

Growing and creating value

RELEVANT TOPICS



Economic development and value for local areas



Competitiveness on the market



Innovation and smart cities



CREATING AND DISTRIBUTING VALUE

Iren Group aims to create value over time for its stakeholders, beginning with its shareholders, through a sustainable growth strategy (see page 28) and appropriate management policies. This is complemented by the Group's constant commitment to ensuring the transparent, complete and timely disclosure of the results achieved.

Iren Group's economic results show, compared to 2019, a 12.8% contraction in revenues due to the reduction in energy demand, as a result of the Covid-19 health emergency, as well as a significant drop in commodity prices, against an increase in Gross Operating Profit (EBITDA) of 1.1%, and a substantial alignment of the profit attributable to the Group. The economic effects of the Covid-19 emergency led to a reduction in revenue, mainly in the energy business areas, with a negative impact on EBITDA of about 15 million Euro and an increase of about 25 million Euro in additions to the allowance for doubtful accounts (more details in the Consolidated Financial Statements).

Economic indicators	u.m.	2020	2019
Revenue	€/mln	3,725	4,275
Gross Operating Profit (EBITDA)	€/mln	927	917
Operating result (EBIT)	€/mln	416	452
Profit attributable to the Group	€/mln	235	237
Total capitalisation	€/mln	2,737	3,582
Dividend per share	€	0.095 ⁽¹⁾	0.0925

⁽¹⁾ Proposal by the Board of Directors.

Net financial debt as of 31/12/2020 amounted to 2,948 million Euro, up from 2,706 million Euro as of 31/12/2019, and was mainly affected by the consolidation of the new companies acquired by the Group and the increase in investments made which, during the year, amounted to approximately 685 million Euro (+30.8% compared to 2019) and were allocated to development measures in the various business sectors, ensuring an important contribution to local communities.

Investments (millions of Euro)	2020	2019 ⁽¹⁾
Generation and district heating	171.6	67.4
Networks (electricity, gas, water cycle)	293.9	297.1
Market	50.6	40.8
Environmental Services	116.3	76.4
Others	52.8	42.3
TOTAL	685.2	524.0

⁽¹⁾ The breakdown has changed as a result of the reclassification of investments.

The economic-financial performance shows – thanks to a business portfolio with a prevalence of regulated activities and a significant increase in investments – a strong focus on developing infrastructures serving the development of the economic systems of the areas served. The multi-utility and predominantly regulated business profile has ensured the Group's high resilience to the Covid-19 emergency demonstrated, as outlined above, by reduced economic and financial

effects. Furthermore, as defined also in the Business Plan perspective, particular attention is paid to environmental sustainability, digital transformation, and innovation in synergy with the companies and institutions in the reference area. By hiring around 612 new employees (745 in 2019), the Group continued the important generational turnover process started in 2018, focused on acquiring the skills needed for digital transformation and development in new business lines.

The focus of the strategic guidelines on sustainability profiles influences the planning of future multi-year investments. These same profiles are part of the principles of the Code of Ethics that Group companies are required to comply with when making investments: creating value and carrying out projects and actions that are useful for increasing the Company's assets, management and technological values, the return for shareholders, and the economic and social well-being for employees and the community. In the planning processes, the Group pays particular attention to the variables, emerging from economic and industrial scenarios of the sector, able to guarantee the medium and long-term availability of energy. Scenarios are analysed by **continuously monitoring industrial, economic, financial and sustainable development dynamics**.

In order to plan the development of production capacity, the Group considers the medium-term scenarios referred to the electricity and gas markets, the evolution of the Capacity Market, CO₂ and Energy Efficiency Certificates. Development investments in district heating networks and regulatory scenarios favouring growth of renewable energies are also taken into account. The maintenance plans, aimed at ensuring high levels of efficiency and preventing faults, are designed to minimise the impact of unavailabilities on the Group's results. The plans have a multi-year time horizon and are defined in consideration of the provisions in place for each type of plant.

The energy production facilities of Iren Group are efficient and adequately sized, thanks to the significant investments in new production capacity and in increasing the efficiency of the existent one. As regards planned production capacity, 75% is supplied by cogeneration and thermoelectric plants, 22% from hydroelectric plants and 3% from other plants (waste-to-energy plants, photovoltaic, treatment plants).

In order to ensure that adequate production and reliability standards are maintained, the Group adopts advanced management and maintenance policies (predictive and preventive). It focuses on innovation, both by increasing the efficiency and flexibility of its plants and by developing projects targeted at the energy efficiency of the system (flexibility of combined-cycle plants, management of waste-to-energy plants to seize opportunities of district heating development, installation of heat storage systems, design of mini hydro plants). In this domain, following the award of the auction on 10 December 2020 for the assignment of the "fast reserve" service, work began on the construction of electrical storage systems at the Torino Nord, Moncalieri and Turbigo power plants that will make it possible to increase reserve power and producible energy.

Medium and long-term gas availability is planned and ensured through the combined management of several sources: multi-year foreign supply contracts, availability of foreign transportation capacity that the Group can use on an event-driven basis, annual availability of storage capacity, and wholesale supply contracts. The combined

use of these sources allows for natural gas demand to be met even during particularly severe periods.

Planning is fundamental for guaranteeing the continuity, reliability and security of the integrated water service. This objective is overseen by the resource need analysis for the various areas, also in relation to their possible evolution and seasonality, and the attainment of diversion concessions that are proportional to the identified needs. This is complemented by the planning and management of ordinary and unscheduled maintenance, the renovation of plants and networks to contain water and sewerage network leaks, the adoption of remote control systems and the automation of plants, an emergency service, analytical checks and treatments to guarantee compliance with the qualitative requirements of the water supplied and the waste discharged from treatment plants.

Regarding waste management, at a plant level the production capacity and any revamping needs are assessed and planned. The planning of investments takes into account these evaluations and the planned objectives for the greater enhancement of the waste resource in terms of material and energy.

The Group has adopted a planning tool (medium voltage distribution network master plan) to guarantee the reliability of its electricity distribution network that defines the renovation, upgrading and extension rules and methods, for the main high-to-medium voltage transformer plants and networks. The renovation and updating plan for the main plants, in addition to the gradual substitution of parts of obsolete plants, includes quality and technical improvements to the grid layout and its adaptation to future load increases. In order to guarantee service levels and the reliability of plants, the plan is reviewed and updated in the event that new significant supply requests or reliability and stability issues emerge for the medium voltage network or for the main plants. The management methods are assessed on the basis of the time schedules for the design and implementation of works and in correspondence with technical standards put in place for the construction of new main substations, by verifying and reviewing the projects established in the time schedules. The effectiveness and quality of the interventions are assessed with the maintenance and/or improvement of service level indicators established by ARERA.

In gas distribution, the plan aims to contain leaks, which is the main objective for the safety, quality, efficiency and continuity of service. Regular ordinary and unscheduled maintenance and the renovation of plants and networks, scheduled leak searches, the addition of gas odorants upon receipt by the national transport network, the maintenance of efficient and effective cathodic protection systems and the use of distributed monitoring systems thanks to the remote control, as well as constant supervision of plants and networks by highly qualified and constantly updated staff, all contribute to achieving this objective.

