Decree no. 152/06) produced by the Orvieto plant. The figure is measured with an uncertainty of ± 2%.
220	Hazardous waste (pursuant to Italian Legislative Decree No. 152/06) produced by the Bio Ecologia plant. The figure is measured with an uncertainty of ± 2%.
221	Non-hazardous waste (pursuant to Italian Legislative Decree No. 152/06) produced by the Bio Ecologia plant. The figure is measured with an uncertainty of ± 2%.
222	CO_2 emissions from the composting plants and Orvieto and related to the ancillary services of the waste-to-energy plants, not strictly related to the production of electricity. They also include non-biogenic emissions from the combustion of biogas produced on site. The figure is measured with an uncertainty of ± 2%.
223, 224, 225, 226	They are powders, Total Organic Compounds (COT), ammonia and volatile inorganic substances (SIV) issued at the Monterotondo Marittimo plant. The other plants provide only concentration values, with no regulatory obligation to calculate absolute values. The values in mg/l of all plants are well below official limits. The increase of the data is due to the almost fully operational restart of the Monterotondo Marittimo plant. The data is calculated starting from the measurement of the concentrations.
227	CO_2 emissions from the Bio Ecologia plant. The figure is calculated.
228	Hazardous waste (pursuant to Italian Legislative Decree No. 152/06) produced by the Pagnana plant. The figure is calculated.
229	Non-hazardous waste (pursuant to Legislative Decree no. 152/06) produced by the Pagnana, Pontedera, Poggibonsi and San Jacopo plants. The figure is calculated.
230	Emissions of CO_2 of the Pagnana and Pontedera plants relate to the consumption of fuels. The figure is calculated.
231	Hydrogen Sulphide emissions from the Pagnana and Pontedera plants. The Pagnana figure is measured. The Pontedera figure is estimated taking into account the maximum value that can be recorded in the plant.
232	Ammonia emissions at the Pagnana and Pontedera Plants. The Pagnana figure is measured. The Pontedera figure is estimated taking into account the maximum value that can be recorded in the plant.
233	Hazardous waste (pursuant to Italian Legislative Decree No. 152/06) produced by the Berg plant. The figure is measured with an uncertainty of ± 2%.
234	Hazardous waste (pursuant to Italian Legislative Decree No. 152/06) produced by the Berg plant. The figure is measured with an uncertainty of ± 2%.
235	Emissioni di CO_2 emissions related to the Berg plant. The figure is calculated.
236	Dust emitted by the Berg plant. The data is calculated starting from the measurement of the concentrations.
237	Organic carbon emitted by the Berg plant. The data is calculated starting from the measurement of the concentrations.
238	Hydrogen sulphide and mercaptans emitted by the Berg plant. The data is calculated starting from the measurement of the concentrations.
239	Ammonia emissions from the Berg plant. The data is calculated starting from the measurement of the concentrations.

EMISSIONS AND WASTE – WATER SEGMENT

item no.	explanation – comment
240	Total quantity of purification sludge disposed of by Acea Ato 2, Acea Ato 5, GORI, Gesesa and AdF. Non-hazardous waste. The figure is measured with an uncertainty of ± 2%.
241	Total quantity of purification sludge disposed of by Acea Ato 2. The figure is measured with an uncertainty of ± 2%.
242	Total quantity of purification sludge disposed of by Acea Ato 5. The figure is measured with an uncertainty of ± 2%.
243	Total quantity of purification sludge disposed of by GORI. The strong increase in the quantities produced since 2019 is due to the progressive transfer to GORI of the management of treatment plants previously managed by the Campania Region. The figure is measured with an uncertainty of ± 2%.
244	Total quantity of purification sludge disposed of by Gesesa. The figure is measured with an uncertainty of ± 2%.

