

erion

Ecodom. Remedia.
Producer Responsibility

SUSTAINABILITY **REPORT**

2020

From solid roots
the largest Extended Producer Responsibility System for the management of waste associated with electronic products is born

"There are two lasting bequests we can give our children: one is roots, the other is wings."

William Hodding Carter II

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LETTER TO STAKEHOLDERS

Erion presents its first Sustainability Report, the one relating to 2020, a year characterized by great challenges that we had to adapt to very quickly as organization and as people.

In 2019 when we laid the foundations for a new shared path between Ecodom and Remedia and natural strategic evolution of the two Consortia for the environment, circular economy, research and technological innovation, we could not have imagined that we were going to make this choice in such a difficult year, marked by a pandemic with health, economic, social and employment consequences on a global scale. The world had slowed down to the point of coming to a standstill for many months, and even today it is struggling to regain its balance. Despite the adverse economic situation, we decided not to give up the Erion project and to give life to what wants to be the reference Extended Producer Organization in Italy. The strength, tradition and experience of Remedia and Ecodom have allowed us to believe in it, whereas the commitment of our people has enabled us to succeed. We strive to be resilient and the course of history immediately gave us the opportunity to prove that, challenging the big unknown of the industrial and commercial shutdown, the fall in sales of EEE in physical stores in the first months of the *lockdown* and the relative increase in those made online (including many free riders) and a work model that reduced our service to the bare essentials to meet health standards. Added to this there is the age-old lack of national policies that can foster the definitive development of a truly circular economy in the Country and concrete investments for the creation of new, more innovative and, above all necessary, facility plants for recycling the fractions obtained from the treatment of WEEE.

In such a difficult context, Erion has become a reality able to ensure Producers and consumers a service performed with the same care and environmental excellence of its two founding Consortia by managing a significant amount of waste: 302,266 tons, of which 262,351 tons of Household WEEE (71.7% of the entire Italian System). These figures (+5% on the total waste managed and +9.3% on Household WEEE respectively) are significantly higher than those achieved in 2019 by Ecodom and Remedia and which highlight the important synergies resulting from the merger and that required constant attention to maintaining high levels of performance.
We made a success by joining together in Erion and in the values that identify it (quality, transparency, efficiency, innovation and social commitment), made up of a dynamic and young team of 44 people, with an average age of 39 years and a considerable female majority (77%). We did this by committing ourselves, from the very first day of activity,

to maintaining our primary objective: ensure that our associated Producers are fully compliant with the relevant regulations, offering them services in accordance with the highest environmental standards. We established a climate of *fair play* with competitors and applied *fair compensation* policies in contracts with our suppliers, among the parties most affected in recent years by the crisis in the raw materials market. At the heart of our work and world there is the protection of the environment, and these are the numbers we care most about: our management of Household WEEE has made it possible to avoid emissions of over 1.8 million tons of CO_2 equivalent, save 421 million kWh of energy and recycle over 236,000 tons of Secondary Raw Materials. Four sectoral Collective Schemes have been created which represent the concretization of an idea of which we are particularly proud. The Consortium **Erion WEEE**, which, by inheriting the values and quality of Ecodom and Remedia Consortia, was created to strengthen the WEEE chain still far from EU targets. **Erion Professional**, a start-up created with the idea of revolutionizing – also through the Exceed program – the Professional WEEE management approach by increasingly enhancing the commitment of Producers towards society. **Erion Energy** dedicated to the management of Waste Batteries and Accumulators (WBA) with the aim of improving the effectiveness and capillarity of the collection system, reducing safety issues for certain types of batteries (especially lithium ones). **Erion Packaging**, the newly established Collective Scheme created with the aim of providing to Producers of EEE, Batteries and Accumulators a comprehensive solution for the management of Packaging Waste associated to their products.
It is on these bases that Erion is preparing to face the great challenge of the ecological transition in Italy: our goal is to continue contributing to this change, never failing to implement our commitment to transparency towards all our stakeholders. A year ago we stated that "*We are very lucky to do a job that, if done right, can do good to the world*", and we repeat it today by bringing to your attention the data of our first Sustainability Report, proof that not only the work has been done right but that, together, we have done some good to the world.

And we are confident that the best is yet to come.

Dario Bisogni

President
Erion WEEE

Daniela Valterio

President
Erion Professional

Alessandro Frigerio

President
Erion Energy

Maurizio Bernardi

President
Erion Packaging

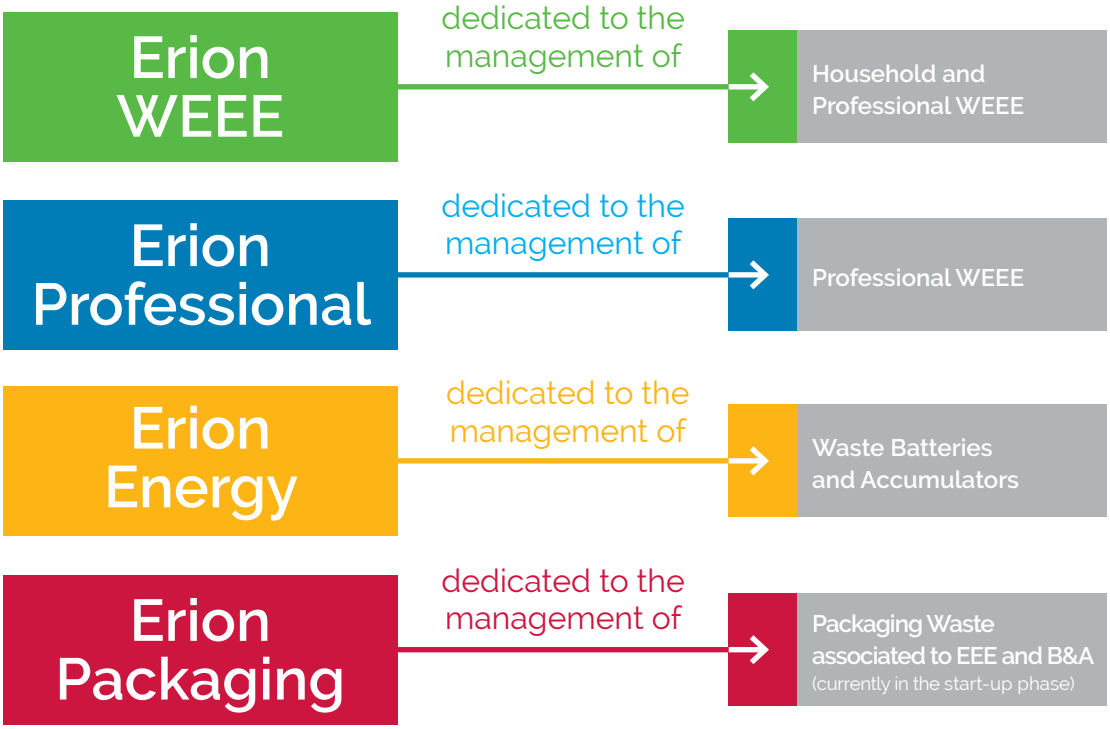
Andrea Fluttero

President
Erion Compliance Organization

EXECUTIVE SUMMARY

The date of 1st October 2020 marks an important moment for the waste sector associated with electronic products in Italy. In fact, on this date, Ecodom and Remedia, the two most important Consortia for the management of **WEEE** and **WBA**, formally joined their skills by giving life to **Erion**, the largest Italian non-profit Producer Responsibility Organization. Based on a vision aimed at ensuring the highest level of transparency, quality, efficiency, innovation and social commitment, the new structure offers a comprehensive service in the field of Household and Professional WEEE, Waste Batteries and Accumulators and Packaging Waste, supporting the development of a sustainable circular culture.

In order to build the quality and resilience of the sector and guarantee to Producers a greater efficiency in achieving full compliance with environmental regulations and a broader portfolio of services, Erion decided to establish four Collective Schemes, each specialized on a specific area:



The operational strategies and activities of the four Collective Schemes are coordinated by the separate legal entity, **Erion Compliance Organization (ECO)**, which represents the operational core of the System.

In 2020, the new System managed a total of **302,266 tons of waste** (+5% compared to 2019), of which **262,351 tons of Household WEEE**, **9,378 tons of special waste** (of which **4,171 tons of Professional WEEE**) and **30,537 tons of Waste Batteries and Accumulators**.

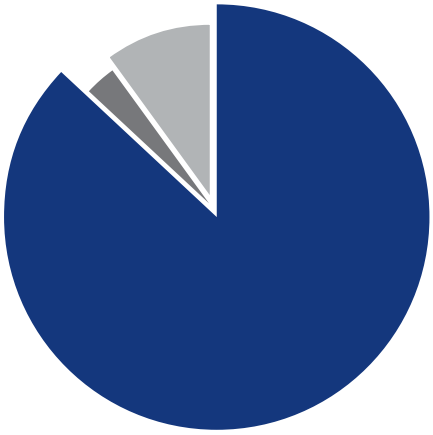
302,266 t ← of waste managed, of which:

262,351 t ← Household WEEE

9,378 t ← Special waste (of which 4,171 t of Professional WEEE)

30,537 t ← Waste Batteries and Accumulators

Percentage distribution of waste managed



87%
Household WEEE

3%
Special waste (including Professional WEEE)

10%
Waste Batteries and Accumulators

The Erion System's objective is to ensure an environmentally excellent waste management aimed at recycling and thus at maximizing the recovery of Secondary Raw Materials. To do this, Erion relies on specialized plants to guarantee that the treatment takes place according to the highest standards of environmental quality. The Erion System verifies that all types of waste are treated and disposed of by authorized operators in full compliance with national and international regulations, and pursues continuous improvement in terms of greenhouse gas emissions and energy consumption resulting from its activities. Thanks to its performance, in 2020 the proper management of Household WEEE led to an **environmental benefit** quantifiable in a saving of **over 1.5 million GJ of energy**, as well as avoiding the emission of **over 1.8 million tons of CO_2eq**.