In the analysis of scenarios in the planning phase, the Group also considers the impact produced by **climate change trends**: variations in temperature distributions – which impact the consumer dynamics of district heating, gas, water and electricity – and extremes of weather phenomena, such as drought and floods. The latter determine, in particular, effects on the hydrology of the hydroelectric plants and water distribution systems, with the associated economic implications, and also constitute factors of attention given the consequences that these may have on the Group's assets and on the

planning of the availability and maintenance scheduled for thermoelectric power plants. For these reasons, the risks associated with climate change and natural and catastrophic phenomena occupy a significant position in the map of the Group's risks. The Risk Management Department considers these risks in its insurance programme.

The financial or strategic impacts on the Group's business are mainly analysed in the Group Risk Map, which was subject to a project entailing substantial revision in 2020. The project, considered a strategic and operational risk management tool, led to the identification and quantification of all significant impacts on the business by producing a complete, detailed and integrated Risk Register, which also considers ESG impacts on the impacted risk categories. For each risk category, the Group identified the operational, contractual and insurance mitigation measures that have been implemented, are in progress or have yet to be implemented to reduce the risk profile. This activity also included a specific study of climate change risks, which resulted in developing a specific Risk Policy to manage this category of risks.

The financial implications that the Group constantly monitors are also those arising from the costs associated with the ETS (Emission Trading System) and from its regulatory evolution.

■ CREATION OF ADDED VALUE

Iren Group produces added value in relation to the external resources employed, making efficient use of production factors. Furthermore, in conducting its business, the Group contributes to the economic growth of the social and environmental context in which it operates and produces significant effects in the local areas, especially in relation to the investments made and employment.

The impacts generated by Iren Group on the reference areas contribute to the growth of the economic, social and environmental context

The activities carried out by the Group have a significant economic impact on the areas in which it operates, guaranteeing direct investment and employment and stimulating local allied industries. The investments improve the social and environmental context through improvements made to basic infrastructure (electricity, gas, sewerage and aqueduct networks, treatment plants) and essential services (waste collection and disposal).

Moreover, all of the business areas present significant opportunities for the development of innovative technologies and processes and, consequently, for territorial growth, also in terms of know-how.

The Group contributes to the employment of the area in which it operates and generates added value through actions aimed at increasing professional skills and at consolidating the improvements reached in the level of education.

The Group has no specific local recruitment policy; nevertheless, given the specificity of the Italian labour market, there is a high coincidence between the provinces of residence of employees and their assigned place of work: more than 78% of executives reside in the same region as their place of work.

Iren Group generates opportunities for the development of innovative technologies and processes and for the growth of territorial expertise

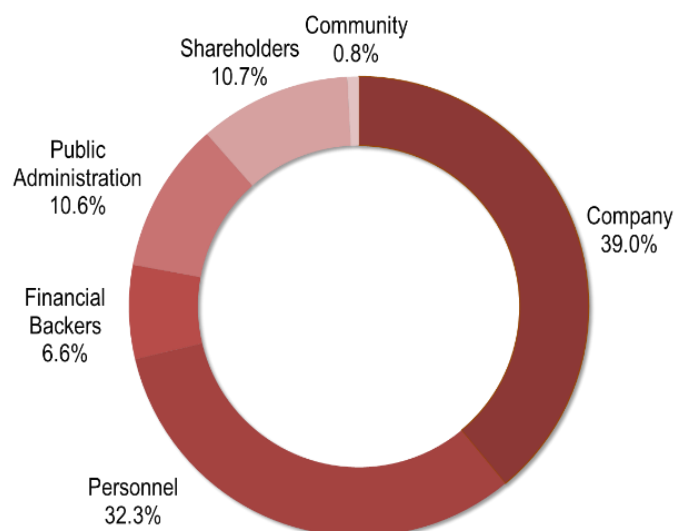
The indicator that highlights the Group's ability to produce value in the area and, at the same time, satisfy the economic interests of its main stakeholders is represented by Added Value, which measures both the economic performance of operations and the ability to create the conditions for distributing wealth to stakeholders.

In 2020, Iren Group generated a total gross Added Value of almost 1,421 million Euro, in line with 2019, which was distributed as follows:

- **39.0% to the Company** (approximately 554 million Euro). This is the share of wealth kept within the Group, inclusive of depreciation and undistributed profits;
- **32.3% to Personnel** (approximately 460 million Euro). This is the share made up of salaries and wages, expenses and other personnel costs;
- **10.6% to the Public Administration** (about 150 million Euro). This is the share distributed in the form of direct and indirect taxes, net of the grants received for the year;

- **6.6% to Financial Backers** (around 94 million Euro). This share includes all the financial charges due by the Group to its creditors;
- **10.7% to Shareholders** (approximately 152 million Euro). This is the share allocated to shareholders in the form of dividends;
- **0.8% to the Community** (more than 11 million Euro). This is the share allocated to local communities through the participation in the development of social, environmental, cultural and sporting events.

DISTRIBUTION OF TOTAL GROSS ADDED VALUE TO STAKEHOLDERS IN 2020



Determination of Added Value (thousands of Euros)	2020	2019
Revenue from goods and services	3,533,854	4,044,715
Change in work in progress, semi-finished products, finished products and goods	-14,159	-2,436
Other revenue	149,434	152,816
Production revenue	3,669,129	4,195,095
Costs for raw materials, consumables, supplies and goods	-1,007,514	-1,408,379
Cost for services	-1,253,105	-1,411,904
Other expenses	-20,677	-29,765
Capitalised expenses for internal work	38,891	33,445
Provisions for risks	-70,651	-61,850
Intermediate production costs	-2,313,056	-2,878,453
Gross Added Value	1,356,073	1,316,642
Non-core and non-recurring items	64,739	104,673
Net profit from discontinued operations	0	0
Total gross Added Value	1,420,812	1,421,315

TAXES AND DUTIES

Iren Group, while respecting and independently making its own management decisions and in line with its sustainability policy, pursues a tax strategy inspired by principles of honesty, correctness and regulatory compliance, characterised by collaborative and transparent behaviour towards the tax authorities and third parties, in order to minimise any substantial impact in terms of risk, be it fiscal or reputational.

To this end, Iren's Board of Directors has issued the document **Fiscal Strategy**, also referred to in the Code of Ethics, which defines the objectives and the approach adopted by the Group in managing the tax variable. The document is made available to all stakeholders following company regulations and is updated promptly whenever changes occur in the essential elements governed by the document. The Fiscal Strategy establishes the principles of conduct in tax matters, to contain the risk of incurring in the violation of tax regulations or the abuse of the principles and purposes of the tax system, and to ensure the correct and timely determination and

settlement of taxes over time. In accordance with these principles, Iren refrains from implementing tax practices or strategies aimed at abusively eroding the tax base and commits itself not to undertake operations and behaviours and not to establish commercial relations or company structures that are devoid of economic substance and aimed at obtaining undue tax advantages and that are not justified by valid economic reasons, including organisational or managerial reasons, or in any case consistent with social and business ethics objectives. Iren also undertakes to actively pursue prior certainty of its tax positions and to prevent the start of unproductive tax disputes or disputes that, in any case, based on a prognostic assessment, could have an unfavourable outcome (principle of “more likely than not”). Where the tax obligations or cases are considered, based on an objective assessment by management, to be unclear or subject to interpretation or, in any case, have margins of uncertainty, Iren acts in any case with full transparency towards the Tax Authorities, according to the instruments made available by the legal system, to achieve the application of the correct level of taxation.