245	Total quantity of purification sludge disposed of by AdF. The figure is measured with an uncertainty of ± 2%.
246	Total quantity of sand and slabs disposed of by Acea Ato 2, Acea Ato 5, GORI, Gesesa and AdF. The figure is measured with an uncertainty of ± 2%.
247	Total quantity of sand and slabs disposed of by Acea Ato 2. The figure is measured with an uncertainty of ± 2%.
248	Total quantity of sand and slabs disposed of by Acea Ato 5. The figure is measured with an uncertainty of ± 2%.
249	Total quantity of sand and slabs disposed of by GORI. The increase in the quantities produced is due to the progressive transfer to GORI of the management of treatment plants previously managed by the Campania Region. The figure is measured with an uncertainty of ± 2%.
250	Total quantity of sand and slabs disposed of by Gesesa. The figure is measured with an uncertainty of ± 2%.
251	Total quantity of sand and slabs disposed of by AdF. The figure is calculated.
252	Amount of other process waste, excluding sludge, sand and slabs. The figure is measured with an uncertainty of ± 2%.
253	Total quantity of hazardous waste (pursuant to Legislative Decree no. 152/06) including that disposed of by Acea Ato 2, Acea Elabori, Acea Ato 5, and a portion of waste produced by the Parent Company (attributed in equal parts to the energy and water segments). The figure is calculated.
254	Total quantity of hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by Acea Elabori. The figure is measured with an uncertainty of ± 2%.
255	Total quantity of hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by Acea Ato 2. The figure is measured with an uncertainty of ± 2%.
256	Total quantity of hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by Acea Ato 5. The figure is measured with an uncertainty of ± 2%.
257	Total quantity of hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by GORI. The figure is measured with an uncertainty of ± 2%.
258	Total quantity of hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by AdF. The figure is measured with an uncertainty of ± 2%.
259	Proportion of hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by the Parent Company and attributed to the water segment. The same proportion was attributed to the energy segment.
260	Total quantity of non-hazardous waste (pursuant to Legislative Decree no. 152/06) including that disposed of by Acea Ato 2, Acea Ato 5, GORI Gesesa and AdF, and a portion of waste produced by the Parent Company (attributed in equal parts to the energy and water segments). The figure is calculated.
261	Total quantity of non-hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by Acea Ato 2 and Acea Elabori. The increase in the quantities in 2020 is mainly due to the launching of filters at the drinking water plant of Pescarella. The figure is calculated.
262	Total quantity of non-hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by Acea Ato 5. The figure is estimated.
263	Total quantity of non-hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by GORI. The figure is estimated.
264	Total quantity of non-hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by Gesesa. The figure is estimated.
265	Total quantity of non-hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by AdF. The figure is estimated.
266	Proportion of non-hazardous waste (pursuant to Legislative Decree no. 152/06) disposed of by the Parent Company and attributed to the water segment. The same proportion was attributed to the energy segment.
267	Total amount of carbon dioxide emitted by dryers and generators. The figures are calculated using the consumption of fuel and the emission coefficients (ISPRA data).
268	Quantity of equivalent CO_2 estimated on the basis of refrigerant fluid replenishments (HCFCs), considering that 1 t of gas has a heating capacity of about 700-2,500 times that of CO_2. The value depends on the specific type of gas (source: GHG Protocol - IPCC Fifth Assessment Report; for gas mixtures the factor is calculated on the primary source). Half of the emissions are allocated to the energy segment and half to the water segment, as is the case for the quantities of refrigerant fluids (HCFCs). The figure coincides with item No. 194. For 2021, the figure is zero as there were no reintegrations in the year.

CO_2 EMISSIONS FROM TRANSPORT AND HEATING

item no.	explanation – comment
269	Total quantity of carbon dioxide issued by the motor pool of the Acea Group. The three-year figure is calculated using the consumption of fuel and the emission coefficients (ISPRA 2021). The figure is calculated.
270	Total quantity of carbon dioxide emitted by the systems used to air-condition the work spaces. The figure is calculated.

OPINION LETTER OF THE INDEPENDENT AUDITOR

Independent auditor's report on the consolidated non-financial statement

pursuant to article 3, paragraph 10, of Legislative Decree no. 254/2016 and article 5 of CONSOB regulation no. 20267

To the Board of Directors of Acea SpA

Pursuant to article 3, paragraph 10, of Legislative Decree No. 254 of 30 December 2016 (the "Decree") and article 5 of CONSOB Regulation No. 20267/2018, we have undertaken a limited assurance engagement on the consolidated non-financial statement of Acea SpA and its subsidiaries (the "Group") for the year ended 31 December 2021 prepared in accordance with article 4 of the Decree and approved by the Board of Directors on 14 March 2022 (the "NFS").

Our review does not extend to the information set out in the paragraph: Information required by the European Taxonomy of the NFS, required by article 8 of European Regulation 2020/852.

Responsibilities of the Directors and the Board of Statutory Auditors for the NFS

The Directors are responsible for the preparation of the NFS in accordance with articles 3 and 4 of the Decree and with the "Global Reporting Initiative Sustainability Reporting Standards" defined in 2016 and updated to 2020, by the GRI - Global Reporting Initiative (the "GRI Standards"), identified by them as the reporting standard.

The Directors are also responsible, in the terms prescribed by law, for such internal control as they determine is necessary to enable the preparation of a NFS that is free from material misstatement, whether due to fraud or error.