over 1.5 million GJ — Energy saved

over 1.8 million t CO_2eq — Avoided emission

44 — Employees

34 — Women

678 — Hours of training

89.4 million € — Economic value generated

88.3 million € — Economic value distributed

41.1 million € — Reduction of charges

17.2 million € — Efficiency bonuses

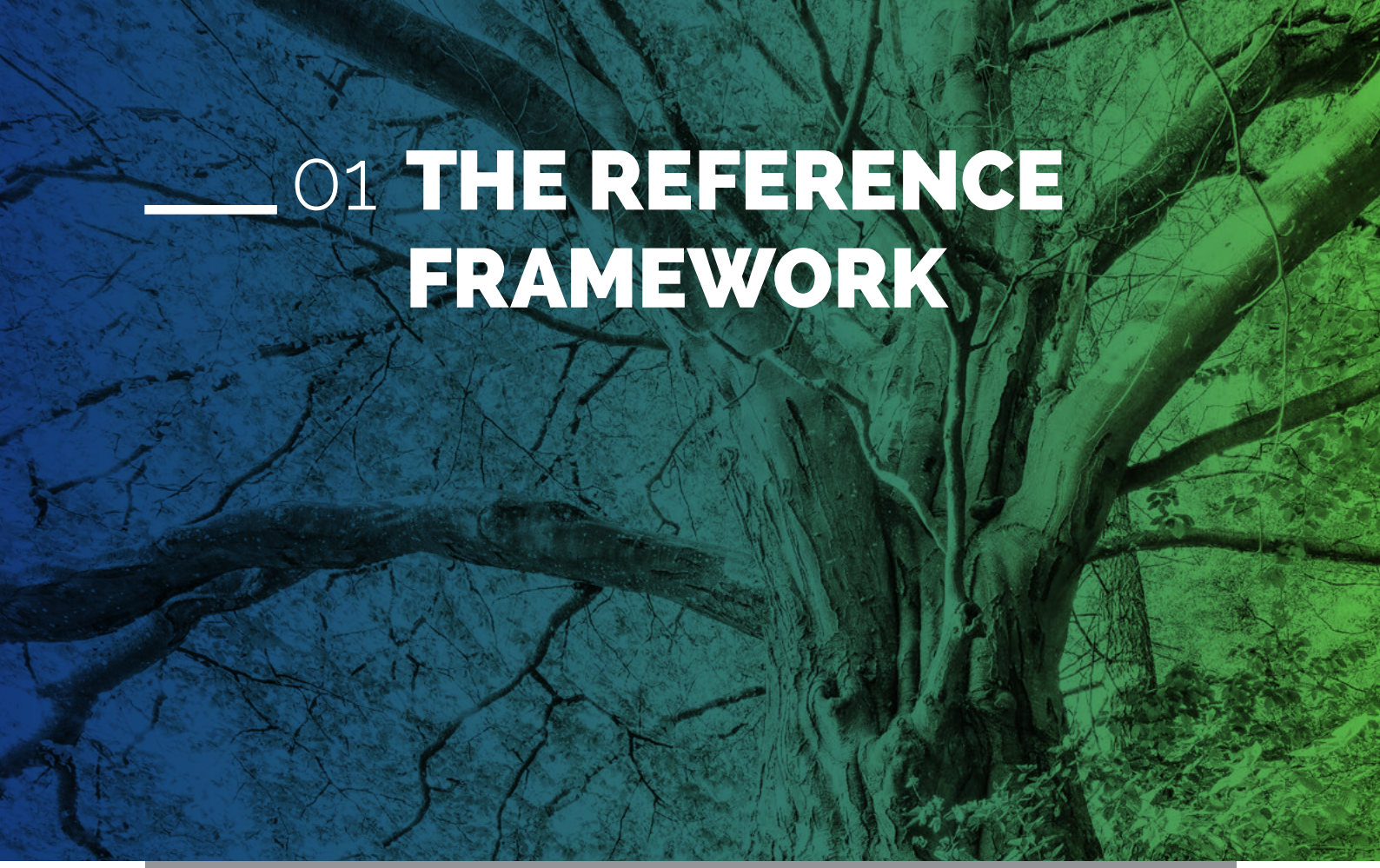
In the social sphere, following the merger, the Erion System not only retained all employees, but also increased its staff by hiring 12 new people. Of Erion's 44 employees, **93% have an open-ended contract**, while the remaining 7% (3 employees) have a fixed-term contract. Erion takes care of the well-being of its people by developing initiatives aimed at improving internal cohesion and ensuring the best possible contractual conditions. The new System is committed to constantly improving the skills of its employees through training courses dedicated to **technical and professional**, **regulatory**, **managerial and relational** aspects.

As for the economic performance, in 2020 Erion directly **generated 89,410,692 € of economic value**, **distributing 88,317,933 €** to suppliers, employees, Public Administration and communities. Erion's work allowed to generate **58,305,007 € of indirect economic impact** in 2020 thanks to:

- the **reduction of charges** deriving from waste management by Local Authorities for 41,097,948 €;
- the payment of 17,207,059 € for **efficiency bonuses** to Collection Centres and Grouping Places.

Erion is strongly committed to promoting the **Circular Economy** thanks also to its participation in **European research projects** in collaboration with universities and research centers, to a constant support to Producers for the implementation of programs aimed at encouraging the emergence of initiatives related to circularity, and to the spreading of a circular culture in the community through both digital and traditional channels. In 2020, 12 research projects on technological issues (plastics and Critical Raw Materials), education activities, value chain policy actions (change of the energy label) and construction of new business models (Circular Housing) were followed. The Exceed Clima project was also launched to increase collection rates of professional air conditioners.

In order to better communicate the Erion world, the initiatives and the constant commitment to the protection of the environment and human health, various activities have been implemented: from the new Erion System website to those of the individual Collective Schemes, from press releases to the constant presence on social channels (Facebook, LinkedIn, Twitter and YouTube), up to the participation in programs and projects aimed at informing and raising awareness of the different stakeholders (Producers, Institutions, Media and Consumers). Among the most significant projects there is the launch of ***"EconomiaCircolare.com"***, the web magazine promoted by CDCA and Erion which offers analysis, in-depth studies and dissemination of content focused on the themes of circularity. In 2020, **two events were organized with the direct participation of guests**, one held in Rome on 15 September 2020, and one in Milan on 14 October 2020. During 2020, the System also launched a **stakeholders engagement** initiative with the aim of gathering their requests as well as their observations and views regarding the new structure, its work and the most relevant issues for sustainability and the Circular Economy.



01 THE REFERENCE FRAMEWORK

Erion is the most important Italian non-profit Producer Responsibility Organization for the environmentally sustainable management of Waste Electrical and Electronic Equipment (WEEE), Waste Batteries and Accumulators (WBA) and Packaging Waste, and for the valorisation of the secondary raw materials.

The Erion System was established on 1st October 2020 as an evolution from the experience gained by Ecodom and Remedia (the two main Consortia operating in the WEEE and WBA sector), with the aim of:

- providing Producers with the most comprehensive service for all waste associated with electronic products, ensuring them full compliance with national and European environmental regulations and support in the design and implementation of circular economy services and processes
- strengthening the resilience of the sector by increasing its efficiency and ensuring fair compensation for treatment operators so as to guarantee a high quality of service and minimize the environmental impacts resulting from the management of the waste under Erion's responsibility

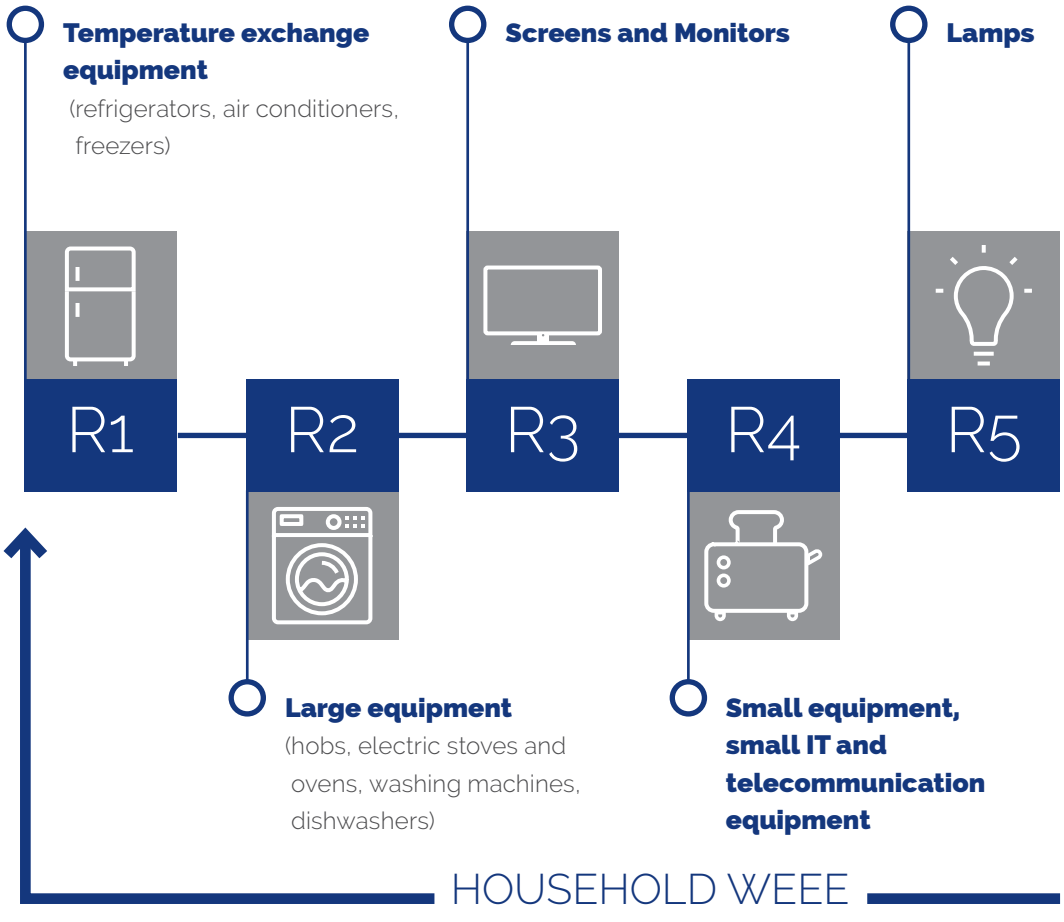
Given its recent creation, this document represents Erion's first Sustainability Report in which are reported the environmental, social and economic performances of the new System.

1.1 HOUSEHOLD AND PROFESSIONAL WEEE

The management of **Waste Electrical and Electronic Equipment (WEEE)** is the main area in which Erion operates. In Italy this activity is regulated by **Legislative Decree 49/2014**, which transposed Directive 2012/19/EU. By Electrical and Electronic Equipment (EEE) is meant *"Any equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and fields and designed for use with a voltage rating not exceeding 1,000 volts for alternating current and 1,500 volts for direct current"*. This can be of two types: household or professional.

When the holder decides to dispose of it, it becomes waste.

Household WEEE is defined as all e-waste generated by private households, but also that deriving from equipment which can be used indifferently by private and professional users. Household WEEE are clustered in **five Groups**:



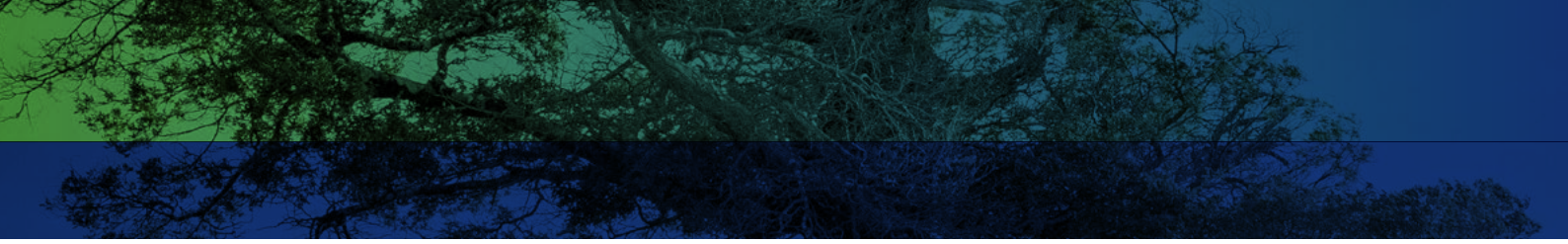
In contrast, **Professional WEEE** is defined as waste deriving from equipment designed with functions and characteristics such as to be usable only by professionals or companies. Some examples of Professional WEEE are radiography equipment, ultrasound systems and any professional medical devices; refrigerated counters, ATM machines, automatic food and drink vending equipment, industrial washing machines, professional printers and large air conditioning systems.