Iren’s Board of Directors, supported by the Control, Risk and Sustainability Committee, defined the guidelines for the internal control and risk management system, including tax risks, and identified the Chief Executive Officer as the person responsible for directing the fiscal strategy, verifying the functioning of the **Tax Control Framework**, i.e. the tax risk management and control system that Iren has adopted to ensure the submission of accurate tax declarations, the correct application of all tax regulations and, when deemed appropriate, the involvement of the Tax Authority in the case of transactions likely to generate interpretative uncertainties.

The Board of Directors also established the **Tax Risk Management Committee**, which has four permanent members: Risk Management Manager, Tax Risk Manager, CFO and Head of Consolidated Financial Statements and Taxation. The Committee oversees the processes envisaged by the Tax Control Framework with supervisory and control tasks, as well as guiding in the context of monitoring activities, supporting the various players involved, including the Chief Executive Officer and the Tax Risk Manager, in the performance of their respective tasks in a non-binding advisory and propositional capacity. The **Tax Risk Manager** is responsible for monitoring the effectiveness and efficiency of the controls in place to protect against tax risks and periodically reports to the Tax Committee on the activities carried out, their results, and the Tax Control Framework’s adequacy. By identifying and assessing risks and the preparation, in collaboration with the functions involved, of operating procedures of a fiscal nature, the Tax Risk Manager ensures that each control owner is aware of and implements the control measures and confirms the effective application of the procedures. Consistent with the broader system of internal control and risk management, the Tax Control Framework requires that tax risk be managed through the assignment of responsibilities and roles according to three levels of control. The **first level control** is represented by the individual operating lines which, daily, in carrying out the activities for which they are responsible, implement the so-called “line controls”, as defined by company policies and procedures, aimed at ensuring that operating activities are carried out correctly, including those with repercussions on tax compliance. Therefore, the first level of control is carried out by the company management of the individual operating lines, including the Tax and Compliance Department.

The **second level of control** is entrusted to the Tax Risk Manager who, according to the criterion of separation of duties concerning line roles, prepares the annual monitoring plan on tax controls and risks and ensures its execution, identifying any areas for improvement and supporting the control owners in identifying the related corrective actions. Adequate, proportionate and diversified information flows guarantee the circulation of information and ensure that the results deriving from the monitoring activities carried out by the Tax Risk Manager are known at the appropriate company levels.

The **third level control**, entrusted to the Internal Audit Unit, has the objective of verifying the operation and suitability of the internal control and risk management system and identifying anomalous trends and violations of procedures and regulations.

The management of fiscal and tax aspects has been identified as a sensitive activity concerning the tax offences referred to in the Italian Legislative Decree 231/01 that Iren considers potentially applicable in the conduct of business activities. The “Procedure for the management of reports to the Supervisory Body”, approved by the Board of Directors, regulates the methods of communication and management of reports concerning situations of overt or alleged violations of the law, of the principles of the Organisational Model 231 and of the procedures governing sensitive activities at risk of 231-related crimes, along with instruments for implementing the Model itself (for more details on the Model 231, see page 51).

In order to improve communication and collaboration with the Tax Authorities, Iren Group decided to adhere to the “Collaborative Compliance Regime” (Italian Legislative Decree 128/2015), which provides a new scheme of relations between the Revenue Agency and taxpayers inspired by the principles of cooperative compliance already adopted by foreign tax administrations. The main benefits of tax risk management derive from the possibility of joint assessment of any tax risks with the Revenue Agency before the tax return and access to forms of prior appeal with an abbreviated procedure. The Group Companies that meet the requirements of the Revenue Agency for participation in the “Collaborative Compliance Regime” are Iren and Iren Energia, which, on 29 December 2020, applied to join the scheme, for which the phase of dialogue with the Revenue Agency necessary for admission is underway.

Iren has also consolidated a stakeholder involvement process through the Local Committees, representing the main tool for dialogue and discussion between Iren Group and all stakeholders (consumers/customers, employees, suppliers, institutions, shareholders, the environment and local communities).

Lastly, the tax information in the Consolidated Financial Statements and the Sustainability Report is subject to an assurance process by a third party (Independent Auditors).

The income taxes for FY 2020 amount to approximately 100 million Euro (down 10.3% compared to 2019). The effective tax rate is 27.40%.

In 2020, the Group received over 26 million Euro in benefits and grants from the public administration, of which 6.4 million Euro in capital investments.

Taxes and duties paid (millions of Euro)	2020	2019
Government and Region	100.13	111.64
Total direct taxes and duties	100.13	111.64
ATO concession fees	2.54	2.75
Other concession fees	23.87	24.88
Derivation, taxes and licenses (derivation fees and surtaxes)	18.91	18.64
Taxes and duties	25.16	25.14
Total indirect taxes and duties	70.48	71.41
TOTAL	170.61	183.05

RELATIONS WITH INVESTORS AND FINANCIAL BACKERS

Iren Group has always carried out an intense activity aimed at reinforcing the relationship of trust with its shareholders and at increasing the interest and knowledge of Italian and foreign analysts and investors.

The market's strong interest in the Group is confirmed by the intensification of relations and opportunities for contact with analysts and the Group's positive performance, supported by the streamlining process in recent years and the presentation of the Business Plan to 2025. In addition to this, there is the positive effect of the optimisation of Iren's financial profile, through greater recourse to the bond market, compared to the banking channel, confirmed by the issue in 2020 of a bond for 500 million Euro and the Group's fourth Green Bond for 300 million Euro, which contributes to strengthening the strategic vision oriented towards sustainability.

In 2020, 7 brokers were active on the stock with periodic reports: Banca Akros, Banca IMI, Equita, Intermonte, KeplerCheuvreux, Main First and Mediobanca. In December 2020, a research contract was signed with Exane, a globally significant broker.

Relationships with investors have continued as in previous years. The increased interest shown by investors towards the Group has required a greater communication intensity. As in previous years, the roadshow, organised from time to time by different brokers, was the main tool for introducing the Group to Italian and foreign institutional investors, both in terms of equity and credit. In 2020, 20 virtual roadshows and conferences were held in the world's major financial markets (London, Paris, Geneva, Brussels, Luxembourg and Frankfurt). An important innovation compared to previous years was the participation in the Frankfurt conference. During the year, meetings were held with 120 investment funds, for a total of 170 fund managers or analysts. The direct day-to-day contact with the managers of institutional funds and financial analysts that oversee the bond is of particular significance.

In addition to the roadshows, the Group has maintained constant communication with the market using different channels, including quarterly conference calls for the presentation of the results for the period. Furthermore, on 30 September 2020, a live streaming investor

day was organised to present the Business Plan to 2025 to the financial community.

Institutional investors are showing increasing interest in environmental, social and governance topics (ESG). A corporate governance approach able to make the Group efficient, dynamic and stable is a decisive factor in the investment choices of the main players in financial markets. Any economic and financial performance, in fact, must be assessed based on its repeatability or potential for improvement over time and this can only happen thanks to rules of corporate governance in line with best practices. In 2020, Iren identified a number of areas for improvement and launched a project to make the information required by investors even more available. In addition, contacts with ESG investors continued, structuring a transparent and timely dialogue on these matters as well.

