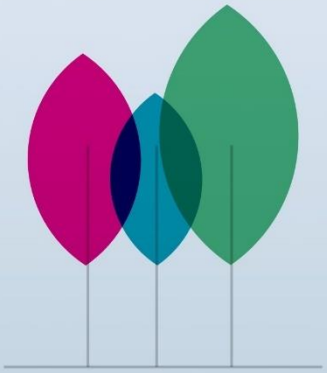


2020 SUSTAINABILITY REPORT

Creating shared value and involving stakeholders: the story of a company that wishes to leave a mark. But not a footprint

Climate change mitigation

(updated on April 22, 2021 after targets validation by SBTi)

GRUPPO HERA

Hera for climate

The challenge of climate change and Hera Group's commitment

Climate change is one of the greatest challenges facing humanity today. Accepting this challenge means initiating an **ecological transformation** of technology, economy and society. Fossil fuels are one of the main causes of climate change and it is therefore essential to reduce their consumption to limit the increase of the main greenhouse gas, carbon dioxide.

Hera Group's commitment in this field starts with several actions taken in terms of **mitigation and adaptation**. The Group's strategy for climate change mitigation mainly consists of:

- **purchasing renewable energy** to power its business and to sell it to its customers;
- increasing **renewable energy production** (in particular biomethane and geothermal energy);
- **offering solutions to reduce the carbon footprint of customers** in all segments (households, condominiums, businesses, and public administration);
- initiatives and projects to **reduce its carbon footprint**;
- promoting and implementing **circular economy** principles;
- implementing **technological innovation projects and initiatives** for a more complete environmental sustainability of its business.

Since 2006, the Hera Group participates to CDP, an independent not-for-profit organization that provides businesses and countries with a way to measure, track, manage and share information about climate change and sustainable use of water resources on a global scale. CDP compliance requires **measuring and reporting** all of an organisation's performance and initiatives taken to reduce GHG emissions. In 2020, Hera has achieved **level A-** (on an A-D scale), **higher than the result obtained in 2019** (level B), than the **average of the** "Energy utilities network" **sector** (level B) and than the **European and global average** (level C).

Also in the field of **reporting**, this assessment contains:

- the results of our process of **alignment with the Recommendations of the Task Force on Climate-related Financial Disclosure (TCFD)** started in December 2019 and which has involved several Departments and all the Group's Business Units;
- our first report on GHG emissions in relation to the reduction targets defined in 2020 and submitted to the **Science Based Target initiative** in a first version at the end of January 2021, subsequently updated in response to the request from the Science Based Target initiative in March 2021.

TCFD recommendations

In 2015, the member states of the United Nations signed the **Paris Agreement**, in which they committed to work to limit the global average temperature rise to well below 2°C compared to pre-industrial levels and strive to limit the increase to 1.5°C by the end of this century. In the same year, the G20's **Financial Stability Board** (FSB) established the **Task Force on Climate-related Financial Disclosures (TCFD)** to support organisations in becoming more transparent about the financial opportunities and risks linked to climate change. In 2017, the TCFD published recommendations on financial disclosures, which are now an international reference for corporate climate risk management. The **TCFD recommendations** can be applied to organisations in all sectors and are classified into four areas: governance, strategy, risk management, and metrics & targets.

The Hera Group decided to adopt the approach proposed by the TCFD, and to do so it started a process to align with the recommendations in December 2019. The process has involved three main steps:

- **establishing a dedicated working group** consisting of: **Shared Value and Sustainability Department**, **Enterprise Risk Management**, **Central Department for Strategy, Regulation and Local Authorities** and **Energy Management**. Some steps also involved: Central Innovation Department, Administration, Finance and Control Department, HR and Organisation Central Department, Quality, Safety and Environment Department, and the Business Units.

- **performing an in-depth analysis of the gaps** in Hera Group's reporting system and management of climate opportunities and risks with respect to TCFD recommendations.
- defining a **work plan** to increase the degree of alignment with the TCFD recommendations, the first results of which were already visible in our 2019 Sustainability Report and our Value for Energy thematic report published in 2020, and which are completed in this report.

Governance of climate change issues

At the **Board of Directors** level, management of the risks and opportunities linked to climate change is supported by the **Control and Risks Committee**, the **Risk Committee** and, indirectly, the **Ethics and Sustainability Committee**, whose tasks include monitoring the implementation of sustainability policies and a prior review of sustainability reporting to be submitted to the Board.

The **CEO** is responsible for ensuring the implementation of the sustainability and shared value guidelines, through the Shared Value and Sustainability Department, one of whose functions is to coordinate the **balanced scorecard system**. In addition to chairing the **Executive Committee**, the **Chairman of the Board of Directors** is responsible for setting strategic guidelines and for decisions on **capital allocation**. In fact, the Central Department for Strategy, Regulation and Local Authorities reports directly to him.

The **Control and Risks Committee** is the advisory body set under the Corporate Governance Code to support the decisions and assessments of the Board of Directors concerning the internal control and risk management system, including risks related to climate change, with adequate preliminary activities.

At the management level, the **Risk Committee** defines risk management policies and develops specific guidelines and objectives to be followed by the business units. Therefore, it can also be an appropriate reference and guideline framework to address climate change risks.

The **Shared Value and Sustainability Department** has among its responsibilities some of the key elements to ensure the good management of climate risks and opportunities. It coordinates the process of defining balanced scorecards, prepares corporate guidelines and reporting in the Shared Value and Sustainability area, and develops new sustainability projects. In addition, the head of the department is also member of the Group's **Ethics and Sustainability Committee**.

The **Central Department for Strategy, Regulation and Local Authorities** plays a key role in the resilience of the Group's strategy. The management's forward-looking and future-oriented analysis skills were crucial in carrying out Hera Group's **first climate scenario analysis**. Among the initiatives identified to seize the opportunities defined through the scenario analysis, the most promising have been included in our 2020-2024 business plan.