The keywords of the Household WEEE collection

Table 1.1

Collection Centres	Sites dedicated to the collection of WEEE and registered on the Centro di Coordinamento RAEE portal, maintained and operated by Municipalities and companies authorized to manage urban waste in accordance with Ministerial Decree No. 185 of 25 September 2007 and subsequent amendments. Collection Centres are open to all citizens and the distribution who can dispose of Household WEEE free of charge.
Grouping Places	Sites dedicated to the collection of WEEE and registered on the Centro di Coordinamento RAEE portal where the distributor groups the WEEE delivered by the consumers. Grouping Places receive the waste coming from the "one-to-one" and "one-to-zero" collection and are served directly by the Collective Schemes. Grouping Places can be set up at the distributor's point of sale or at another location specified by the distributor.
Collecting Points	Physical places where the individual WEEE are stored, by separate Group, inside the Collection Centres or Grouping Places. In a Collection Centre or in a Grouping Place, up to five Collecting Points can exist (one for each Group).





The **European Directive 2012/19/EU** assign to Producers of EEE the responsibility for the proper treatment, recovery and disposal of WEEE. The Italian Legislative Decree 49/2014 provides that Producers can fulfil this responsibility individually or by joining together in Collective Schemes. Furthermore, with regard to Household WEEE, it is envisaged that the costs for the management of WEEE in all phases subsequent to the primary collection (i.e. transport, treatment and eventual disposal) will be borne by the Producers. Household WEEE is delivered by citizens to Collection Centres set up by Local Authorities or to distributors of EEE. In particular, distributors (i.e. EEE retailers) are required to give citizens the opportunity of disposing of their WEEE in the following ways:

- **one-to-one**: distributors must ensure at the time of the supply of a new EEE intended for household use, the free take back of the used equipment if it is of an equivalent type;
- **one-to-zero**: distributors with sales areas relating to EEE of at least 400 m^2 must provide for the collection, in their stores or in their immediate proximity, of very small WEEE (no external dimension more than 25 cm) free of charge to end-users and with no obligation to purchase an EEE.

Directive 2012/19/EU has introduced increasingly new **minimum collection targets** for the WEEE streams. In fact, from 1 January 2019 the collection percentage to be achieved each year is set at 65% of the average quantity by weight of EEE placed on the market in the previous three years or, alternatively, 85% of the quantity by weight of WEEE generated in the national territory in the reference year. These legislative requirements have the objective of promoting the recovery of Secondary Raw Materials deriving from recycling, which can be introduced into new production cycles without the need to extract new raw materials from the earth.

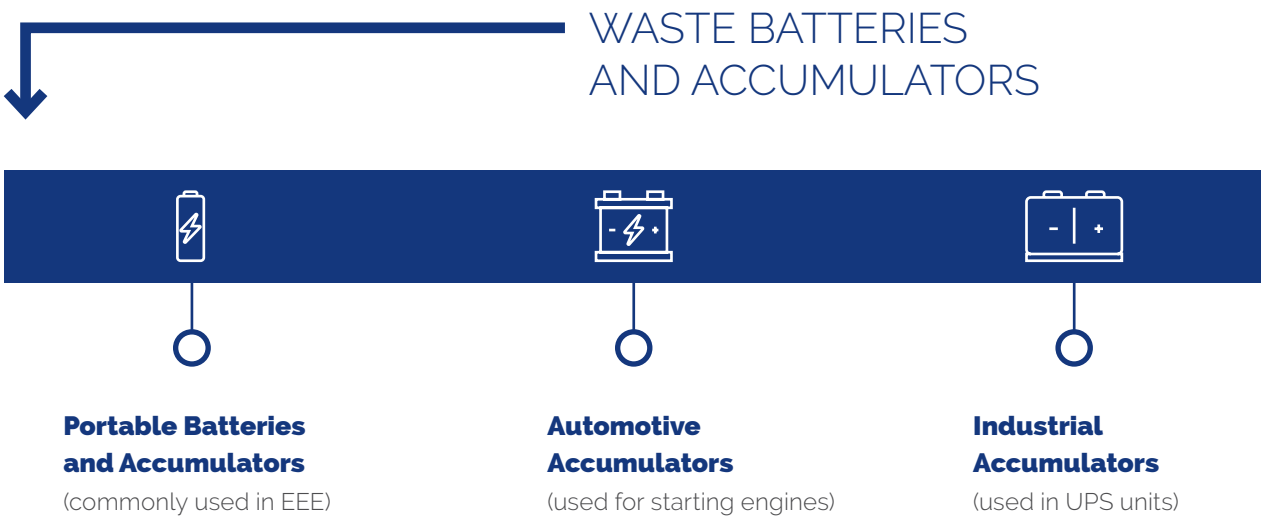
Following the provisions of the European Directives of the so-called **"Circular Economy Package"** adopted by the European Union in July 2018, in September 2020 entered into force the four Legislative Decrees that update and redefine the rules on waste treatment, including WEEE. However, the changes introduced have no impacts on the functioning of the current WEEE management System.

As regards the management of Household WEEE, Erion WEEE operates within the System headed by the **Centro di Coordinamento RAEE (CdCRAEE)**, the body responsible for optimizing the management of WEEE in Italy. It is a private Consortium which brings together all Collective Schemes and operates under the supervision of the Environment and Economic Development Ministries. The CdCRAEE coordinates the activities of all Collective Schemes by assigning to each of them the Collecting Points from where Household WEEE is to be collected and verifies the environmental performance of the treatment plants.

Despite the COVID-19 pandemic, in 2020 the WEEE sector experienced a growth of 6.7% compared to 2019. This result is partly due to the first national *lockdown* during March and April 2020 which forced citizens to a period of isolation used by many for clearing their homes from old devices and equipment that – once the restrictions eased – they delivered to the Collection Centres or distributors. Furthermore, the *lockdown* and the drop in iron prices made WEEE less attractive to the "parallel market", i.e. to those parties who usually intercept WEEE exclusively in order to profit from the sale of the raw materials contained therein without any consideration for the environment. The stoppage of this "parallel market" has therefore allowed the collection of a greater quantity of WEEE by the Collective Schemes.

1.2 WASTE BATTERIES AND ACCUMULATORS

Erion Energy is an important reference point in the Waste Batteries and Accumulators sector. The objective of the **European Directive 2006/66/EC** on Batteries and Accumulators – implemented in Italy by **Legislative Decree 188/2008** – is to ensure that the treatment of spent Batteries and Accumulators is carried out in full respect of the environment, with a correct and safe disposal of polluting substances and a high recycling rate of Secondary Raw Materials. In fact, Batteries and Accumulators contain materials that, unless subjected to proper treatment, can pollute the environment. For this reason the Italian legislation provides for the separate collection of this type of waste, dividing Batteries and Accumulators (B&A) into the following categories:



The Italian legislation obliges Producers who place new Batteries and Accumulators on the national market to organize and manage the waste deriving from these products. Each Producer can fulfil this obligation individually (i.e. by implementing its own Waste Batteries and Accumulators collection system throughout the national territory) or collectively (by relying on a Collective Scheme).

The Decree also sets out the collection targets and establishes the **Centro di Coordinamento Nazionale di Pile e Accumulatori (CDCNPA)**. The Centro di Coordinamento, of which Erion Energy is a member, has the task of optimizing the activities of the collection systems, ensuring adequate operating conditions for continuous improvement of the collection and recycling rates of Waste Batteries and Accumulators.

It should be noted that the impact of the COVID-19 pandemic on the sector has been rather limited, thanks to the high degree of resilience of the chain.

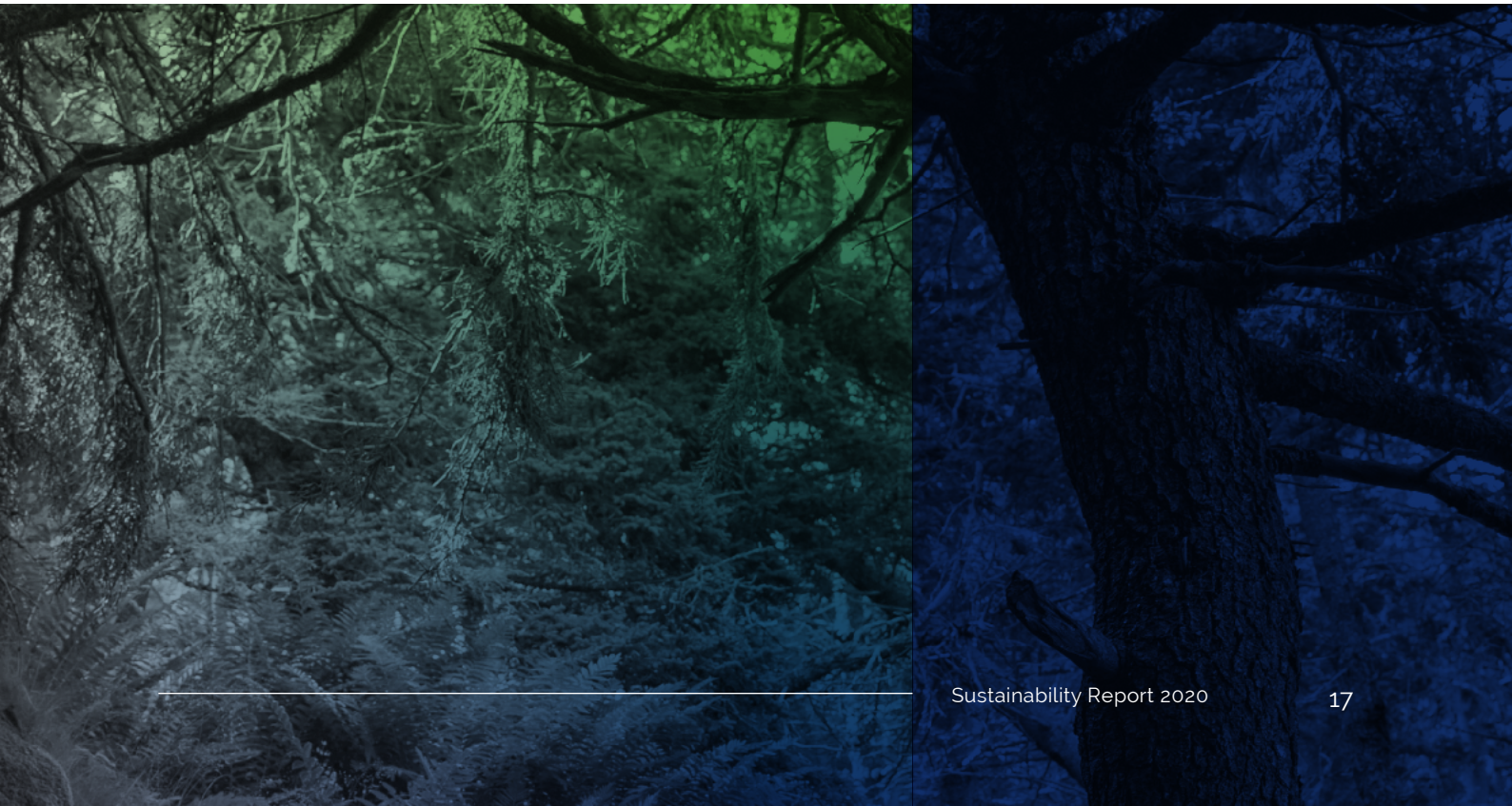
1.3 PACKAGING WASTE

Erion wants to offer its Members (Producers of Electrical and Electronic Equipment and Batteries and Accumulators) a management service for all waste deriving from the commercialization of these products. For this reason it has created Erion Packaging, a Collective Scheme for the management of **Packaging Waste associated with EEE and B&A**.