IREN SHARE PERFORMANCE

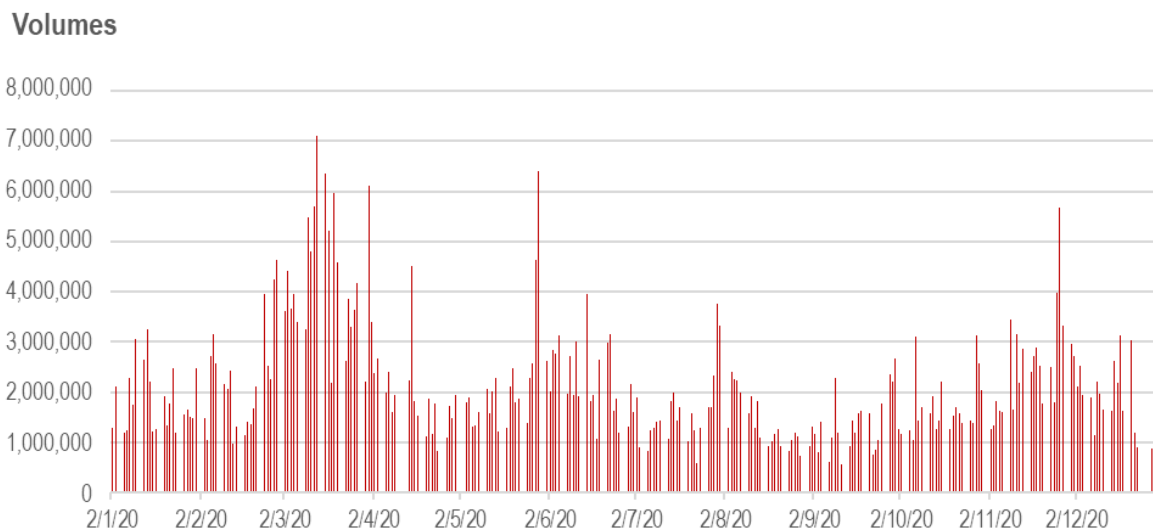
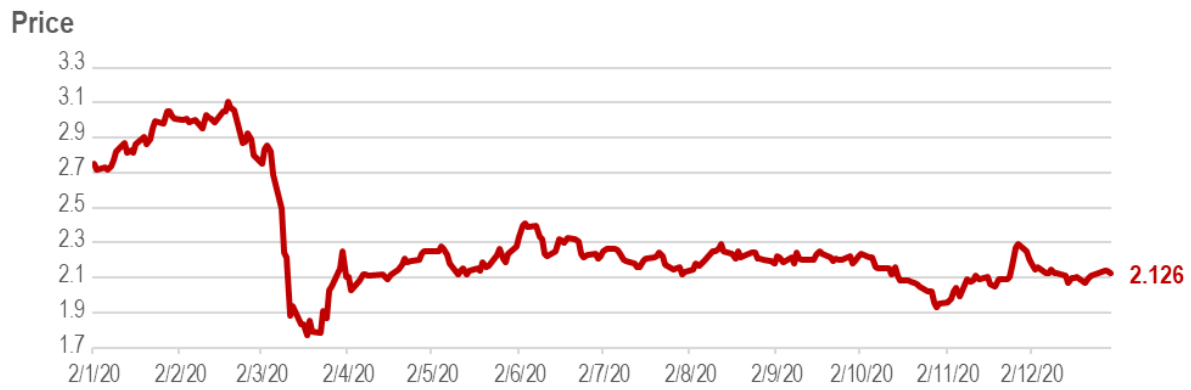
In 2020, the FTSE Italia All Share (the main index of Borsa Italiana) fell by 5.6%, mainly due to the impacts of the Covid-19 pandemic. The first part of the year was characterised by an unfavourable energy scenario, with low commodity prices, which deteriorated further following the health emergency, the resulting lockdown and expectations of a slow economic recovery, despite the recovery plans approved by central banks and governments. This difficult economic situation has affected share price performance in general, which has been affected by negative market expectations from incurring extra costs related to the Covid-19 emergency, lower demand for products and services and a slowdown in investments. In this context, multi-utilities underperformed the FTSE All Share index due to investors' portfolio choices favouring other sectors such as technology. At 31 December 2020, the price of Iren stock stood at 2.126 Euro per share, down 23% compared to the price at the beginning of the year, with average volumes traded during the period amounting to approximately 2.12 million units per day. The average price was 2.301 Euro per share and reached an all-time high (3.106 Euro per share) on 19 February, bringing the Group's market capitalisation to over 4 billion Euro; the lowest price of the year (1.770 Euro per share) was recorded on 18 March.

The Iren share is listed on Borsa Italiana (the Italian Stock Exchange in Milan) and is included in the following financial indexes:

- FTSE Italia All Share, the index that includes all the shares listed on the electronic market of Borsa Italiana, with the exception of micro-capitalised companies;
- FTSE Italia Mid Cap, part of the FTSE Italia All Share that includes the shares of medium-capitalised companies;
- FTSE All Share Capped, which includes all of the companies included on the FTSE MIB, FTSE Italia Mid Cap and FTSE Italia Small Cap indices, the shares of which are weighted;
- FTSE Italia Servizi Pubblici, the sector index that includes the shares of companies that operate within public services.

The Group is present in several stock indices defined as sustainable. There were no instances of fines or penalties for failure to comply with the obligatory regulations and laws for shareholders.

VOLUMES AND PRICE TREND OF IREN STOCK



RELATIONS WITH FINANCIAL BACKERS

The Group has relations with leading Italian and international credit institutions and has access to the capital market in order to research the most suitable forms of financing for its needs and the best market conditions, implementing a management model focused on the resources and financial risk management with the objective of financial optimisation for all of the companies of the Group.

The sustainability of the financial profile has always been one of the key strategic elements for the Group. On 20 October 2020, the Fitch agency confirmed for Iren and its senior unsecured issues the BBB rating, with a stable outlook. The assessment is based mainly on the Business Plan to 2025 which, in continuity with previous years, confirms the prevalence of regulated and semi-regulated activities (over 70% of EBITDA at the end of the Plan). Fitch rates the Group as well positioned within its benchmark indices, with limited impact from the negative market effects of the Covid-19 emergency. In support of the Group's liquidity profile and rating level, as of 31 December 2020, Iren has 300 million Euro of subscribed and

available but undrawn medium/long-term loan facilities and 150 million Euro of committed credit lines of the sustainability-linked revolving credit facility (RCF), in addition to current cash and cash equivalents.

In particular, the new loans were granted to support investment plans and, confirming the trust held by the financial system in relation to the Group's development projects, allow for the suitable balance between financial exposure in the short and long term to be maintained.

As regards capital market transactions relating to the Euro Medium Term Notes (EMTN) Programme of 4 billion Euro at the end of June 2020, on 23 June, Iren carried out a new bond issue for 500 million Euro with an annual gross coupon of 1% and maturity on 1 July 2030, while on 10 December 2020, the fourth bond issue in Green Bond format was completed for 300 million Euro. No additional requirements from Socially Responsible Investors (SRIs) have been identified concerning maintaining the Sustainable Financing Framework commitments.