Within Hera Group's organisational structure, a role in the management of climate opportunities and risks is also played by the **Administration, Finance and Control Department**, in particular for defining the annual budget and raising capital, and by the **Energy Management function**, which supports the CEO in developing energy-saving initiatives.

In order to strengthen the governance of climate change aspects, during 2020 the working group also identified several **opportunities for improvement** that will be subject to evaluation and subsequent implementation. Some of these affect the management system and will support a more formalised and integrated consideration of climate change issues in all those business processes that can contribute in pursuing carbon neutrality. In particular, the opportunities identified concern the investment authorisation process, the risk identification methodology and the planning process.

The management system and Enterprise Risk Management

Our quality, safety, environment and social responsibility **management system** is the set of interrelated or interacting elements that support the implementation of Hera Group's policies and objectives in a large number of areas, including those relating to climate change.

With regard to the **identification**, **assessment** and **management** of **climate risks**, the organisational structure adopted by the Hera Group makes it possible to manage the exposure to risk arising from its businesses and, at the same time, to preserve the effectiveness of management along the entire value chain.

In our corporate governance system, the **Control and Risks Committee**, which is a part of the Board of Directors, is responsible for monitoring the functionality of the internal control system, the efficiency of company operations, and the compliance with laws and regulations as well.

The Control and Risks Committee receives regular reports from the **Risk Committee**, which is the main body for steering, monitoring, and reporting on risk management strategies, including climate risks. The Risk Committee is responsible for defining the guidelines for the **Enterprise Risk Management** process, the mapping and monitoring of corporate risks and the definition of **Risk Policies**, to submit to the Board of Directors for approval.

Specific risk analyses are conducted by the **Enterprise Risk Manager** or by the Risk Specialists, who play an essential role in identifying, assessing and controlling how risks are managed. Climate-related risks, both physical and transitional, are included in the risk categories that have been analysed by the Enterprise Risk Manager.

During 2020, the **climate scenario analysis** conducted by the cross-functional working group led the Enterprise Risk Manager to define new quantification methods to assess the potential financial impact of the most relevant climate risks.

Analysis of climate scenarios

Scenario analysis is a methodology used to test the **resilience of business plans** under different assumptions of future developments. In the context of climate change, the analysis of scenarios helps us to understand how physical and transitional **climate opportunities** and **risks** may affect our business over time.

To carry out its analysis, Hera Group has selected the **two most relevant scenarios** out of nine taken as a starting point.

We have chosen the **IEA ETP 2DS transition** scenario developed by the International Energy Agency as the "ambitious" climate scenario, that describes a future development characterised by strong decarbonisation processes to keep the increase in average temperatures below 2°C.

Transition scenario IEA ETP 2DS: Key parameters to 2050

Energy	• Energy intensity (TWh/GDP): -67% vs. 2013 • Production of advanced biofuels: 20-fold increase from 2020 to 2025 • Natural gas import price: 10.2 $/MBTU (2017: 5 $/MBTU)
Electricity	• Strong increase in production of electricity from renewable sources • Emission factor: <40 gCO_2/kWh (2017: 484 gCO_2/kWh) • 50% of solar generation from domestic panels (distributed generation) • Demand for electricity: +68% vs. 2017
GHG emissions	• CO_2 emissions: -54% vs. 2017 • CO_2 price: up to \$210/tCO_2 (2017: Euro 5.8/tCO_2) • Carbon capture utilisation and storage (Ccus): from 2.4 $MtCO_2$ (2017) to 3,500 Mt

We have selected the **IPCC RCP 8.5 physical** scenario as a "pessimistic" scenario, in order to study the possible impacts on Hera Group's strategy in case of a "business-as-usual" pathway and a resulting large increase in average temperature (about 4° C). We have selected the indicators available in the models simulating the RCP 8.5 scenario from the results of an analysis previously conducted by Enterprise Risk Management, which involved the business units in order to identify the climate events to which they are most exposed.

Physical scenario RCP 8.5: Key parameters to 2050

Dimension	Parameters	1980-2005	Trend to 2050
Precipitation	No. of days with heavy rainfall	23 days	↘
	No. of rainy days	90 days	↘
	Consecutive days without rain	25 days	↗
Temperatures	Average maximum temperature	17.5 °C	↗↗
	Average minimum temperature	8.5 °C	↗↗
	Heating degree days	1950 DD	↘↘
Sea	Sea level	+8cm (vs. 1990)	↗↗

At the same time, we have defined **timescales** to distinguish and classify risks, opportunities and impacts as short-, medium- and long-term. This strategic approach enables us to go beyond the traditional time frame of the business plan.

Short-term	Medium-term	Long-term
From 0 to 5 years	From 5 to 10 years	From 10 to 30 years
Business plan timescale	Decarbonisation targets timescale	European Green Deal timescale

Risks and opportunities arising from climate change

The analysis of the ETP 2DS and RCP 8.5 climate scenarios has allowed to identify **eight physical risks**, **eight transition risks**, and **15 opportunities**. Each risk and each opportunity have been linked to:

- a timescale;
- a priority level (defined as the combination of the level of likelihood that the context in which Hera operates will change as described by the risk/opportunity and the level of impact of the risk/opportunity on the business);
- one or more management methods (for risks) and one or more business initiatives (for opportunities).

Physical risks

The RCP 8.5 climate scenario analysis conducted by the Hera Group, combined with the investigations already carried out by Enterprise Risk Management together with the business units, has led to the identification of **eight physical risks**. The physical risks are distributed over the medium- and long-term timescales, with more occurrences in the 2031-2050 horizon consistently with the notion that the impacts of climate change will become increasingly evident in the long term. To mitigate, manage or transfer these risks, we also identified **21 management methods**. Some of the management methods envisaged in the 2020-24 business plan are explained in the following section on Hera's climate strategy.