Legislative Decree 116/2020, implementing the EU Directive 2018/851 which amends Directive 2008/98/EC on waste and the EU Directive 2018/852 which amends Directive 1994/62/EC on packaging and Packaging Waste, introduced significant modifications and additions to the Consolidated Environmental Law (Legislative Decree 152/2006) also with regard to the management of Packaging Waste by establishing measures to prevent the production of such waste, as well as setting out the recycling targets for 2030 and promoting an increase in the percentage of reusable packaging.

The Decree divides packaging into different categories according to the type of material (paper and cardboard, wood, steel, plastic and glass) and their recoverability in order to promote their recycling, energy recovery or recovery as compost.

As for the effect of the pandemic on the packaging sector, collection has fallen by an average of 10% due to the *lockdown* and the consequent interruption of the activities by waste collection sites.



02 STAKEHOLDERS AND MATERIALITY

2.1 THE STAKEHOLDERS STRATEGIC ROLE

Erion operates in a broad context and according to a global vision that involves different national and international entities with which it interfaces and interacts constantly and which represent the network of *stakeholders* of the System. Through continuous dialogue, Erion is committed to establishing a solid and lasting relationship, based on transparency, trust, cooperation and reciprocity.




Citizens and consumers
Institutions
National Clearing House
Members Producers
Waste collection companies
erion
Universities and Research Centres
Suppliers and sub-suppliers
Italian and European associations, Funding Bodies
Media
Municipalities
Distributors



STAKEHOLDERS	ENGAGEMENT METHODS
Members Producers	As a Collective Scheme, Erion is constantly in contact with its Members, in particular through the General Managers and the Producer Support Team (PST), consisting of 7 people at the disposal of the Collective Scheme Members to support them in fulfilling their regulatory obligations and listen to their needs. Erion has also created the "Erion Portal for Producers", a dedicated website in which each Producer – once authenticated through its credentials – can consult its profile, the EEE and B&A categories for which it is registered, the declarations made, the accounting situation, the formalities and obligations and directly contact the PST. In addition to this, at least twice a year the Members of each Collective Scheme attend the "Members Meetings" in which the strategic lines are defined. Meetings and seminars are also planned, ranging from technical and regulatory topics to issues related to each sector (during 2020, seminars were held in the form of webinars). Moreover, "working groups" are organized to address specific projects, as happened for the Exceed Clima project, the program designed for the management of professional WEEE in the A/C sector, and for the Exceed Printing project, currently in the start-up phase. Finally, some associated Producers are members of the Boards of Directors of Erion Compliance Organization and of the sector Collective Schemes where they actively participate in strategic decisions.
Institutions	Erion identifies itself as an authoritative and qualified presence in institutional forums and for the main players in the supply chain, with whom it has established a dialogue on issues of common interest and compliance with current regulations, also thanks to the development of studies, surveys and research, as well as communication, information and awareness-raising initiatives.
National Clearing House	Erion is a member of the Centro di Coordinamento RAEE (CdCRAEE) and of the Centro di Coordinamento Nazionale Pile e Accumulatori (CDCNPA), with whom it maintains a direct and constant relationship to actively contribute to the growth of the National System.



STAKEHOLDERS	ENGAGEMENT METHODS
Suppliers and sub-suppliers	The operating partner Remedia TSR, the treatment plants and the logistics operators can be considered to all effects strategic partners and direct *stakeholders* of the System. Erion interfaces with them constantly with the aim of continuously improving the quality of the service.
Municipalities	Erion has opened a stable channel of dialogue with several Municipalities aimed at raising awareness among communities on the issue of recycling with a view to promote proper waste management.
Waste collection companies	Waste collection companies are public and private operators, with whom Erion carries out projects aimed at increasing the collection of waste associated with electronic products.
Distributors	Large-scale distribution and e-commerce players interact with Erion in the role assigned to them by legislation and promote the correct collection of WEEE through the "One-to-One" and the "One-to-Zero" take-back schemes and the collection of portable batteries.
Citizens and consumers	Erion addresses citizens with the aim of promoting sustainable behaviour, both by actively participating in the initiatives of the National Clearing House and through some specially created tools such as social networks, the **"*EconomiaCircolare.com*"** magazine and ***Erion per voi***, the website dedicated to citizens to promote a culture based on the correct and virtuous recycling of waste associated with electronic products.
Universities and Research Centres	Erion actively collaborates with Universities and Research Centres to develop projects funded by the European Union or other public and private entities, focused on the topics of circular economy and sustainability.



STAKEHOLDERS	ENGAGEMENT METHODS
Italian and European associations, Funding Bodies	Erion WEEE is a member of WEEE Forum, the largest international centre of expertise for the management of WEEE, and actively participates in round tables, in moments of sharing industry practices, as well as dedicated projects. The Collective Scheme is also a member of the WEEELABEX Organization, an international body created to verify through trained auditors the quality level of the WEEE treatment plants, and is the only Italian member of WEEE Europe, a joint venture among the main European Collective Systems that provides regulatory and technical assistance to Producers. As for the world of batteries, Erion Energy is a member of EUCOBAT, the European association of National battery collection Systems. It is also a member of MOTUS-E, the first Italian association made up of industrial operators, the automotive supply chain, the academic world and opinion movements in order to accelerate the change towards electric mobility. The System also makes use of Funding Bodies to support its work in research, such as Horizon 2020, EIT – Climate KIC and EIT – Raw Materials. Erion plays an active and proactive role in terms of sustainable development and circular economy. For this reason, it is member of Bodies and Associations such as the Foundation for Sustainable Development, the Circular Economy Network, ICESP, OPTIME and the Agency for the Promotion of European Research (APRE). Finally, the relationship with the community and citizens as such and as consumers is of vital importance to Erion. This is why it has developed a relationship with environmental and consumers associations with which it aims to establish cooperation on relevant aspects such as raising citizens' awareness on the issues of recycling and circular economy.
Media	For Erion it is very important to contribute with its work to the well-being of the chain and the community. To do this, the System interfaces daily with mass media by promoting initiatives and projects aimed at raising awareness and spreading the values it represents, starting from the experience of the Consortia from which it was born, but rising beyond these as a new and innovative entity.



In addition to the ordinary ways of contact with its *stakeholders*, during 2020 Erion engaged in an open confrontation with some categories of *stakeholders*, with the aim of gathering their requests, comments and views with respect to the work of the System and the performance of the sector.

THE 2020 *STAKEHOLDERS ENGAGEMENT* ACTIVITY

In November 2020, Erion decided to involve a panel of *stakeholders* through an interview with a triple objective:

- understand their expectations on the System and on the performance of the sector, also with reference to the impacts generated by the COVID-19 pandemic
- obtain the point of view of individual *stakeholders* on the relevance of certain issues related to sustainability
- investigate possible future collaborations and take ideas for improvement in the drafting of the "Sustainability Report"

The contacted *stakeholders* were chosen among the representative player of the various components of the chain: ASSORAEE (Association of Treatment operators), APPLIA (Association of EEE Producers), ALTROCONSUMO (Association of Consumers), WEEE Forum (European Association of Collective Schemes), UTILITALIA (Association of WEEE collection companies).

During the interviews, which took place remotely due to the health restrictions in force, an exercise was conducted to prioritize the sustainability issues relevant to Erion, in order to integrate directly, and in a specific and more reliable way, the significance that *stakeholders* attributed to each issue. This exercise, which was conducive to the construction of the materiality matrix included in this document, consisted in assigning a level of relevance from "low" to "very high". Finally, respondents were asked to identify possible ideas for collaboration and explain their future expectations regarding their relationship with Erion.



These findings can be summarised as follows:

CITIZENS AND CONSUMERS: *Altroconsumo*

Main material topics discussed	Materials, Waste Management, Occupational Health and Safety.
Expectations	• continue to oversee the education and information initiatives for citizens; • contribute to the facilitation of waste disposal activities for the citizen, with particular reference to the "One-to-Zero" take-back scheme by the Distribution; • design the messages and communication activities taking into account the generational gap and the different levels of citizens' awareness.
Ideas for collaboration	• promote the reuse and reconditioning of second-hand equipment.

SUPPLIERS: *ASSORAEE*

Main material topics discussed	Compliance with Environmental Legislation, Waste Management, Occupational Health and Safety.
Expectations	• bring to the legislature's attention the need for simplification of the management models; • abide by a strict code of ethics; • limit the interference by Collective Schemes with regard to the outflow of waste fractions to the market.
Ideas for collaboration	• develop a dialogue between the Members Producers and ASSORAEE in which Erion is the contact and mediation element to promote the development of the circular economy; • denounce the unlawfulness of the parallel system.

PRODUCERS: *APPLIA*

Main material topics discussed	Materials, Waste Management, Compliance with Environmental Legislation.
Expectations	• promote and correctly manage the reconditioning process; • contribute as a facilitator between the parties involved in the evolution of the Producer Responsibility Organization (PRO).
Ideas for collaboration	• create a work table with treatment operators and Producers to bring proposals for integration into existing legislation to the Ministry.

EUROPEAN SECTORAL ASSOCIATION: *WEEE Forum*

Main material topics discussed	Waste Management, Materials, Business Integrity and Fight Against Corruption.
Expectations	• achieve the WEEE collection targets; • manage the collection with a view to reducing pollution and recovering Critical Raw Materials (CRM); • develop the skills of the personnel of both the Collective Scheme and suppliers.
Ideas for collaboration	• continue the collaboration already under way with regard to the dissemination of *best practices* in the sector.

WASTE SEPARATION AND RECYCLING AREAS: *UTILITALIA*

Main material topics discussed	Climate Change, Inclusiveness and Non-Discrimination, Business Integrity and Fight Against Corruption.
Expectations	• focus investments in innovation and research to find new solutions to facilitate collection; • study new solutions for promoting the adaptation of national plants levels in order to achieve better environmental results; • increase the effectiveness and efficiency of integrated collection services (waste separation and recycling areas and home collection); • improve the functioning of the "One-to-One" and the "One-to-Zero" take-back scheme to facilitate the collection and increase the performance level of the System.
Ideas for collaboration	• study together ways of increasing collection in waste separation and recycling areas in order to make the system more effective and integrated with home collection services and minimize economic inefficiencies.

2.2 THE MATERIALITY MATRIX

The creation of the Erion System and the outbreak of the COVID-19 pandemic made it necessary to update the issues reported in this document so as to take into account the important changes that occurred during the year. A materiality analysis was therefore carried out to represent the significant issues from the point of view of the economic, environmental and social impacts of Erion, and those that most influence the assessments and decisions of *stakeholders*. In this regard, the guidelines of the "*Global Reporting Initiative (GRI) 101: Foundation*" have been adopted as a framework to give the right weight to the different aspects reflecting the social, economic and environmental impacts generated by the Erion System, given that this latter is able to influence the decisions of its *stakeholders*. The result of this process is the materiality matrix, which relates the issues identified as material, both from the decision-making point of view of the *stakeholders* (axis of the ordinates) and from the point of view of the significance of the impacts of the Organization (x-axis).