Moreover, the Directors are responsible for identifying the content of the NFS, within the matters mentioned in article 3, paragraph 1, of the Decree, considering the activities and characteristics of the Group and to the extent necessary to ensure an understanding of the Group's activities, its performance, its results and related impacts.

Finally, the Directors are responsible for defining the business and organisational model of the Group and, with reference to the matters identified and reported in the NFS, for the policies adopted by the Group and for the identification and management of risks generated and/or faced by the Group.

The Board of Statutory Auditors is responsible for overseeing, in the terms prescribed by law, compliance with the Decree.

PricewaterhouseCoopers SpA

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Auditor's Independence and Quality Control

We are independent in accordance with the principles of ethics and independence set out in the Code of Ethics for Professional Accountants published by the International Ethics Standards Board for Accountants, which are based on the fundamental principles of integrity, objectivity, competence and professional diligence, confidentiality and professional behaviour. Our audit firm adopts International Standard on Quality Control 1 (ISQC Italia 1) and, accordingly, maintains an overall quality control system which includes processes and procedures for compliance with ethical and professional principles and with applicable laws and regulations.

Auditor's responsibilities

We are responsible for expressing a conclusion, on the basis of the work performed, regarding the compliance of the NFS with the Decree and the GRI Standards. We conducted our work in accordance with International Standard on Assurance Engagements 3000 (Revised) – Assurance Engagements Other than Audits or Reviews of Historical Financial Information ("ISAE 3000 Revised"), issued by the International Auditing and Assurance Standards Board (IAASB) for limited assurance engagements. The standard requires that we plan and apply procedures in order to obtain limited assurance that the NFS is free of material misstatement. The procedures performed in a limited assurance engagement are less in scope than those performed in a reasonable assurance engagement in accordance with ISAE 3000 Revised, and, therefore, do not provide us with a sufficient level of assurance that we have become aware of all significant facts and circumstances that might be identified in a reasonable assurance engagement.

The procedures performed on the NFS were based on our professional judgement and consisted in interviews, primarily of company personnel responsible for the preparation of the information presented in the NFS, analyses of documents, recalculations and other procedures designed to obtain evidence considered useful.

In detail, we performed the following procedures*:*

1. analysis of the relevant matters reported in the NFS relating to the activities and characteristics of the Group, in order to assess the reasonableness of the selection process used, in accordance with article 3 of the Decree and with the reporting standard adopted;
2. analysis and assessment of the criteria used to identify the consolidation area, in order to assess their compliance with the Decree;
3. comparison of the financial information reported in the NFS with the information reported in the Group's consolidated financial statements*;*
4. understanding of the following matters:
   a. business and organisational model of the Group with reference to the management of the matters specified by article 3 of the Decree;
   b. policies adopted by the Group with reference to the matters specified in article 3 of the Decree, actual results and related key performance indicators;
   c. key risks generated and/or faced by the Group with reference to the matters specified in article 3 of the Decree.

   With reference to those matters, we compared the information obtained with the information presented in the NFS and carried out the procedures described under point 5 a) below;
5. understanding of the processes underlying the preparation, collection and management of the significant qualitative and quantitative information included in the NFS.

In detail, we held meetings and interviews with the management of Acea SpA and we performed limited analyses of documentary evidence, to gather information about the processes and procedures for the collection, consolidation, processing and submission of the non-financial information to the function responsible for the preparation of the NFS.

Moreover, for material information, considering the activities and characteristics of the Group:

- at a group level,
  a) with reference to the qualitative information included in the NFS, and in particular to the business model, the policies adopted and the main risks, we carried out interviews and acquired supporting documentation to verify its consistency with available evidence;
  b) with reference to quantitative information, we performed analytical procedures as well as limited tests, in order to assess, on a sample basis, the accuracy of consolidation of the information.
- for the following companies, Acea Spa and Acquedotto del Fiora SpA, which were selected on the basis of their activities, their contribution to the performance indicators at a consolidated level and their location, we carried out remote visits during which we met local management and gathered supporting documentation regarding the correct application of the procedures and calculation methods used for the key performance indicators.

Conclusions

Based on the work performed, nothing has come to our attention that causes us to believe that the NFS of Acea Group for the year ended 31 December 2021 is not prepared, in all material respects, in accordance with articles 3 and 4 of the Decree and with the GRI Standards.

Our conclusions on the NFS of Acea Group do not extend to the information set out in the paragraph: Information required by the European Taxonomy of the NSF, required by article 8 of European Regulation 2020/852.

Rome, 6 April 2022

PricewaterhouseCoopers SpA

Signed by

Luigi Necci
(Partner)

Paolo Bersani
(Authorized signatory)

This report has been translated from the Italian original solely for the convenience of international readers. We have not performed any controls on the NFS 2021 translation