Of the eight physical risks assessed, we have subjected those with a higher priority level to an in-depth analysis to quantify their **financial impacts**. In particular, the risk associated with the **decline in gas consumption and district heating** for civil use as a result of the **temperature increase** has been assessed as significant in the long term.

Transition risks

We have identified transition climate risks mainly by the analysis of the International Energy Agency's ETP 2DS scenario. The analysis has led to mapping **eight transition risks**, mainly concentrated in the medium-

term time horizon, but distributed over all categories of the classification suggested by the TCFD. We have also linked each risk to one or more **management methods**, for a total of **12** which will allow the Group to be better prepared for possible future changes. Some of the management methods envisaged in the 2020-24 business plan are explained in the following section on Hera's climate strategy.

We have further investigated the transition risks considered to be a priority to assess their **financial impacts**. The risks related to trends in **energy efficiency** and **electrification of consumption**, and to the extension of **carbon pricing systems** were significant. We have defined management methods and monitoring indicators for each risk class.

Opportunities

The Hera Group has identified the opportunities arising from decarbonisation processes on the basis of the International Energy Agency's ETP 2DS scenario. The analysis has led to the identification of **15 opportunities**, mainly associated with projected reductions in greenhouse gas emissions, increased demand for electricity and greater use of renewable energy sources, and the development of advanced biofuels. Most of the opportunities are expected in the short term and we have identified **33 initiatives** to seize them.

We have classified ten of the opportunities as **relevant in the short term** (by 2024). We have further developed the initiatives designed to capture the most promising opportunities to feed into Hera Group's new **2020-2024 business plan**. The following section describes how the new plan seizes the opportunities to participate in the decarbonisation process and what initiatives will be implemented to achieve the objectives.

Hera's climate strategy

Hera Group's new 2020-2024 business plan takes the sustainability guidelines of **European policies** as a reference and confirms the **Sustainable Development Goals** as the basis for the creation of shared value.

The framework of the new business plan consists of **three strategic dimensions**: **environmental**, **socio-economic** and **innovation**, which the Group's projects in all its businesses are built around to combine the development of the multi-utility with that of the context in which it operates, in a "win-win" perspective to increase the share of EBITDA "with shared value" (EBITDA CSV).

The EBITDA CSV indicator measures the share of the Group's consolidated EBITDA generated by business operations that respond to the drivers of change and related impact areas identified in the shared value creation model that informs Hera's approach to sustainability.

During 2020, we have updated our shared value creation model to meet the new challenges of the global scenario. In the new model, one of the three drivers of shared value creation is the **pursuit of carbon neutrality** of the services we provide, both for the benefit of customers and of the local ecosystem. The actions envisaged to fight climate change therefore play an important role in the environmental dimension and in the shared value creation model. These include the commercial offering of products and services for **energy efficiency** and **carbon neutrality**, the support for **urban electric transportation**, the **reduction of the Group's energy consumption** and **natural gas leaks**, and circular economy initiatives such as **plastic recycling** and **biomethane production**. In addition, we are studying initiatives aimed at **developing hydrogen as an energy vector**, also in partnership with other companies.

The strategic framework reaches beyond the Plan's timeframe, to 2030. The goal of reducing greenhouse gas emissions in line with the Science Based Target initiative's criteria is particularly prominent here, in relation to which an extensive discussion can be found in the next paragraph.

The physical and transitional risk management measures and business initiatives linked to the opportunities included in our 2020-24 business plan are outlined below.

Physical risks	Timescale	Priorities	Management method
Floods and flooding with resulting landslides and mudslides	Medium term: 2025-2030	Medium-high	Infrastructural upgrading of drainage networks, reservoirs and purification plants
			Increased alert capacity for extreme events in critical areas
Rising temperatures	Long-term: 2031-2050	Medium-high	Market strategies oriented towards the development of customer-dedicated VAS to complement and enrich the offer portfolio
Extreme weather events	Medium term: 2025-2030	Medium-low	Network resilience plan and reinforcement of the electricity distribution network in the face of extreme winter events with interventions on overhead powerlines and substations
Changes in the distribution over time of annual precipitation and average rainfall amounts	Long-term: 2031-2050	Medium-low	Strengthening and expanding water resources to increase the resilience of water networks
			Construction of interconnections between water networks
			Enhancement of the application of advanced leak detection techniques to increase the efficiency of the network

Transition risks	Timescale	Priorities	Management method
Electrification of energy consumption and development of renewable energy sources	Medium term: 2025-2030	Medium-high	Market strategies oriented towards the development of customer-dedicated VAS to complement and enrich the offer portfolio
			Acquiring increasing shares of electricity customers as a result of energy carrier switching
			Increased presence in electricity distribution
Limits on the generation of greenhouse gas emissions	Medium term: 2025-2030	Medium-high	Reducing the Group's carbon footprint with energy efficiency improvement projects, increasing optimised consumption management and the use of zero-emission energy sources
Introduction of measures requiring structural and non-structural efficiency measures	Medium term: 2025-2030	Medium-high	Specific projects in the field of energy efficiency
			Enhancement of advanced techniques aimed at limiting the use of primary resources in the field of: • water (reduction of water losses, reuse of water resources) • waste (initiatives to enhance recovery and recycling)