This process involved the following phases:

01

Identification of the universe of potentially relevant issues: in this first stage, a context analysis was performed covering both the external scenario (through an examination of global sustainability macro-trends, a study of sector trends, a benchmark analysis based on peer and competitor performance, a media survey), and the internal scenario (through an in-depth study of Erion's internal documentation). This made it possible to identify the potentially relevant sustainability issues with the aim of providing a starting point for making subsequent assessments on the relevance of the different issues for the System and its *stakeholders*

02

External relevance analysis: in order to identify the level of influence that the previously identified issues have on *stakeholders*, the analysis of the external context was taken into consideration (survey of macro-trend, sector trends, benchmarks and media), integrated with the results of the exercise carried out during the *stakeholders engagement* meetings

03

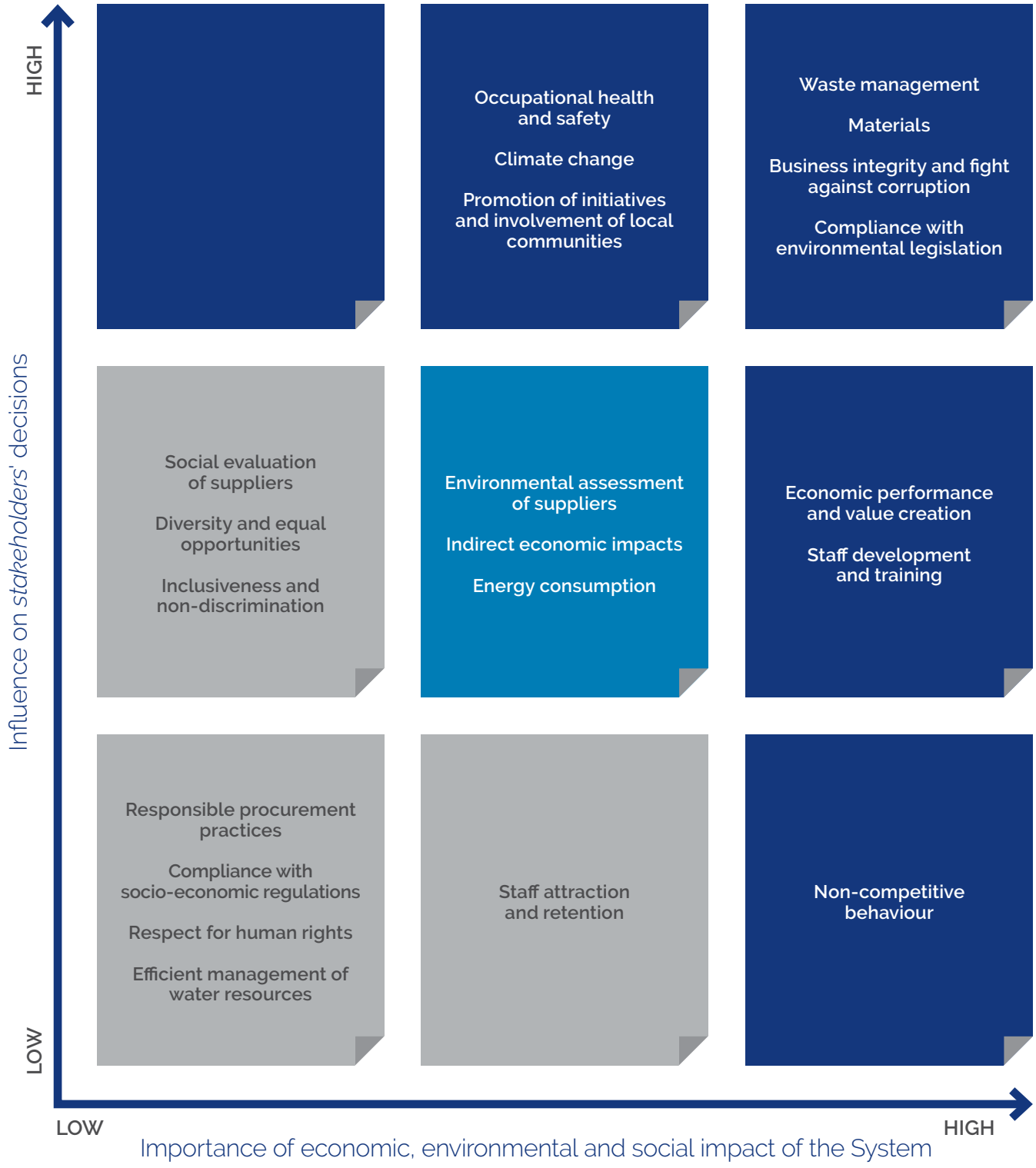
Internal relevance analysis: in order to identify the significance of sustainability issues from a business point of view, taking also into account the economic, social, environmental impacts of the Organization and its contribution to sustainable development, a *Workshop* was held with the Management, during which a prioritization exercise was conducted

04

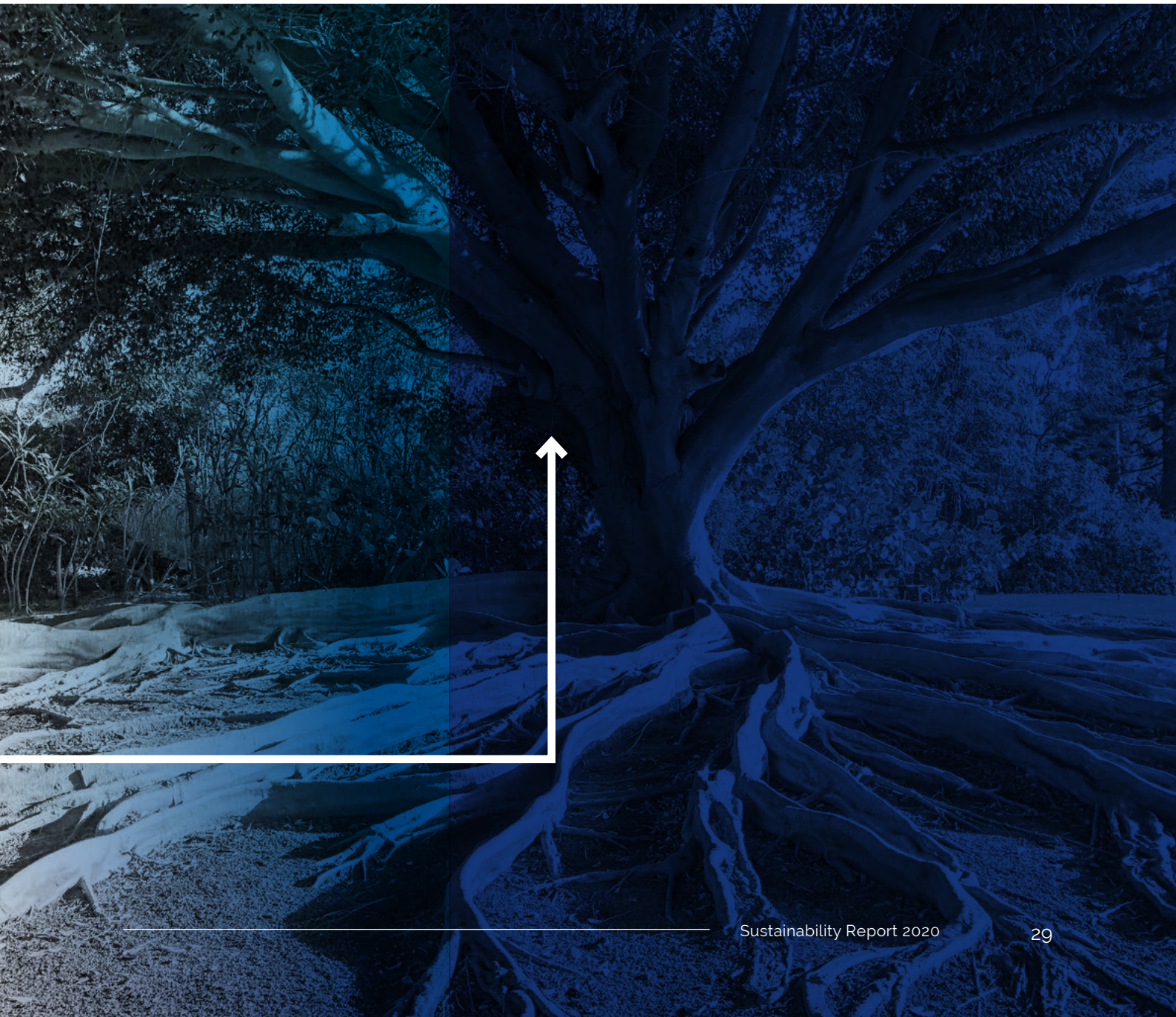
Compilation of the matrix: the results obtained from the various analyzes were evaluated and the materiality matrix was developed, while defining the thresholds to identify the material issues to be reported[1]. The matrix obtained was discussed and validated by the Top Management

[1] A relevant issue becomes material when it exceeds the materiality threshold, or when it is attributed a high value both from the internal and external point of view to the Organization. In this case it is reported in the Sustainability Report.

The resulting 2020 Erion's materiality matrix is shown below:



The issues positioned in the light blue and blue coloured rectangles (top right) are considered to be extremely relevant, since they have been given a high level of relevance from both perspectives. The material issues with high relevance were found to be: waste management, materials, business integrity and fight against corruption, compliance with environmental legislation, occupational health and safety, climate change, promotion of initiatives and involvement of local communities, economic performance and value creation, staff development and training and non-competitive behaviour, environmental assessment of suppliers, indirect economic impacts and energy consumption. The issues that have obtained a lower relevance, and which are therefore not material, are those positioned in the three grey rectangles at the bottom left. These issues will be recalled or cited as needed in this document in order to provide a complete picture of Erion's performance and will maintain their importance in view of future strategic assessments by both the System and its *stakeholders*.





03 ERION AND THE CIRCULAR ECONOMY

236,056 tons of Secondary Raw Materials recycled

- 134,200 t → of iron
- 34,479 t → of plastics
- 20,584 t → of concrete
- 6,393 t → of copper
- 5,371 t → of aluminium

302,266 tons of waste managed

- 262,351 t → **Household WEEE**
- 9,378 t → Special waste (including **Professional WEEE**)
- 30,537 t → **Waste Batteries and Accumulators**

More than 2,400 Members Producers

4 Collective Schemes



125,412 Transport journeys

11,465 Collecting Points managed

99.5% Level of service

- Websites ← 6
- Online magazine: *EconomiaCircolare.com* ← 1
- Articles ← 282



Through its action within the EEE, Batteries and Accumulators value chain, Erion concretely contributes to furthering the European path towards the **circular economy**. Within the circular economic model the System represents both an end-of-life manager (from the moment the waste is collected until its treatment) and a partner for all stages of the value chain, working to ensure the Producers a service that goes beyond the simple disposal of the waste.