There were no instances of fines or penalties for failure to comply with the obligatory regulations and laws for financial backers.

IREN BONDS IN CIRCULATION AT 31/12/2020

Bond	ISIN Code	Issue Quantity (€/000)	Amount in circulation (€/000)	Ann. coupon (%)	Maturity at issue (Years)	Maturity date	Issue Price (%)	Rating
Green Bond 2031	XS2275029085	300,000	300,000	0.25%	10	17/01/2031	99.030	BBB
Eurobond 2030	XS2197356186	500,000	500,000	1.00%	10	01/07/2030	98.144	BBB
Green Bond 2029	XS2065601937	500,000	500,000	0.88%	10	14/10/2029	99.345	BBB
Green Bond 2025	XS1881533563	500,000	500,000	1.95%	7	19/09/2025	99.129	BBB
Green Bond 2027	XS1704789590	500,000	500,000	1.50%	10	24/10/2027	98.356	BBB
Eurobond 2024	XS1511781467	500,000	500,000	0.88%	8	04/11/2024	98.974	BBB
Eurobond 2022	XS1314238459	500,000	359,634	2.75%	7	02/11/2022	99.398	BBB
Eurobond 2021	XS1086104681	300,000	181,836	3.00%	7	14/07/2021	99.225	BBB
Private Placement	XS0979548954	260,000	0	4.37%	7	14/10/2020	100.783	n.a.
Private Placement	XS1030889411	100,000	0	3.00%	5	11/02/2019	98.728	n.a.
TOTAL		3,960,000	3,341,470					

SUSTAINABLE FINANCE

The issuance of the **fourth Green Bond** (Fitch BBB rating) (10 December 2020 with maturity 17 January 2031) for **300 million Euro**, reinforces the path undertaken in the field of sustainable finance by Iren, which confirms its position as the first Italian local utility by number of green issues: a total value of 1.8 billion Euro, representing 54% of the Group's bond portfolio. The operation – in addition to the Green Bonds placed in 2017, 2018 and 2019 – registered a very positive response, with **memberships over 2 times the amount offered**, which confirms the strong appreciation of investors towards Iren's credit and Sustainable Financing framework. Green investors have been estimated at about 70% of the amount allocated, up from previous issues, with high quality and broad diversification. The fourth Green Bond was allocated to the refinancing of 20 projects, falling into four categories: **energy efficiency, renewable sources, waste management efficiency and recycling, wastewater treatment**. In particular, these are projects focused on plastic recovery, the development of district heating and the improvement of treatment processes, which give concrete form to the concept of a multicircle economy that characterises Iren's strategy to 2025, in line with the goals of the UN 2030 Agenda (Sustainable Development Goals).

The fourth Green Bond issued has a minimum denomination of 100,000 Euro, pay a gross annual coupon of 0.25% and was placed at an issue price of 99.030 Euro. The effective gross rate of return at maturity is 0.348%, corresponding to a yield of 64 basis points above the 10-year mid-swap rate. The bonds were listed on the regulated market of the Irish Stock Exchange and on the ExtraMOT PRO market of Borsa Italiana in the green instruments segment. This new issue confirmed the Group's strategy of integrating sustainability into its development plans with an increasingly structured approach and adopting procedures dedicated to "green" financial instruments to ensure the necessary transparency for investors.

Iren has also identified additional innovative instruments of sustainable finance such as:

- green energy loan that led, in October 2020, to the finalisation of a new loan facility with the European Investment Bank (EIB) for

100 million Euro, with a 16-year duration, to support the programme (2021-2025) of development and efficiency of the district heating network in the Turin area for a total amount of 197 million Euro. Such projects that qualify as "efficient district heating and cooling" under Directive 2012/27/EU are covered by the EIB's new energy lending policy;

- signing of a loan agreement for 80 million Euro with CEB (Council of Europe Development Bank) to support an investment plan in the water infrastructure of the provinces of Genoa and Parma, providing an efficient and sustainable service in compliance with European directives. Promoting sustainable water resource management is closely aligned with CEB's strategic priorities pursuing the Sustainable Development Goals.

ALLOCATION OF FUNDS

For the Green Bond issued on 10 December 2020 (GB4), the funds were allocated to 20 individual projects identified by Iren according to a correspondence with precise environmental criteria ensured by an external certification body. The use of liquid funds allocated to the refinancing/financing of the selected projects is monitored from the date the Green Bond was issued and until the complete allocation of the net amount of 297,090,000 Euro, within the maximum period of 24 months. 57% of the net proceeds (168,081,288 Euro) was used for refinancing and/or financing investments covered by previous bank lines and bonds. In comparison, the remaining 43% (129,008,712 Euro) will be allocated within 24 months of issue and is included in the liquidity balance as of 31 December 2020, with an allocation constraint to the refunding/funding of eligible projects.

For the Green Bond issued on 14 October 2019 (GB3), 450,408,230 Euro has been allocated as at 31 December 2020, representing 91% of the net proceeds, while the remaining part, amounting to 46,316,770 Euro, is included in the liquidity balance as of 31 December 2020 and will also be allocated according to the limitations in refunding/funding of eligible projects.

Investments concerning the Green Bonds issued in 2017 and 2018 (GB1 and GB2) were also confirmed as of 31 December 2020.

ALLOCATION OF INCOME FROM GREEN BONDS AS AT 31/12/2020⁽¹⁾

Project categories	Green Bond 2031 (GB4)		Green Bond 2029 (GB3)		Green Bond 2025 (GB2)		Green Bond 2027 (GB1)	
	Investments (Euro)	Projects (no.)	Investments (Euro)	Projects (no.)	Investments (Euro)	Projects (no.)	Investments (Euro)	Projects (no.)
Energy efficiency	196,784,859	6	401,705,375	11	247,991,764	4	232,587,446	6
Renewable sources	33,360,992	5	4,263,000	1	134,658,410	5	161,002,995	7
Waste management efficiency and recycling	47,450,547	6	42,617,124	3	7,265,347	1	42,123,504	1
Wastewater treatment	8,393,602	3	40,163,699	4	100,438,533	1	56,066,055	4
Water service efficiency	-	-	4,677,908	1	-	-	-	-
E-mobility	-	-	3,297,894	1	5,290,946	1	-	-
TOTAL ALLOCATED	285,990,000	20	496,725,000	21	495,645,000	12	491,780,000	18
Issue discount	2,910,000		3,275,000		4,355,000		8,220,000	
Residual funds to be allocated	11,100,000							
TOTAL ISSUE	300,000,000	20	500,000,000	21	500,000,000	12	500,000,000	18

⁽¹⁾ The 71 projects indicated in the table include projects common to all four Green Bonds for different years, excluding these projects the total is 44.

The positive environmental impacts generated by the projects funded by the four Green Bonds are outlined by the main indicators shown in the table below.

More information on the Green Bonds and funded projects is available in the relevant section of the gruppoiren.it website.