Opportunities	Timescale	Priorities	Initiative
Air quality and urban emissions policies, including incentives for efficient district heating systems	Short-term: 2021-2024	Medium-high	Production capacity saturation of existing district heating systems
			Conversion of district heating plants to "Efficient district heating systems"
Fiscal bonus for energy efficiency and EU incentives for decarbonisation	Short-term: 2021-2024	Medium-high	Promotion and sales for improving the energy efficiency of products and services
			Support for energy efficiency in buildings
Raising customer awareness and increase of green offers by utilities	Short-term: 2021-2024	Medium-high	Green loyalty programmes and value-added services for energy efficiency and carbon neutrality
Technological optimisation and plant efficiency improvement	Short-term: 2021-2024	Medium-high	Plant optimisation through revamping
Stimulating the circular economy and increasing demand for recycled plastics and/or bioplastics	Short-term: 2021-2024	Medium-high	Increase of plastic recycling activities
Dissemination of Renewable Energy Communities and Environmental Communities, and increase of distributed renewable energy demand	Short-term: 2021-2024	Medium-high	Promoting the sale of domestic photovoltaic systems
Development of electric mobility and increased demand for electricity along road infrastructure	Short-term: 2021-2024	Medium-high	Development of services and infrastructure to support electric mobility
Production of biomethane through recovery processes (possible eligibility for incentives)	Short-term: 2021-2024	Medium-high	Construction of plants for the production of biomethane from the organic fraction of MSW
Production of syngas and/or green gas (hydrogen, biogas) for the decarbonisation of the gas chain and to handle overproduction of renewable energy	Medium term: 2025-2030	Medium-high	Introduction of Power-to-Methane technology for electrical energy storage

Climate performance and targets

The Hera Group's strategy to **seize the opportunities** linked to decarbonisation and **mitigate the risks** of climate change is also governed by monitoring specifically defined **KPIs**.

On the one hand, **greenhouse gas emission** indicators and related **intensity indices** measure the company's overall ability to reduce its climate impact and minimise risks.

On the other hand, **quantitative measures that affect emissions** and **economic and financial KPIs** capture how Hera Group is redesigning its internal processes and, above all, its commercial offering to seize the opportunities offered by regulatory, technological, and market developments related to decarbonisation.

The following table summarises the types and number of indicators that apply to each monitoring area. The indicators are set out in the annex to this report.

Monitoring scope	Indicators	Of which with targets/forecasts
Emissions	8	7
Intensity index of emissions	6	4
Quantitative measures that affect emissions	12	9
Economic and financial indicators	6	4
Total indicators	**32**	**24**

Total emissions of the Hera Group

This report consolidates the innovative reporting of GHG emissions we introduced in our 2019 Sustainability Report as a result of an initial alignment with **TCFD recommendations**.

The **Group's total emissions** (Scope 1 + Scope 2 + Scope 3) in 2020 are about **12,644 thousand tonnes of CO_2e**.

Specifically, the **emissions directly produced** by the Group (Scope 1) are equal to 986 thousand tonnes of CO_2e and represent 7.8% of the Group's total emissions. The Group's **indirect emissions from consumption of electricity** (Scope 2), using the market-based method, amount to 44 thousand tonnes of CO_2e and represent less than 1% of the Group's total emissions.

The **emissions indirectly caused by the Group's activities** (Scope 3) amount to 11,613 thousand tonnes of CO_2e, equal to 91.8% of the Group's total emissions. According to the "Technical Guidance for Calculating Scope 3 Emissions" published by the GHG Protocol, Scope 3 emissions can be divided into two categories: upstream and downstream of the supply chain. The Hera Group's Scope 3 includes the following emission categories:

- upstream category (5,072 thousand tonnes of CO_2e, 40.1% of the Group's total emissions): production of the fuels consumed to generate non-renewable electricity sold to customers; production of natural gas sold to customers; production of fuel consumed in the industrial cogeneration plants installed at third parties; production of fuels consumed in owned vehicles; production of fuels consumed to generate non-renewable electricity consumed internally; network losses of electricity consumed internally; use of suppliers' vehicles for waste collection; use of Herambiente's vehicles for waste transport; production and printing of paper bills;
- downstream category (6,541 thousand tonnes of CO_2e, 51.7% of the Group's total emissions): consumption by customers of natural gas sold; production of energy in joint venture plants; recycling of waste from separate waste collection.

Composition of greenhouse gas emissions

thousands of t CO_2e	2019	2020	Delta 2020/2019
Waste-to-Energy plants	400.5	367.8	-8.2%
District heating	201.4	171.7	-14.7%
ASE and HSE energy services (natural gas, diesel, LPG)	208.9	186.4	-10.8%
Landfills for municipal waste	212.6	212.5	0.0%
Leaks in gas network	28.8	18.2	-36.8%
Company fleets (diesel, petrol, LPG, natural gas)	30.5	29.7	-2.5%
Total direct emissions (Scope 1)	**1,082.6**	**986.2**	**-8.9%**
Indirect emissions from energy consumption (Scope 2, market-based)	**48.4**	**44.4**	**-8.3%**
Total emissions Scope 1 + 2 (market-based)*	**1,131.0**	**1,030.6**	**-8.9%**
Sale of natural gas – upstream	814.7	769.0	-5.6%
Sale of natural gas – downstream*	6,268.5	5,915.0	-5.6%
Sale of electricity*	4,386.7	4,195.8	-4.4%
Emissions from energy production and consumption (not included in Scope 1 and 2)	418.6	309.3	-26.1%
Emissions from services provided	612.0	423.9	-30.7%
Total indirect emissions (Scope 3)	**12,495.4**	**11,613.0**	**-7.1%**
Total emissions Scope 1 + 2 (market-based) +3	**13,626.4**	**12,643.6**	**-7.2%**

The calculation criteria have been aligned with the methodology of the Science Based Target initiative. To allow comparability of data over the two-year period, the 2019 figure includes data on Estenergy, Amgas Blu, Ascotrade, Ascopiave Energia, Blue Meta, and Etra Energia, which merged into Hera Group as at 31/12/2019.
*Indicators with target validation by the Science Based Target initiative. As for the sale of electricity, the target is related to its carbon intensity (t CO_2e / MWh). See the dedicated paragraph "Greenhouse gas reduction targets" for further information.