In fact, Erion collaborates with its Members so as to:

- ensure compliance with EU and national legislation on WEEE and Waste Batteries and Accumulators in a virtuous, safe and cost-effective way;
- promote the environmental commitment of its Members towards the community in order to give concreteness to the issue of corporate social and environmental responsibility, thanks to a wide range of services guaranteeing timeliness and quality in waste treatment;
- support the European transition towards the circular economy both in terms of operational aspects thanks to the recycling of Secondary Raw Materials, and in terms of strategic developments, through studies and research on eco-innovation and the organization of awareness events aimed at consumers.

Particular attention is given to the promotion of a cultural change from the linear economy to the circular one, through an awareness-raising path addressed to all stakeholders. To this end, Erion has decided to launch, in partnership with the CDCA, an online magazine (***EconomiaCircolare.com***) dedicated to the circular economy that offers analysis, in-depth information and dissemination content, intended for professionals and environmental enthusiasts, where the focus is on the transition to the circular economy seen from an environmental, social and economic point of view. Another important building block of Erion's mission linked to **innovation**, considered a key element for the development of the circular economy. The System, in fact, deals with innovative operational initiatives such as the Exceed Clima project, collaborates in research programs financed by public and private entities together with universities and specialized research centres, and acts as a centre of expertise for companies that intend to develop circular economy initiatives, supporting them in the research process[2].

[2] See chapter 5.3 for more information on circular economy projects.



3.1 A SERVICE THAT GOES BEYOND WASTE MANAGEMENT

Erion is a **second generation Producer Responsibility Organization (PRO)**, conceived as a response to the will of Producers to fulfil in a positive and virtuous way the European Directives on the management of their own waste. To this end, a new System has been created to fully support the Extended Responsibility of the Producer and create value both for the high level of internal skills and the partnership with a dedicated and specialized operating entity, which can maximize its efficiency thanks to the critical mass made possible by Erion.

One of the objectives of the Erion System strategy is to contribute to making the national recycling chain stronger and more resilient, helping Producers to find new Raw Materials markets and supporting them in the research and redesign of their products.

At an operational level, Erion offers its Members an integrated service for the end-of-life management of all products placed on the market, whether they are Electrical and Electronic Equipment (EEE), Batteries and Accumulators and, in the future, also Packaging, positioning itself as a partner able to accompany the Producer in the transformation of its business models with a view to circularity.

Today, in fact, the Producer can identify in Erion the entity with which to compare its strategies at environmental level.



3.2 ERION'S VALUE CHAIN

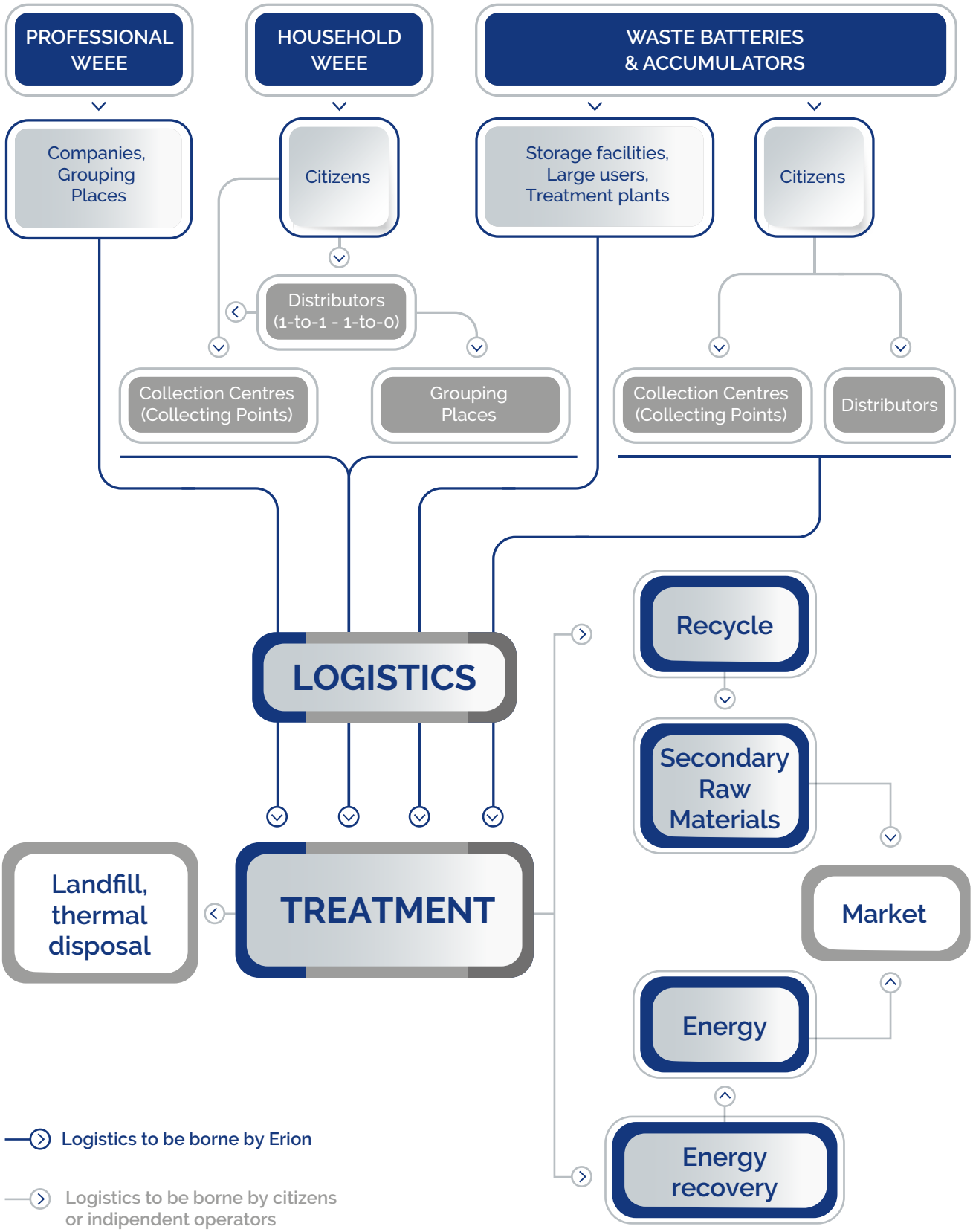
For the management of waste, Erion relies on specialized companies that provide logistics and treatment services. Upstream and downstream of the System's activities, there are respectively the starting points of all operational activities (i.e. the citizens and companies that generated the waste) and the relevant parties dealing with the management of the fractions leaving the treatment plants.

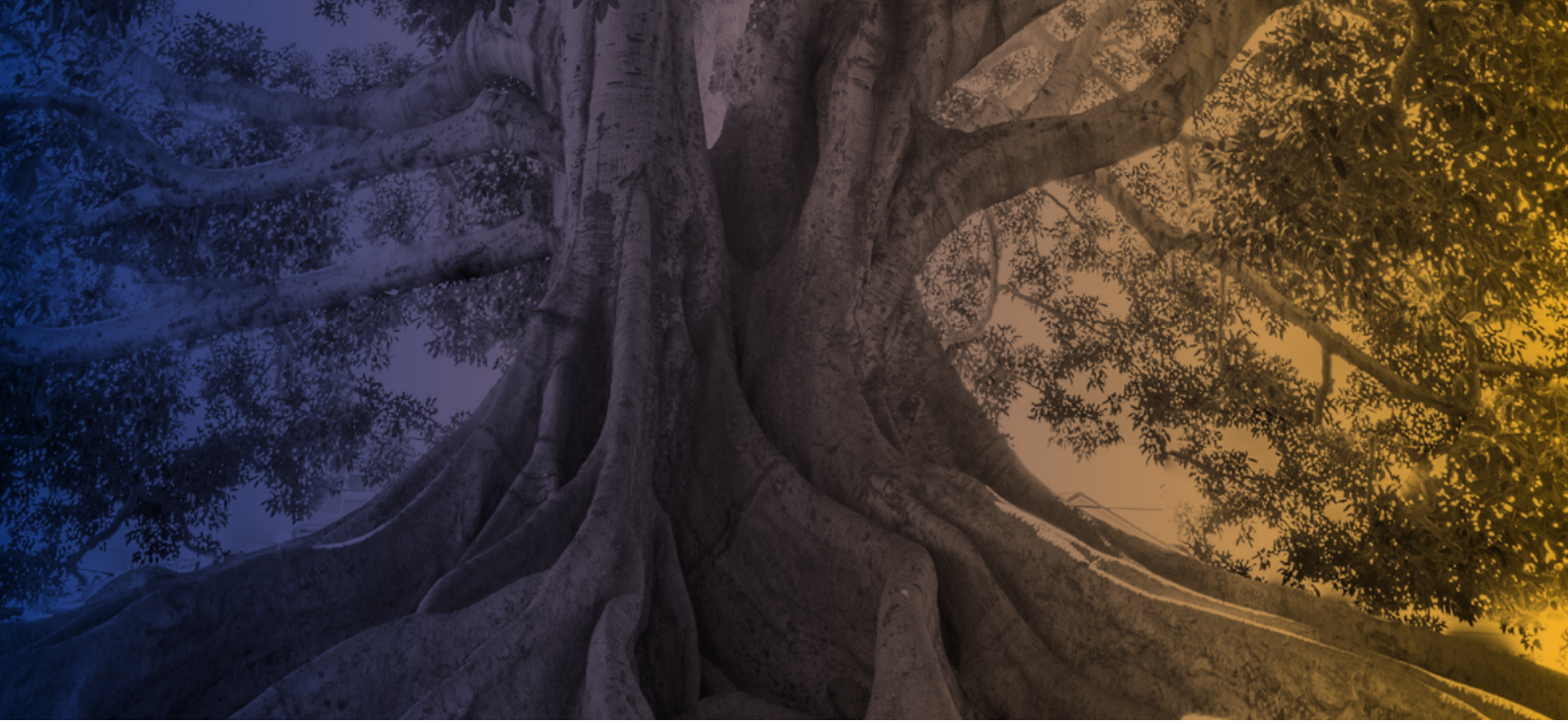
As regards the starting points for Household WEEE and Waste Batteries and Accumulators (WBA), Erion respects and complies with the provisions of the **Centro di Coordinamento RAEE (CdCRAEE)** and the **Centro di Coordinamento Nazionale Pile e Accumulatori (CDCNPA)**, whereas for the management of Professional WEEE, collections are carried out on the basis of the provisions of the agreements signed with the waste producers. Downstream of the logistics and treatment activities, the chain consists of the operators involved in the recycling of the outgoing fractions and the parties involved in the energy recovery and disposal of the remaining fractions.





The following are the Household and Professional WEEE and WBA chains:





Together with the other Italian Collective Schemes, Erion is part of what is generally called the **Italian "formal" System**. This System collects the waste from designated collection sites registered with the National Clearing House and processes it in treatment plants certified in accordance with the provisions of the agreement voluntarily signed with the Recyclers' Associations.