Project category and main indicators	u.m.	2020	2019	2018	2017
Energy efficiency					
Electricity produced	MWh	3,486,789	3,833,955	3,887,199	3,884,511
Electricity produced from renewables	MWh	0	848	75	45
Primary energy saved	MWh	1,532,645	1,808,508	2,200,496	2,281,239
CO ₂ emissions avoided from non-fossil sources	t	492,287	616,258	636,478	724,744
Thermal energy produced	MWh	1,761,915	1,672,602	1,777,454	1,857,633
Electricity input to the grid	MWh	3,695,140	3,987,352	4,002,396	4,420,350
Network leaks (electricity)	MWh	107,705	168,581	166,866	172,820
Electricity and gas smart meters installed	no.	1,385,339	1,330,716	1,188,480	966,569
Renewable energy					
Primary energy saved	MWh	2,101,596	2,827,848	3,254,066	3,663,699
Electricity produced from renewables	MWh	765,174	777,269	904,438	761,335
Thermal energy distributed	MWh	2,852,617	2,779,773	2,816,307	2,956,143
CO ₂ emissions avoided from non-fossil sources	t	1,074,207	1,320,889	1,371,073	1,581,848
Waste management efficiency and recycling					
Refuse Derived Fuel (RDF)	t	9,429	16,523	2,585	7,886
Sorted waste collected	t	825,674	813,804	788,313	711,910
Unsorted waste treated	t	371,735	415,905	445,411	464,837
Door-to-door collection services – residents served	no.	1,656,415	1,590,536	1,473,268	1,391,087
Plastic sent for recovery	t	59,635	-	-	-
Blupolymer product	t	7,054	-	-	-
Bluair product	t	6,648	-	-	-
CO ₂ emissions avoided	t	102,162	-	-	-
Wastewater treatment					
Equivalent residents served (potential)	no.	627,656	526,528	510,650	290,650
Volumes of water for reuse/Volumes of treated water	%	31%	32%	30%	30%
Wastewater treatment plants	no.	1,310	1,293	1,278	1,122
Sewerage system	km	10,739	10,662	10,606	9,924
Water service efficiency					
Smart meters installed	no.	96,965	51,742	-	-
E-mobility					
CO ₂ emissions avoided from non-fossil sources	t	1,091	789	52	-

ESG INDICES AND RATINGS

Iren Group's decision to place sustainability at the centre of its development is confirmed in its Business Plan to 2025: circular economy, water resources, resilient cities, decarbonisation and people will be at the heart of the Group's agenda, which will invest more than 2.2 billion Euro in sustainability by 2025, to achieve its commitments in line with the United Nations 2030 goals (SDGs – Sustainable Development Goals). This is a tangible commitment that confirms the desire to merge the Group's development with that of the communities, local areas and the environment.

INDICES

ESG indices include company shares with strong sustainability profiles, with the aim of providing socially responsible investors with a method of evaluation based on the premise that companies with sustainable approaches to environmental, social and governance issues outperform their competitors in the long term. Also in 2020, Iren was reported in the STOXX and Bloomberg indices.

RATING

The ESG ratings are considered a strategic tool to support investors and identify risks and opportunities regarding sustainability within their investment portfolio, contributing to the development of active and passive sustainable investment strategies. Iren has been evaluated by various rating agencies.

CDP

CDP Climate Change 2020 analyses performance data for reducing emissions, mitigating climate change and developing a low-carbon economy. Iren achieves the highest A-level recognition for 2020, plus Supplier Engagement Leader Rating (SER) obtained for the involvement of its suppliers in the fight against climate change.

OEKOM

The Oekom Corporate Responsibility Rating comprehensively assesses businesses' sustainability performance and future profitability and identifies the most successful businesses. In the Corporate Responsibility Rating (April 2018), Iren Group was awarded Prime status.

MSCI

MSCI ESG Ratings gave Iren an A rating, against a maximum of AAA.

SUSTAINALYTICS

In the Sustainalytics ESG Risk Rating – which analyses the relevance of environmental, social and governance issues and how the company manages the risks arising from these issues – the Group earned 29.7.

OTHER RATINGS

Furthermore, Iren is rated in the ESG Rating of Vigeo Eiris, the leading social, environmental and governance rating agency in Europe, and the Equileap rating for gender equality.

RESEARCH AND INNOVATION

Technological innovation in Iren Group is central to the strategic choices and the definition of the products and services offered. The Business Plan to 2025 confirms the centrality of innovation that will be expressed in the development of all sectors in which the Group operates, intending to make the Group an example of excellence in the multi-utility sector. In particular, the Plan outlines a strong development according to a "multicircle" approach, where innovation activities are aimed at researching and adopting technologies and processes to support the sustainable development of the reference businesses.

The main research, development and innovation areas in which Iren Group is investing include:

- energy efficiency, applied across multiple levels and assets;
- study of new systems for the recovery of energy losses and an increase in the efficiency of the plants;
- solutions for the production of renewable hydrogen and syngas combined with carbon dioxide capturing;
- thermal energy and electricity storage systems;
- study of business models and analysis of platforms for the implementation of Energy Communities;
- processes for maximising energy and waste material recovery;
- systems for reducing quantity and the recovery of material and/or energy from purification sludge;
- automation and robotics in waste treatment plants;
- Internet of Things ("IoT"), home automation and data intelligence ICT tools;
- optimised management of the integrated water cycle (districtualisation, identification and reduction of network leaks) and instruments in support of sensors in the field;
- detection and removal of pathogens in water samples;
- innovative solutions connected with electric mobility;
- "smart safety" systems for assisting personnel or reporting situations of potential risk;
- "industry 4.0" solutions in support of the personnel involved in plant operation and maintenance activities, for predictive maintenance and monitoring in the field.

Iren Group manages innovation processes through an open innovation model and, consistently, has launched profitable collaborations with universities, research centres, innovation hubs and start-ups. Furthermore, it actively participates in working groups and associations on specific research and development topics and promotes events such as conferences, workshops and hackathons.

2020 was characterised by the continuation of technical activities related to the Group's various co-financed projects and by the development, also in partnership with innovative companies and start-ups, of internal technological projects on the basis of planning which, starting from an analysis of the long-term scenario, is aimed at giving the Group the tools needed to seize the opportunities and mitigate the risks deriving from the evolution of the markets in which it operates.

*Iren Up: over 20 million Euro in three years
to support Italian start-ups
in the cleantech sector*

The activities of **Iren Up**, the **Corporate Venture Capital programme** launched in 2018, continued, with the aim of supporting high-potential Italian start-ups in the cleantech sector, from green technologies to the circular economy, through the provision of a unique service package that may include trials, technical support, legal consultancy, market tests and commercial and/or business agreements. The programme envisages investments of over 20 million Euro for the first three years, with investment tickets ranging from 100,000 Euro to 2 million Euro, depending on the start-up's development phase and requirements. In 2020, Iren Up carried out operations in 2 start-ups in the areas of applied robotics in the waste sector and circular economy.

Due to the Covid-19 emergency in 2020, the usual **Iren Startup Award** event dedicated to the search for start-ups did not take place, but the scouting activity continued through collaboration with international accelerators. The management of equity investments in start-ups in which the Group has invested continued, concluding several supplementary agreements and the disbursement of tranches upon achieving the milestones conceived in these agreements.

Among the initiatives in which Iren has participated, bringing its contribution in terms of process innovation and applied research,

there is the adhesion to the Competence Centres (promoted by the Ministries of Economic Development and Economy) established in Turin ("Competence Industry Manufacturing 4.0 – CIM 4.0") and Genoa ("Competence Centre for the Security and Optimisation of Critical Infrastructures" Association – "START 4.0").