In 2020, total GHG emissions (Scopes 1, 2 and 3) **decrease by 7.2%** compared to 2019.

In particular, direct emissions (**Scope 1**) and indirect emissions from electricity consumption (**Scope 2**) **decrease by around 9%** compared to 2019. This is mainly due to lower emissions from district heating (-15%) and from natural gas used in cogeneration plants (-15%) as a result of milder winter temperatures and lower thermal energy requirements due to the health emergency; without this effect, Scope 1 and 2 emissions would decrease by 4% mainly due to the decrease in emissions from waste-to-energy plants as a consequence of the closure of the Ravenna plant.

Scope 2 emissions amount to 44 thousand tonnes in 2020, down 8% compared to 2019 as a result of lower consumption of electricity from non-renewable sources (-5%, due to both a reduction in consumption and a slight increase in the share of purchased renewable energy) and a reduction in the national residual emission coefficient (-3%). The value of Scope 2 emissions shown above is calculated using the market-based method, which makes it possible to attribute value to the organisation's specific energy purchase choices, i.e. the part of renewable energy purchased with Guarantee of Origin certificates and the part of electricity purchased without certificates; for the latter component, the emission factor relating to the national "residual mix" has been used. On the other hand, Scope 2 emissions calculated with the location-based method amount to 166 thousand tonnes, calculated by applying the Italian average emission factor from electricity production, which does not take into account the company's specific purchasing choices.

Total indirect **Scope 3** emissions in 2020 are around 11.6 million tonnes of CO_2e, **down 7%** from the previous year. These are indirect greenhouse gas emissions that occur outside the organisation's boundaries and from sources not owned or under direct operational control. This category may include activities both upstream and downstream of the business' perimeter, such as the extraction and production of purchased raw materials or emissions occurring when using the products sold. For an analysis of the Scope 3 indirect emissions trend, please refer to a subsequent paragraph relating to greenhouse gases reduction targets.

GHG emissions under the EU-ETS

The **European Union Emissions Trading System (EU ETS)** is a cornerstone of the European policy to fight climate change and a key tool for cost-effective reduction of greenhouse gas emissions in regulated sectors. The system sets a **cap on the total level of emissions allowed** to all participants in the scheme but allows them to trade emission quotas on the market according to their needs. It covers about 45% of European emissions and in January 2021 its fourth phase of application began, to end in 2030. By 31 March of each year, installations in the regulated sectors must report the greenhouse gas emissions recorded in the previous calendar year, and by 30 April cancel a number of emission permits ("European union allowances", 1 Eua = 1 t CO_2) made available on the market at a calibrated and decreasing rate over time to **encourage a gradual reduction of emissions** in accordance with the medium- to long-term European objectives.

In the Hera Group, nine plants are subject to the EU-ETS regulation in 2020, all of which are related to energy production serving **district heating** networks. At 119,728 tonnes of CO_2, the emissions recorded in 2020 were lower than those of 2019 (162,679 t CO_2), mainly due to the effects of different weather, the temporary suspension of the application of the regulation for one plant and the exit from the application of the system for another in the last two months of the year. To take into account the fact that district heating is a public utility service and that it meets environmental sustainability criteria, the charge associated with actual emissions imposed by the ETS system is partly mitigated by free allocation of EUA or a maximum allowed amount of emissions within which no charges are made. In 2020, this measure totalled 23,219 tonnes of CO_2 (down from 30,004 t CO_2 in 2019, consistent with the regulatory profile); in particular, the EUA free allocation in 2020 totalled 13,246t CO_2 (16,726 t CO_2 in 2019).

In 2020, emissions from plants under EU-ETS accounted for **12.1%** of the Group's total direct emissions (they were 15.0% in 2019).

Carbon intensity indices

The Group's emission results can be represented by a number of indices that indicate their evolution and prospects, giving a picture of the company's performance in reducing impact in terms of greenhouse gases emitted. By relating direct emissions (Scope 1) and indirect emissions from energy consumption (Scope 2) to certain economic and demographic indicators, we can obtain **carbon intensity indices** that reflect the improvements generated.

Carbon intensity indices

	2019	2020
Direct emissions (scope 1) (t CO_2e)	1,082,609	986,211
Indirect emissions from consumption of electricity (Scope 2, market-based) (t CO_2e)	48,425	44,409
Total Scope 1 and 2 emissions (t CO_2e)	1,131,035	1,030,620
EBITDA (millions of Euro)	1,085	1,123
Carbon intensity index (Scope 1 and 2 t CO_2e emissions / EBITDA millions of Euro)	**1,042**	**918**
Citizens served (thousands)	4,332	4,221
Carbon intensity index (Scope 1 and 2 t CO_2e emissions / thousands of citizens served)	**261**	**244**

The calculation criteria have been aligned with the methodology of the Science Based Target initiative.

The **emission intensity index** calculated as a ratio of Scope 1 and 2 greenhouse gas emissions to EBITDA improves compared to the previous year (-12%) due to the reduction in emissions for the reasons explained above and the parallel increase in EBITDA. The same index calculated against the value of production shows an improvement from 152 tonnes of CO_2e in 2019 to 137 (-10%) due to a change in revenue. Lastly, the ratio

on a citizen basis also decreases (-6%) due to the reduction in overall emissions. Relating Scope 3 emissions to the number of customers, the emission intensity index is about 5 tonnes per customer.