For WEEE, there is however a so-called **"parallel market"** that intercepts large quantities of WEEE every year, taking it away from the formal System and subjecting it to a treatment that does not meet any quality standards, and hence in an incorrect way from the environmental point of view. The existence of this parallel market has two major consequences. Firstly, it causes significant economic and environmental damage to the entire Italian System, and, secondly, it is one of the reasons why our Country is unable to reach the collection targets set by the European Community, as, in fact, the plants operating outside the formal System do not declare the quantities of WEEE that they treat, which consequently do not "feature" in the official statistics. The mission of the formal System is to avoid the dispersion of pollutants into the environment through the correct treatment of equipment that has become waste and maximize the recovery of materials to be reintegrated into the production cycle, combining efficiency in treatment processes with the protection of the health of citizens.

As regards the management of Household WEEE, Producers who belong to the Erion System ensure coverage of the management costs by paying an economic contribution (**WEEE Eco-contribution**) proportional to the quantities of EEE placed on the market. The WEEE Eco-contribution, which has the sole function of financing Erion's activities, can be visible (i.e. shown on the sales invoices to the distributor who in turn can communicate it to the final consumer) or built-in (included directly in the sale price to the distributor), and does not therefore generate any profit, neither for Producers nor for distributors.

The financing for the management of Waste Batteries and Accumulators is differentiated according to the type of products and expressed in a €/kg contribution to be applied to the quantities placed on the market.

The costs for the management activities related to Professional WEEE are subject to personalized quotations based on the characteristics of the waste (EWC code and quantity), the place of collection and the additional services requested. In addition, some chains operate according to the generational financing model called **"Erion Exceed"**, which makes it possible to pay a contribution when new equipment is placed on the market, used to implement efficient networks for the collection and treatment of professional end-of-life equipment.

3.2.1 Monitoring of the social aspects of suppliers

All suppliers of the Erion System are required to fully comply with current legal obligations, such as tax, social security and insurance, as well as provisions on health and safety at work, collective bargaining and environmental protection. For suppliers operating in the Household WEEE sector, an additional monitoring system has been adopted in 2020 by 42 suppliers (out of a total of 52): these employ 2,260 people (1,841 men and 419 women), of which 1,862 with an open-ended contract. The analysis of accident data indicates a low risk situation: 16 out of 42 companies have not had any accident, while the frequency indices are highly variable (as are the size of the companies and the services performed) and are therefore difficult to compare. As regards the fight against corruption, the risk is not considered high since the type of activity carried out by suppliers does not make them particularly exposed to it. Nevertheless, 20 companies have adopted a Management and Control Organization Model compliant with the requirements of Legislative Decree 231/2001 or a Code of Conduct.



04 ERION, TOWARDS A SUSTAINABLE FUTURE

4.1 THE NEW SYSTEM

The Erion project stems from the will of Ecodom and Remedia to offer their Producers a higher level of environmental and economic performance and a wider range of services. The two leading Italian Consortia have merged their strengths and skills into Erion, the natural evolution of a history of commitment to the environment, the circular economy, research and technological innovation.

Erion intends to be the best Producer Responsibility Organization in terms of efficiency, quality, transparency and innovation. These are the values that over time have inspired the work of Ecodom and Remedia and that Erion incorporates to continue to ensure the excellent management of **Waste Electrical and Electronic Equipment (WEEE)**, **Waste Batteries and Accumulators (WBA)** and soon also **Packaging Waste**.

The Producers who wanted the creation of Erion share some common values and an innovative vision in terms of Extended Producer Responsibility (EPR).



THE VALUES OF ERION

QUALITY

Guaranteeing operational quality means ensuring high recycling and recovery rates of materials, in full respect of the environment. To achieve this essential objective, Erion relies on value chain partners able to operate according to logistics and treatment standards.

TRANSPARENCY

Producers who choose Erion know they can count on a policy of total transparency and access to all information regarding the System (from the financing model to the management results and the environmental performances).

EFFICIENCY

Erion guarantees maximum punctuality in the collection of waste from all Collecting Points throughout the Country and the optimization of management costs, thanks to high economies of scale.

INNOVATION

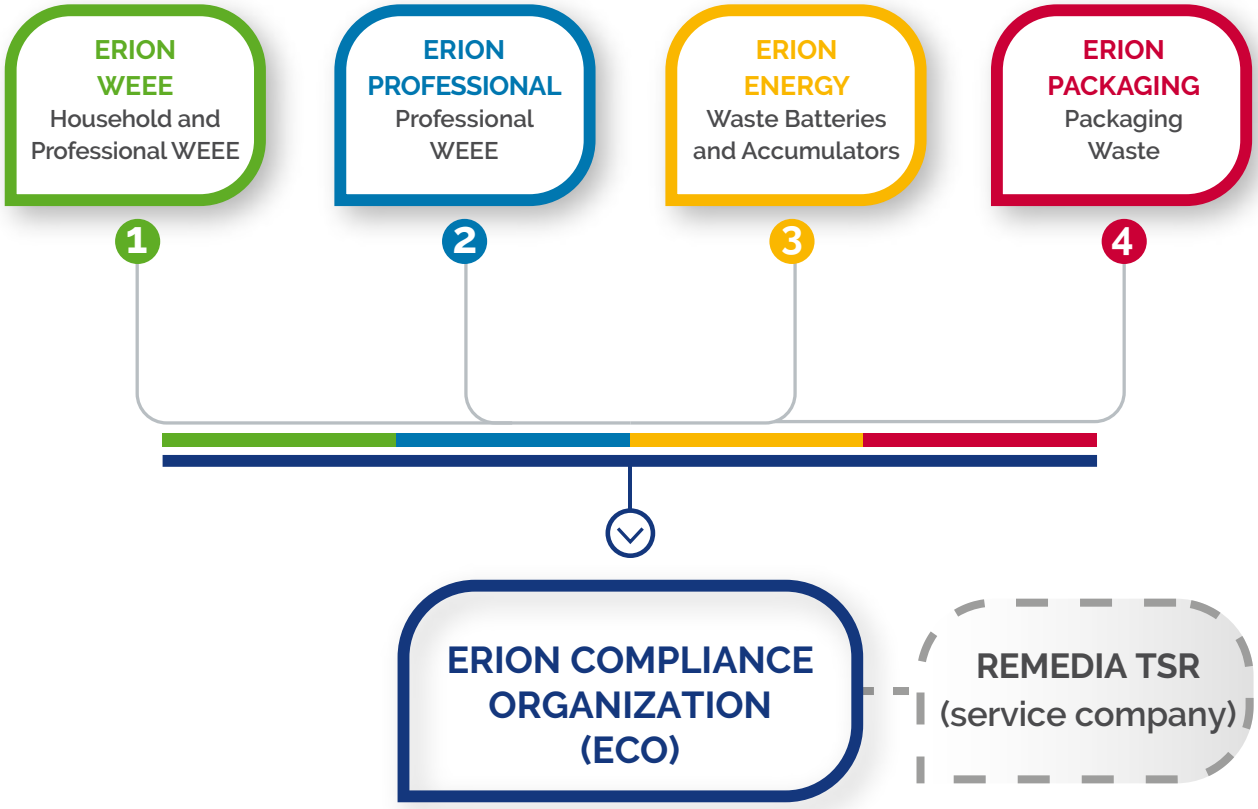
Erion focuses on innovation to ensure an effective contribution to the Circular Economy through international partnerships and the development of projects with research institutions, industrial enterprises and the academic world.

SOCIAL COMMITMENT

Erion strongly believes in shared environmental responsibility and contributes to the dissemination of a circular culture through information and awareness-raising initiatives aimed at the community.

4.1.1 Operational structure and organization

The Erion System is structured into four Collective Schemes, each specialized in a specific sector in order to favour an higher effectiveness on the single Extended Responsibility profile of the Producer.



The operational core of Erion is represented by **Erion Compliance Organization (ECO)**, a consortium company jointly owned by Erion WEEE, Erion Professional, Erion Energy and Erion Packaging. ECO, as a separate legal entity, harmonises the operational strategies of the four Collective Schemes and coordinates the activities for the System, providing all the services necessary for the functioning of the Collective Schemes. The Erion System also holds 20% of the share capital of Remedia TSR[3], a company that operates as the *main contractor* in the executive phase of the waste collection, logistics and treatment processes, whose responsibility falls under the Collective Schemes.

[3] *Remedia TSR (Recycling Technologies and Services) is not only the main contractor of the Erion System for the management of waste for which it is responsible, but also the partner for the design and implementation of innovative programs for the Circular Economy.*



4.1.1.1 The Collective Schemes



The four Collective Schemes represent over 2,400 companies in the hi-tech and consumer electronics sectors, and guarantee their commitment to the environment, the circular economy and *green* research, ensuring Producers regulatory compliance services in accordance with national and Community law and the coordination of waste management activities for Household and Professional WEEE, Waste Batteries and Accumulators and Packaging Waste, as well as support in the implementation of sector innovation projects and initiatives, and in the relations with the chain's stakeholders.

ERION WEEE

Erion WEEE is the non-profit Collective Scheme of the Erion System dedicated to the management of Household and Professional WEEE. National leader for share of responsibility, at 31 December 2020 Erion WEEE has 2,335 Member Producers.

Erion WEEE guarantees the highest standards of treatment quality, transparency and safety, combining the maximization of environmental benefits with the operating efficiency of the System. Thanks to its strategic collaboration with the company Remedia TSR, the Collective Scheme is able to offer an even more efficient service with specialized management models able to integrate data from all stakeholders in the chain (Collection Centres, logistics operators and treatment plants), ensuring the complete traceability of the waste under its responsibility.

Erion WEEE does not only guarantee full regulatory compliance, but also offers its Members an integrated service for everything concerning the Extended Producer Responsibility and the implementation of the circular economy in companies. The Collective Scheme has the expertise to help its Producers to design and implement virtuous business models and projects, capable of combining environmental protection and economic efficiency and enhance their environmental commitment towards the relevant stakeholders and the community.





ERION PROFESSIONAL

Erion Professional is the non-profit Collective Scheme of the Erion System dedicated exclusively to the management of Professional WEEE. It was founded by will of important Producers in the Professional Electrical and Electronic Waste chain with the aim of offering an increasingly specialized service and an optimized operating model, capable of generating high levels of efficiency and contributing to the increase in the collection rate of Professional WEEE, currently much lower than that of Household WEEE. Considering the 300,000 tons of professional EEE annually placed on the Italian market, the collection quota of the Collective Schemes organized by Producers, the only ones able to guarantee proper treatment and the high recovery and recycling targets provided for by the legislation, still remains too low, placing Italy very distant from the collection targets indicated in Legislative Decree 49/2014.

The main causes of this delay in the professional EEE chain include the significant dispersal of flows, the poor engineering of the collection processes and the borderline behaviour of operators, often resulting from limited information and training on environmental protection policies.

It is this context that has given rise to Erion's will to provide a concrete and effective response to Producers who place professional EEE on the market. At 31 December 2020 Erion Professional has 210 Members.

ERION ENERGY

Erion Energy is the non-profit Collective Scheme of the Erion System established for Producers of Batteries and Accumulators (B&A) that intend to rely on a System capable of guiding them in a safe, cost-effective and environmentally sustainable way in the fulfilment of all EU and national regulations for the end-of-life of their products.

The Collective Scheme, which at 31 December 2020 has 1,150 Members, ensures full regulatory compliance and the coordination of activities relating to the provision of collection and treatment services (entrusted to the company Remedia TSR) so as to ensure the proper recycling of this waste and the reintegration into the production chain of Second Raw Materials according to a circular approach.