RESEARCH AND INNOVATION PROJECTS

In 2020, Iren actively took part in 20 research and innovation projects for a total multi-year commitment of around 8.8 million Euro, of which half was financed by research and innovation tenders managed by institutions such as the European Union, the Italian State and its bodies and regions (for example, Horizon 2020, MIUR, MATTM, POR FESR, etc.). Over the year, these projects involved investments of around 1,200,000 Euro, of which approximately 730,000 Euro was funded through tenders. These projects actively involve around 90 Group employees from different business areas, and guarantee collaborations with numerous businesses and academic institutions located in almost 200 European cities.

Project	Description
Pump-Heat (European Horizon 2020 programme)	An example of international collaboration with 14 partners from 8 different European countries that aims to introduce innovative solutions to increase the flexibility of major electricity plants in favour of renewable sources. At the power plant in Moncalieri (TO), a pilot plant is being built to test the technologies studied and developed during the project.
Planet (European Horizon 2020 programme)	This project aims at developing technologies and analysis of regulatory constraints in order to make the most efficient use of distribution networks (electricity, gas and heat); Iren Group is involved in the development of a physical pilot, in which a heat pump connected to a thermal storage for heating is tested, capable of modulating the load by arranging the needs of the building with those of the electricity network.
Prelude (European Horizon 2020 programme)	Testing of innovative solutions in the field of building and plant management, maximising the interaction with users to optimize consumption.
Chester (European Horizon 2020 programme)	Development and integration of an innovative Power-to-Heat-to-Power solution to maximise the exploitation of non-programmable electricity Renewable Energy Sources (RES) and thermal RES already combined with district heating systems.
RES-DHC (European Horizon 2020 programme)	Awarded in 2020, it will test programmatic and technical-economic assessment tools, actions to improve policies and regulatory frameworks, as well as innovative dissemination and communication means in 6 European pilot projects to validate their benefits and prepare a set of tools for future projects in the energy field for the increase of renewable sources in district heating and cooling systems.
Marilia (European Horizon 2020 programme)	Started in September 2020, it develops a new low-cost, high-sensitivity, expeditious test for detecting pathogens in water samples, potentially applicable in other sectors such as food, healthcare, and agriculture. The goal is to validate the test – developed to identify a set of bacteria laying the foundations for a subsequent deployment in the field – in the laboratory, with a significant efficiency in speed and cost compared to current analytical practices.
WaterTech (MIUR tender)	Optimised, synergistic and innovative management of Group's assets with trialled ICT architectures enabling a multi-service smart metering system, at both end users and asset level, for the optimised management of the integrated water cycle and the study of innovative technologies for wastewater treatment.
Waterspy (European Horizon 2020 programme)	Concluded in February 2020, it has developed a methodology and a tool to detect the presence of heterotrophic bacteria (Escherichia Coli, pseudomonas aeruginosa and salmonella) in aqueous matrices, highlighting relevant opportunities in the pervasive monitoring of water quality and encouraging the continuation of the optimization and improvement of the device through further activities in the monitoring of viruses in aqueous matrices applicable to the management of Water Safety Plans.
Store&Go (European Horizon 2020 programme)	Concluded in the first quarter of 2020, it implemented three innovative Power-to-Gas (PtG) systems in Germany, Switzerland, and Italy, aimed at identifying and overcoming the technical, economic, social and legal barriers. The project assessed the possibility of integrating the PtG storage system within cutting-edge energy production and distribution systems.
Everywh2ere (European Horizon 2020 programme)	Iren, as a third party, will test a fuel cell skid for electricity production during events/trade fairs (uninterrupted power supply/mobile generator mode).
eVolution2G (EMEUurope Call 2016)	In-depth analysis and on-site tests of Vehicle-to-Grid (V2G), a system in which electric vehicles play a balancing role on electricity networks.
INCIT-EV (European Horizon 2020 programme)	Development and on-site testing of a set of electric vehicle charging infrastructure, hardware and software technologies and business models to drive large-scale adoption of electric mobility: 5 pilot sites in urban and suburban areas will host 7 use cases with the objective of integration with existing ICT, transport, civil and commodities/utilities infrastructures.
Saturno (Bioeconomy Technological Platform – Piedmont Region Call for Tenders)	Validation, on an industrial platform, of the conversion of the organic waste and CO ₂ emissions from cars and industrial processes into biofuel and biochemicals. The project conceives the enhancement of the organic fraction of municipal waste by extracting high added value substances such as hydrogen, carboxylic acids, biofertilizers and biostimulants.

Project	Description
Recovery of material from WEEE (Ministry of the Environment Call for Tenders)	Development of technologies with high replicability and rapid transferable to the industrial world, aimed at optimising the management of waste from electrical and electronic equipment (WEEE) and, in particular, the recovery of polyurethane from refrigerators as secondary raw material and optimising the separation of cement from the carcass of washing machines.
OnlyPlastic (RFCS – 2019)	Substitution of fossil carbon sources (coal, coke, petroleum coke) in the electric arc furnaces of the Feralpi steel plant in Lonato (BS) with densified polymers derived from residues from the treatment of plastic waste.
PolynSPIRE (European Horizon 2020 programme)	Demonstration of a range of sustainable, innovative and cost-effective solutions for the energy and material recovery of post-consumer plastics and industrial waste.
5G-Solutions (European Horizon 2020 programme)	Experimentation – in different on-site, functionalities, potentialities and limits tests – of the 5G network, actively participating to the activities of the “Energy” vertical in the evaluation of the benefits related to the integration and use of the 5G network for the Demand Side Management at the level of regulation of thermal loads and the recharge of electrical vehicles.
Energy shield (European Horizon 2020 programme)	Development of an integrated cyber security platform that can be used by all actors of the energy chain (system operators, distributors, aggregators, producers). Iren Group is taking part as a distributor (through Ireti), supporting the other partners in the definition of specific cyber security tools, carrying out feasibility tests and, where necessary, conducting “offline” field tests on one or more network subsystems (remote control, SCADA, smart meters, etc.).
BestSafe4Iren (Call for Tenders PRIA4.0 – Competence centre CIM4.0)	Increased levels of redundancy, security and interoperability of workers’ safety equipment by integrating it with a LoRa wireless infrastructure and a next-generation DLT patent capable of certifying data from field sensors in a standardised and anonymised manner on blockchain networks to ensure the appropriate level of neutrality needed for operational, regulatory, insurance and legal use. The project will develop a solution that the Group will test on a portion of TRM’s plant and on a portion of the City of Turin’s hillside where Iren operators deal with waste collection.
ENERGYNIUS (POR-FESR 2014-2020 Emilia-Romagna)	Definition of development models that enable Energy Communities and Energy Districts to carry out bidirectional exchanges with energy networks, offering energy and services to the regional/national system. Iren participates as an external partner, providing its point of view on developing the project tools and possibly with pilots in the field.