Carbon intensity index of energy production

	2019	2020
Waste-to-energy plants (t CO_2e)	400,531	367,756
District heating (t CO_2e)	201,412	171,728
Landfills (t CO_2e)	212,577	212,493
Total emissions from energy production (t CO_2e)	814,520	751,976
Electricity (MWh)	1,242,963	1,152,798
Thermal energy (MWh)	1,047,553	975,510
Biomethane (MWh)	59,215	71,058
Total energy produced (MWh)	1,785,040	1,670,734
Carbon intensity index of energy production (kg CO_2e/MWh)	**456**	**450**

The model for estimating landfill emissions has been updated in 2020 and the 2019 data have been recalculated using the same criteria as in 2020 to allow comparability of the data over the two-year period.

Considering the emissions generated by the electricity and heat generating plants shown in the table, the **carbon intensity index of power generation** in 2020 is **450 kg CO_2e/MWh**, **down 22%** from the 2013 baseline (580 kg/MWh) and 1.4% from 2019. In detail, compared to the previous year, emissions from these plants decrease by 8% and energy production by 6%. This is a result of: (i) lower emissions from waste-to-energy plants, due to the closure of the Ravenna plant (-8%), from which, however, it has been possible to produce more energy (+3%); (ii) increased production of biomethane at the Sant'Agata Bolognese plant compared to 2019 levels (+20%). These improving effects are partly offset by a reduction in energy production from district heating plants (-26%) that is more than proportional to the reduction in related emissions (-15%).

The energy-saving measures already in place and those planned by the Hera Group will enable us to further reduce the carbon intensity index of our energy production in the years to come. By 2024, we expect the carbon intensity index of energy production to **decrease by 34% compared to 2013** (reaching 386 kg CO_2/MWh), mainly as a result of the Group's commitment to greater production of biomethane from the organic fraction of waste and a further decrease of the use of landfills for the treatment of municipal waste, as well as various efficiency measures that we will be carried out on the plants.

Carbon intensity index of electricity sale

	2019	2020
Emissions from sale of electricity (t CO_2e)	4,386,685	4,195,757
Electricity sold (MWh)	12,010,215	12,258,095
Carbon intensity index of electricity sale (t CO_2e/MWh)*	**0.365**	**0.342**

*Indicators with target validation by the Science Based Target initiative. See the dedicated paragraph "Greenhouse gas reduction targets" for further information.

The **carbon intensity index of electricity sale** also improves, equal to 0.342 t CO_2e/MWh in 2020 (**-6.3%** compared to 2019). This result has been achieved thanks to the higher volumes of renewable electricity sold with a Guarantee of Origin certificates on the total compared to the previous year.

Greenhouse gas reduction targets

During 2020, as part of the process of aligning our reporting with the TCFD recommendations, we have explored climate and transition scenarios with a 2050-time horizon. On the basis of these studies, we have identified 15 development opportunities for the Group's businesses and, as a result, we have defined many initiatives which, together with the development of the energy and climate scenario, will reduce direct and indirect Group's greenhouse gas emissions.

On the basis of the above, we have defined our **emission reduction targets for 2030** compared to 2019 in line with the **Science Based Target initiative** method (with particular regard to the "well-below 2°C" level) and included **in the 2020-2024 business plan** approved in January 2021. The scope of the targets includes both the Group's emissions (Scope 1 and 2) and those of its customers (Scope 3 from the sale of electricity and the downstream sale of natural gas) and therefore applies to 86.5% of the Group's 2019 total emissions. We submitted the defined targets to the Science Based Target initiative at the end of January 2021 and subsequently updated them in March 2021 in response to the request of the Science Based Target initiative.

Specifically, the Group's 2030 targets defined for the "well-below 2°C" level and **validated** by the Science Based Target initiative are:

- Scope 1+2: **absolute reduction of 28%** by 2030 compared to 2019 (the target boundary includes biogenic emissions and removals from bioenergy feedstocks and biodegradable sources from municipal solid waste);
- Scope 2: **increase** the share of certified renewable electricity to cover internal energy consumption **from 83% to 100%** by 2023;
- Scope 3 downstream sale of methane gas: **absolute reduction of 30%** by 2030 compared to 2019;
- Scope 3 sale of electricity: **reduction of carbon intensity (t CO_2e/MWh) of 50%** by 2030 compared to 2019 in line with the Sectoral Decarbonization Approach (Sda).

Based on these targets, the **reduction of greenhouse gas emissions for the defined scope is expected to be 37%** to 2030 compared to 2019.

We will achieve these targets through the many reduction initiatives described in this report, such as increasing the use of electricity from renewable sources for the consumption of Group companies, reducing greenhouse gas emissions from landfills, further developing district heating, developing energy efficiency services for buildings, promoting the energy efficiency of residential customers, increasing the sales of electricity from renewable sources, and launching initiatives to develop hydrogen as an energy carrier. We expect further improvements from external aspects as set out in the CEN energy scenario developed by Terna and Snam used as a reference for defining the targets, such as the decarbonisation of electricity production, the increase in energy efficiency and the electrification of energy consumption, which will contribute to meeting the target related to the decrease in GHG emissions.

Below are some summary tables related to the evolution of greenhouse gas emissions in the two-year period 2019-20 and the related science-based targets.

Greenhouse gas emissions and absolute "science-based" reduction targets

thousands of t CO_2e	2019	2020	Delta 2020/2019	2030 target
Scope 1 + 2 (market-based)	1,131.0	1,030.6	*-8.9%*	-28.0%
Scope 3 sale of methane gas – downstream	6,263.5	5,915.0	*-5.6%*	-30.0%
Scope 3 sale of electricity	4,386.7	4,195.8	*-4.4%*	-48.5%*
Total Scope 1 + 2 (market-based) + 3 downstream sale of methane gas and sale of electricity	**11,781.2**	**11,141.3**	***-5.4%***	**-36.7%**

*The Scope 3 target for the sale of electricity derives from the Science Based Target for the carbon intensity of the sale of electricity.

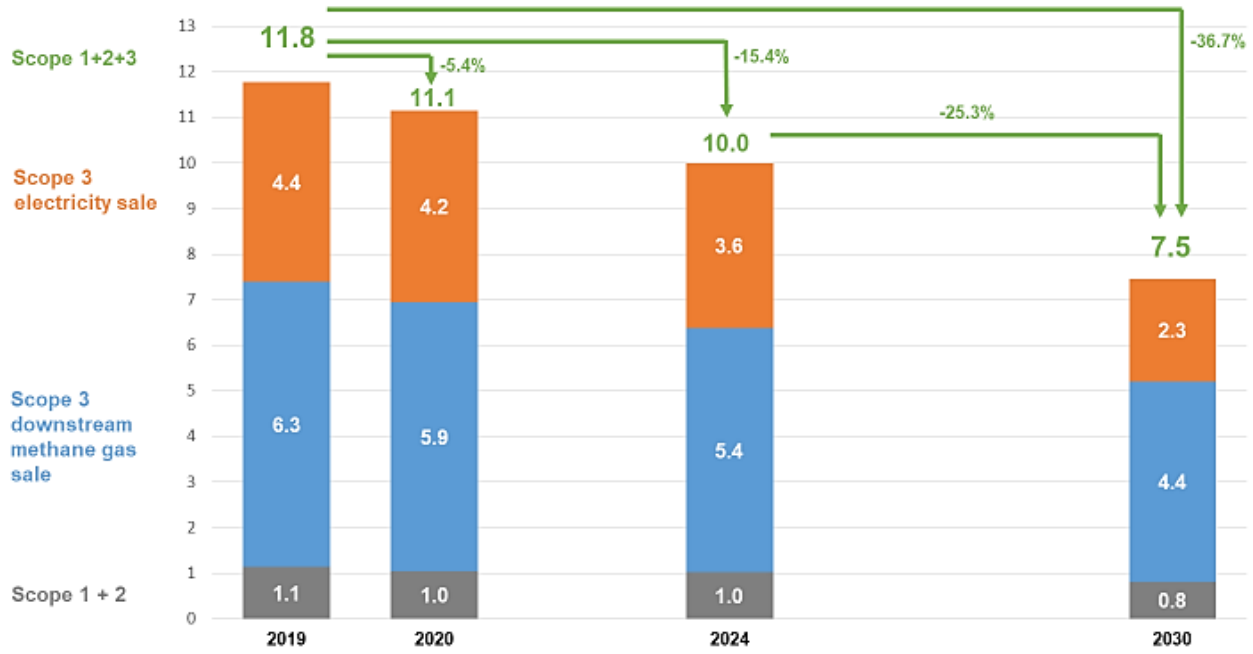
Carbon intensity index of electricity sale and "science-based" targets (Sectoral Decarbonization Approach)

t CO2e/MWh	2019	2020	Delta 2020/2019	2030 target
Carbon intensity index of electricity sale	**0.365**	**0.342**	***-6.3%***	**-50.0%**

Electricity consumption from renewable sources and "science-based" targets

%	2019	2020	2023 target
Electricity consumption from renewable sources	**82.8%**	**83.0%**	**100%**

Hera Group's greenhouse gas emissions (million tonnes)



Scope 3 emissions deriving from to the downstream sale of methane gas and the sale of electricity.

In 2020, Scope 1 and 2 emissions **decrease by 9%** compared to 2019 for the reasons described in the previous section.

As for Scope 3 emissions related to the downstream sale of methane gas and electricity, the reduction recorded in 2020 is **5.1%** compared to 2019 due to the reduction in volumes of gas sold as a result of milder winter temperatures and the lower thermal energy requirements associated with the health emergency period. Net of the effects of milder winter temperatures and lower requirements as a result of the pandemic emergency, this reduction is **2.0%** compared to the previous year, due to the higher volumes of electricity from renewable sources sold by purchasing Guarantee of Origin certificates.
In particular, with regard to Scope 3 emissions related to the sale of methane gas (downstream), the reduction recorded is **5.6%** due to the reduction in the volumes of gas sold as a result of the milder winter temperatures and the lower thermal energy requirements associated with the health emergency period. For Scope 3 emissions related to the sale of electricity, the reduction is **4.4%** thanks to the volumes of renewable electricity sold through the purchase of Guarantee of Origin certificates higher than in 2019; as a result, the carbon intensity index of electricity sales improves as well (**-6.3%**).

In brief, considering the scope of greenhouse gas emissions for which the 2030 reduction target was set compared to 2019, the first annual report shows a **5.4%** decrease as a result of the trends described above. Without taking into account the effects of the milder winter season and the lower thermal energy requirements due to the health emergency, the **decrease is 2.2%** and is due to the higher volumes of electricity from renewable sources sold by purchasing Guarantee of Origin certificates compared to the previous year and to the closure of the waste-to-energy plant of Ravenna**.**

Emissions avoided

Reduction of GHG emissions

thousands t CO_2e	2018	2019	2020
Reduction of direct emissions (Scope 1)	583.3	557.6	506.5
Reduction of indirect emissions from energy consumption (Scope 2)	158.7	169.6	156.2
Reduction of other indirect emissions (Scope 3)	1,574.0	1,608.7	1,598.6
Emissions compensation	-	-	257.6
Total emissions avoided	**2,316.0**	**2,335.9**	**2,518.9**

The total greenhouse gas emissions avoided in 2020 as a result of the Group's activities amount to **2.5 million tonnes**. Comparing this value to the number of inhabitants served by the Group, **597 kg of greenhouse gases per person have been avoided**.