AMGA FOUNDATION

The AMGA Foundation was established in 2003 with the aim of promoting and organising scientific, educational and cultural initiatives for protecting the environment and water resources and the optimal management of network services. In particular, it looks to increase and disseminate knowledge and understanding about the water cycle and its interactions with the environment, within research and training projects orientated at allowing sustainable management of water resources and promoting economic growth and development of the local areas in which it operates. Furthermore, it is committed to research activities on organisational models of water services and, more generally, public services, in order to assess the possible management options within the various regional scenarios. The skills

acquired are made available by the organisation of training courses and seminars and the publication of technical and educational volumes. The Foundation’s scientific results from projects and collaborations are a valid reference in the water resources, energy and environmental management sectors. In 2020, AMGA undertook such activities by coordinating research projects and promoting wide-ranging cultural and educational activities. The institutional activities carried out by the Foundation also include support of initiatives launched by other organisations aimed at the management of network services and sustainability.

2020 ACTIVITIES

A summary of the activities promoted by the Foundation is provided below.

Areas	Projects
Research	MYRAEE – Myco Recovery of Waste Electronic and Electrical Equipment: research aimed at the selection of new fungal strains able to selectively absorb precious metals and/or rare earths from electronic waste, the definition of the most efficient working conditions and possible pre-treatments (screening, grinding, etc.), the enhancement of the final product obtained (very concentrated solution of one or more metals whose cost on the market is high), the preliminary feasibility study of the scale-up of the process and the raising of awareness of the importance of recycling among stakeholders.
	Reuse of wastewater. Hygiene and sanitation impact analysis: monitoring hygiene and sanitation levels through studies of the microbiological and ecotoxicological characteristics of wastewater from treatment plants, characterised by various disinfection treatments, aimed at its possible reuse for agronomic/industrial purposes. The hygienic and sanitary impact of the wastewater on the receiving bodies of water (surface freshwater and/or sea water) is also evaluated.
	Methods for the optimal management of urban drainage systems based on innovative monitoring of rainfall using IoT Low Power Wide-Area Network technology: study and trial of a new tool for more efficient management of the sewerage systems during extreme weather events, through the development and testing in the Genoa centre area of advanced methods for the elaboration of two-dimensional rainfall intensity maps updated in real-time. Precipitation fields will be calculated on measurements from the Smart Rainfall System (SRS) network consisting of IoT sensors. The results of the research will provide a system that can be repeated in different contexts and refined based on the design data of the monitored sewerage systems.
	Application of Water Safety Plan (WSP) to the water service, methodological and informative aspects for the stakeholders involved: implementing WSP in the integrated cycle by assessing and managing risk in the supply chain of water intended for human consumption. Application of a new methodology in the definition of potential risks.
Research	Indicators of resilience in water distribution systems concerning climate and socio-economic changes: analysis of state of the art to define a methodology for quantifying water distribution systems’ resilience and measuring its variation for climate and socio-economic change scenarios.
	Markets in search of regulation, tenders for gas distribution concessions: theoretic analysis of multi-unit tenders and econometric analysis of economies of scale with regard to gas distribution, aimed at estimating a benchmark distribution cost and ranking the businesses participating in each tender according to said benchmark, in order to assess the total possible savings offered by the leading operators in individual tenders.

National sustainability guidelines for third-sector bodies, with particular reference to energy and water: development of guidelines aimed at structuring pathways towards environmental sustainability and the efficient use of resources for non-profit organisations, with particular reference to the energy and water sectors and identifying and developing content in collaboration with the relevant stakeholders. The guidelines will be shared with at least two third-sector bodies to verify the applicability, and will be distributed in collaboration with the AMGA Foundation.

Comparative assessment of biogas cleaning and upgrading processes: development of a tool to support industrial process operators and biogas producers in activities to plan, operate or revamp biogas plants. The study analyses biogas production processes, conducts critical analysis of biogas cleaning processes, and identifies the supply chain in use in relation to the operating parameters of the production process and the intended final use of the biogas.

Regulation of water and environmental services, analysis of factors that determine operating and capital costs, and possible impacts on price recognition models: study of the possible regulatory synergies between the water and environmental sectors and the specific features of each sector, feasibility study of alternative regulatory models based on the recognition of standard/parametric costs, considering if such parametric benchmarks can be used to support pricing limits, regulatory guidelines and/or bonus/penalty systems in an output-based logic. The survey will be supported by a study on the perceived value of service levels, using the choice experiment method to evaluate the priorities of residents and service users.

Applicability of landfill mining to old landfill sites: landfill mining can help to offset the post-management costs of landfill sites, remove potential sources of groundwater contamination and recover material and/or energy through the treatment of mined waste. The main outputs expected to be delivered by the project are the publication of guidelines outlining a method of analysing the technical and economic feasibility of landfill mining, and its application in a particularly relevant case study.

The economic, environmental, and organisational performance of the Italian water sector: measuring water service operators' performance with analysis of information on physical leaks of drinking water in distribution networks. The project aims to underline the relationships between businesses' economic and environmental performance and their ownership structure (public or private entity), as well as the effect of other environmental or operational variables which may impact said performance. For the integrated economic and environmental performance measurement phase, a non-parametric efficiency method is used, which enables the operators with the most significant leaks to be penalised.

Nanocatalysers based on manganese oxide for sustainable energy production (Mn4Energy): development of a set of highly active heterogeneous catalysts based on manganese oxide to be used to produce energy through water splitting and reduce CO₂.

Proposed actions for the removal of emerging pollutants and micropollutants in water treatment plants. Conventional and innovative processes: the study of various emerging micropollutants, selected for their consistent presence in bodies of water and potential but incompletely defined toxic effects, to provide a comprehensive and up-to-date framework of measures that may be adopted at water treatment plants to remove them. Through the analysis of technical literature and by processing of the data contained therein, the study will present the effectiveness of the various treatment methods currently available through the careful management of operational and process parameters, and the potential effectiveness offered by biological, physical-chemical and hybrid processes.

Sei Eco-logico? [Are you Eco-logical?]: a sustainability programme focusing on water, energy and the environment, delivered through fun puzzles and stickers. The three topics are illustrated in 47 fact sheets available in two languages. The contents were transformed into a web application by the students of the Italo Calvino Institute in Genoa. The project, which can be seen online at eduiren.it/seiecologico, has been published on the MIUR website among the experiences of excellence at national level. Furthermore, a second app was developed in collaboration with Liguria Digitale, featuring a virtual "playground" with 36 interactive games designed to promote environmentally sustainable behaviour in a fun and engaging way. The two apps can be accessed in the children's area of the Città dei Bambini e dei Ragazzi educational amusement centre in Genoa.

Culture and education

Cacche Spaziali. Il Musical! [Space Poo. The Musical!] Produced in collaboration with the Teatro dell'Ortica in Genoa, the play tells the story of a fantastical journey through space and time, leading to the magic world of treatment plants. The characters explore the city's foetid streets of the 1800s, witness the construction of the new sewerage systems and the first water treatment methods, are catapulted into the future where they discover astonishing facts about shooting stars and what astronauts eat, before returning to the present day to learn about the benefits of water treatment. The show was repeated in the 2020 edition of the Andersen Festival in Sestri Levante.

A sea without plastic: the show, aimed at children and families, debuted in streaming at the Genoa Science Festival, raising awareness among spectators, through the journey of the magician Eco and Anna, on the problem of pollution caused by plastic waste that ends up in the sea every year, endangering the ecosystem and health.

Collaboration in cataloguing the Group's historical archives: in 2020, the public authorities started cooperation with Iren aimed at reorganising the historical archives of the Brugnato water supply network, located at the Prato water purification plant.