Emission reductions as a result of the following activities are considered in the calculation:

- Scope 1: Energy production from renewable sources, district heating, energy-saving measures and waste sorting;
- Scope 2: Energy saving measures and consumption of energy from renewable sources (both by purchasing Guarantee of Origin certificates and by considering the national fuel mix);
- Scope 3: Energy-saving measures by Hera Luce, white certificates, sales of renewable energy (both through purchase of Guarantee of Origin certificates and considering the national fuel mix), sales of recycled plastic by Aliplast and, to a lesser extent, use of recycled paper for printing bills.

In addition, from 2020, emissions offsets from the sales of natural gas to customers with the Hera Impronta Zero offer (Hera Zero Footprint) and, to a lesser extent, from the printing of reports and balance sheets are included in the calculation.

Annexes

Greenhouse gases: metrics and targets

Emission indicators

	Unit	2019	2020	2024 target	2030 target
Direct Scope 1 emissions	kt CO_2e	1,082.6	986.2		814
Scope 1 emissions under the Eu-Ets regime	%	15.0%	12.1%	22%*	27%*
Indirect Scope 2 emissions from consumption of electricity (market-based)	kt CO_2e	48.4	44.4	0	0
Scope 1+2 emissions	kt CO_2e	1,131.0	1,030.6	1,015	814
Indirect Scope 3 emissions from gas methane sale – downstream	kt CO2e	6,263.5	5,915.0	5,361	4,386
Indirect Scope 3 emissions from electricity sale	kt CO2e	4,386.7	4,195.8	3,612	2,259
Total Scope 1+2+3 emissions**	kt CO_2e	11,781.2	11,141.3	9,988	7,459
Total emissions avoided	kt CO_2e	2,335.9	2,518.9		

*Forecast (not target). Indicator linked to risks.
**The Scope 3 value reported relates to the sale of natural gas (downstream) and the sale of electricity.

Intensity index of emissions

	Unit	2019	2020	2024 target	2030 target
Carbon intensity index of energy production (emissions from power plants/energy produced)	kg CO_2e/ MWh	456	450	386	
Carbon intensity index of electricity sale	t CO2e / MWh	0.365	0.342		0.184
Carbon intensity index of production value (Scope 1+2 emissions/production value)	t CO_2e/ Euro mln	152	137	118	
EBITDA carbon intensity index (Scope 1+2 emissions/EBITDA)	t CO_2e/ Euro mln	1,042	918	780	
Carbon intensity index per resident served (Scope 1+2 emissions/resident)	t CO_2e/ 1000 resid.	261	244		
Carbon intensity index per customer (Scope 3 emissions/customer)	t CO_2e/ 1000 customers	-	5.2		

Quantitative measures that affect emissions

	Unit	2019	2020	2024 target	2030 target
ISO 50001 energy saving measures compared to internal consumption in 2013	toe and %	11,748 (5.1%)	13,745 (6.2%)	15,580 (7%)*	22,258 10%*
Internal consumption of electricity from renewable sources	%	82.8%	83.0%	100%	100%
Contracts at year-end with energy efficiency solutions of the total contracts (excluding safeguard, default and last resort contracts)	%	20.1%	20.2%**	42%	>45%
Electricity from renewable sources sold to free market and protected market customers (excluding safeguard)	%	29.1%	32.2%**	33%	>40%

	Unit	2019	2020	2024 target	2030 target
Electricity from renewable sources sold to free market, protected market and safeguard customers	%	23.7%	27.2%**	28%	
Natural gas sold with CO_2 offsets (% of the total sold volumes excluding volumes sold to wholesalers, default service, and last resort supply)	%	0.8%	4.4%**	17%	>20%
Electricity contracts at year-end with electricity from renewable sources [1] of the total electricity contracts (excluding safeguard contracts)	%	19.8%	28.0%**		
Gas contracts at year-end with CO_2 emissions offsetting [2] of the total gas contracts (excluding default and last resort contracts)	%	5.3%	9.6%**		
Electricity and gas contracts at year-end with "green" offers [1] [2] of the total electricity and gas contracts (excluding safeguard, default, and last resort contracts)	%	11.7%	16.6%**		
Installed renewable energy capacity	MW	155	156	166	186
Charging stations for electric transportation (public)	no.	43	104	>300	
Installed NexMeter smart meters of the total installed smart meters	qty and %	0.0 (0%)	>19.8 k (8.1%)	>300 k	

*The ISO 50001 energy saving measures for 2024 and 2030 compared to internal consumption in 2013 are characterized by both improvement targets and risk forecasts.

**The figure reported in 2020 is the Group figure; excluding the recently acquired companies (Estenergy, Amgas Blu, Ascotrade, Ascopiave Energia, Blue Meta, and Etra) to make the figure comparable with 2019: Renewable electricity sold = 31.9% (excluding protected market), 26.7% (including protected market); Natural gas sold with CO_2 emissions offsetting = 5.2%; Electricity contracts at year-end with renewable electricity = 31.5%; Gas contracts at year-end with CO_2 emissions offsetting = 13.3%; Electricity and gas contracts at year-end with "green" offers = 21.6%; Contracts at year-end with energy efficiency solutions = 27.4%.

[1] Pacchetto Natura/Hera Impronta Zero/Business contracts.

[2] Hera Impronta Zero/Business contracts.

Economic and financial indicators

	Unit	2019	2020	2024 target	2030 target
EBITDA CSV from Energy Drivers	Euro mln	85.5	136.6	185	
EBITDA CSV from Energy Driver "Promoting energy efficiency"	Euro mln	52.2	85.0	117	
EBITDA CSV from Energy Driver "Energy Transition and Renewables"	Euro mln	33.3	51.6	68	
Share of BSC premium linked to CSV Energy Drivers	%	2%	4%		
Share of BSC premium linked to CSV Environment Drivers	%	8%	11%		
Revenue from energy production from coal or nuclear plants	Euro mln	0.0	0.0	0	0