Erion Energy was established as a strategic response for Producers of different types of waste: from portable batteries to industrial accumulators, up to those for vehicles. Depending on the category, in fact, there are differentiations both in terms of financing and in terms of waste management.

ERION PACKAGING

Erion Packaging is the non-profit Collective Scheme for the management of Packaging Waste associated with Electrical and Electronic Equipment and Batteries and Accumulators. Erion Packaging is an innovative project originated from the synergy between Erion and Interseroh, a leading multinational group operating in the recycling and environmental services sector, with particular reference to Packaging Waste.

Erion Packaging represents the possibility of offering an all-inclusive service to EEE and B&A Producers who, by law, are also required to contribute to the virtuous management of Packaging Waste related to their products. At 31 December 2020 there are 7 Members who established the Collective Scheme.





4.1.1.2 Commitments table

THE CHALLENGE

Erion is the strategic evolution of Ecodom and Remedia, the two most important Consortia in the WEEE and WBA sector in Italy. Both played a key role in the creation and development of waste management systems in our Country, achieving important results recognized by all stakeholders in terms of authoritativeness, efficiency and quality. In this context it was extremely difficult, both for Ecodom and Remedia, to make a further "qualitative leap" in environmental and economic performance, other than undertaking an entirely new project by giving life to a single entity with the aim of becoming a leading European player and a point of reference for Producer Responsibility Organizations. From an idea that turned into a successful project, the Erion System was founded in October 2020.

OBJECTIVES

Erion System

- Create a leading System in Italy and Europe in the field of waste management, which contributes to affirming effective and modern models of "Producer Responsibility Organizations" (PRO) and become for its Members the best System for efficiency, quality and innovation;
- distinguish itself for its work ethics and transparency, understood as care for the environment, utmost attention to the quality of treatment, high ethical behaviour and management standards, and strict compliance with all regulations;
- position itself in the national Collective Schemes landscape as the main non-profit entity entirely controlled by the Producers, able to bring a positive discontinuity, create value for Producers and for the chain of stakeholders and innovate the current management models in a circular economy key;
- be a leader in terms of quality and breadth of services offered to Producers, representing a single point of reference for the management of WEEE, WBA and Packaging Waste and circular economy projects, offering its Members a *one-stop-shop* solution;
- make more stable and strong the entire value chain of WEEE and WBA management, which today is in clear difficulty, through "fair compensation" policies for treatment operators (thus allowing to maintain a high level of quality), and leverage the economies of scale available to the System for developing, with the collaboration of Remedia TSR, an optimized operating model capable of generating high levels of efficiency;
- give absolute priority to the quality of treatment and respect for the environment;
- create a Collective Scheme (Erion Packaging) dedicated to the recycling of packaging for Electrical and Electronic Equipment and Batteries and Accumulators, which will ensure Producers compliance services in accordance with national legislation;
- engage in continuous innovation to make an effective contribution to the Circular Economy, investing in technological and organizational innovation, including through participation in European research projects to identify solutions capable of increasing the performance of the System.



OBJECTIVES OF BUSINESS FUNCTIONS

Operations

- Compliance with the defined service levels;
- identification of the KPI that will be used to monitor Erion's performance;
- manage the contractual renewals relating to WBA.

Producer Support

- Development of services and initiatives for the retention of Members (seminars, training sessions and video tutorials, communication materials, reports on the performance of the Collective Schemes, monthly webinar welcoming new Members);
- analysis, measurement and listening to needs for a continuous improvement of the service to Producers;
- revision of the Members Portal and building of the CRM database.

People and Welfare

- Completion of the Teams integration process;
- definition and implementation of the training plan;
- optimization of the provision of general services and start the search for a new location.

Information Services

- Operational support to users with the implementation of a clear and efficient activation and troubleshooting procedure;
- new version of the Members Portal, identification and development of service processes on the management system, expansion of the intranet network, development of the business intelligence system.

Quality and Standards	• Organizational Model 231: make the new model operational in Erion, harmonizing the rules and organizing training sessions; • definition of Erion's Business Continuity Plan; • continuation of the activities of the Compliance & Risk Management Team.
Administration, Finance and Controlling	• Cash flow monitoring and optimization of financial management, monitoring and evaluation of investments; • availability of a reliable and effective monitoring and reporting system for business indicators.
Legal Services	• Regulatory monitoring; • legal support for strategic projects; • accreditation of the autonomous WEEE Packaging system.
Projects and Innovation	• Assessment of the needs of the Members and definition of support plans; • preparation of the Sustainability Report; • presentation of new HORIZON EUROPE/LIFE/EIT – Climate KIC/EIT – Raw Materials proposals.
Communications	• Development of Erion's brand awareness in terms of positioning and reputation; • promotion of the activities of Erion and of the ***EconomiaCircolare.com*** magazine through websites, social networks, events and press office and PR activities; • dissemination of results on research and projects on topics of interest.

4.2 GOVERNANCE AND INTEGRITY



4.2.1 Governance

Governance in each of the Collective Schemes forming part of the Erion System is entrusted to the **General Assembly** and the **Board of Directors**. The General Assembly, in which all Producers belonging to each Collective Scheme participate, is the body responsible for defining the strategic guidelines, approving the financial statements and appointing the Board of Directors. The strategic guidelines of the four Collective Schemes find a point of harmonization within the Board of Directors of ECO, composed of an independent President and ten Members, nominated by the Members as follows: six from **Erion WEEE**, one from **Erion Professional**, two from **Erion Energy** and one from **Erion Packaging**.



At 31 December 2020, the ECO's Board of Directors is composed of the President and seven Members, while the three missing Members will be appointed in 2021.

Independent President	Andrea Fluttero
Member	Barbara Proietti
Member	Carlo Traversari
Member	Andrea Salati Chiodini
Member	Walter Rebosio
Member	Dario Bisogni
Member	Mauro Pedruzzi
Member	Maurizio Iorio

The ECO's Board of Directors verifies the implementation of the strategies defined by the General Assembly, delegating their execution to the General Managers with the support of the management of ECO, responsible for the preparation of the Sustainability Report, and of the entire structure. This document, the main tool for measuring and reporting the environmental, social and economic impacts of the System's performance, in 2020 it was approved by the Board of Directors of Erion WEEE.

The Boards of Directors of the individual Collective Schemes elected by the General Assembly are composed as follows:

- **Erion WEEE**'s BoD by eighteen Members and one President;
- **Erion Professional**'s BoD by seven Members and one President;
- **Erion Energy**'s BoD by six Members and one President;
- **Erion Packaging**'s BoD by six Members and one President.

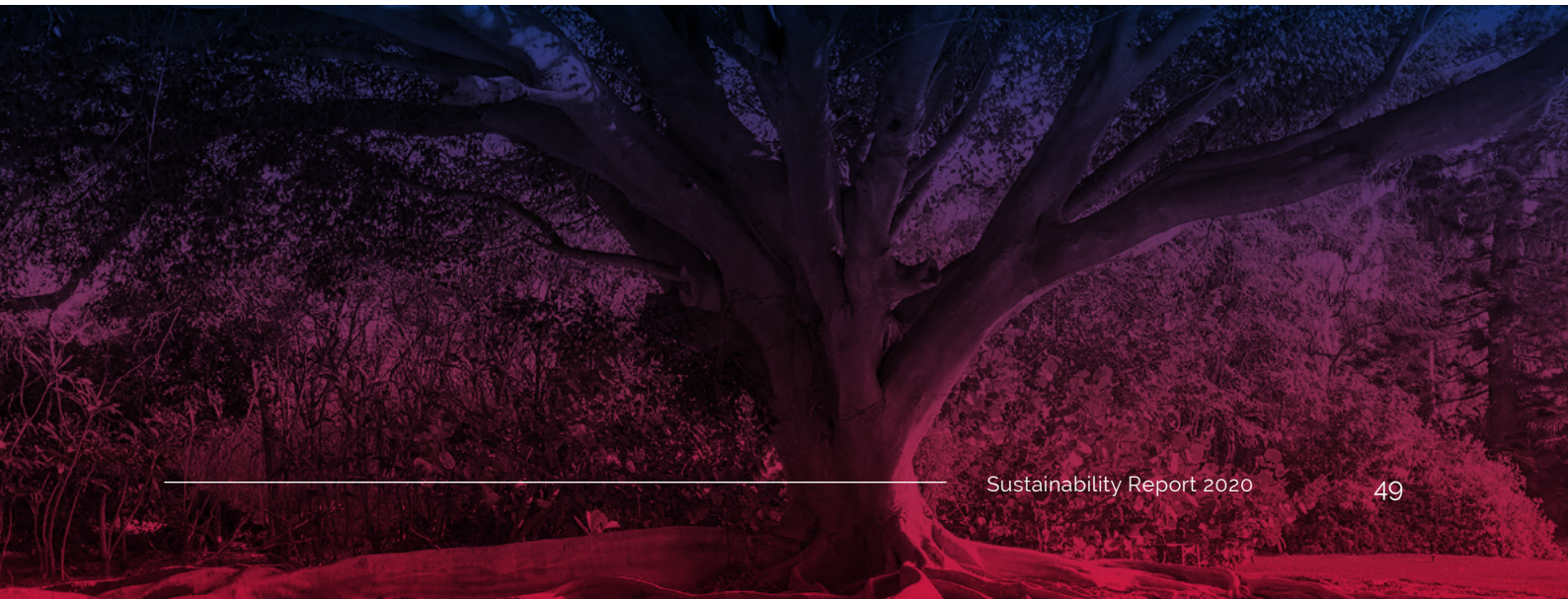
Lastly, pursuant to Legislative Decree 231/2001, the governing bodies are supported by the Supervisory Board which reports directly to the Boards of Directors and interacts with the Board of Statutory Auditors.

4.2.2 Integrity and fight against corruption

The **Code of Ethics and Conduct** contains the principles of conduct which all parties acting on behalf of Erion must follow. This document, unique for the whole System, outlines the commitment to promote exchange and dialogue with all stakeholders in the sector, promote fair competition between Compliance Schemes and create environmental and economic value for the benefit of all stakeholders involved. The Code of Ethics and Conduct is a tool to ensure the correct application of the main founding values of the Erion System, namely transparency, quality, efficiency, innovation and social commitment.

In order to maintain high standards, Erion has decided to provide each Collective Scheme operating within it, and ECO, with a specific **Organizational Model in accordance with Legislative Decree 231/2001**, integrated with the guidelines of Confindustria (Confederation of Italian Industry) and the trade associations of Producers belonging to each Collective Scheme. The rules and responsibilities of all business processes, as well as the control measures and mitigation actions aimed at fighting corruption, are defined in this Model, whose application is monitored by the Supervisory Body and the **Compliance Risk & Management Team**, a cross-cutting team between the Legal Services, Operations and Quality & Standard areas which closely follows, in an integrated way, environmental issues and matters relating to compliance with current legislation, including personal data protection and risk management.

The various Organizational Models are an important tool in order to avoid the risk of committing the crimes referred to in Legislative Decree 231/2001 and for implementing the Code of Ethics and Conduct, which allow the supervision of all the activities of the individual Collective Schemes, and of ECO, identified at risk of crime. Through the risk assessment and gap analysis activities have emerged the areas of potential risk and, accordingly, the general principles of conduct and control measures to which all parties operating for Erion must comply have been established. As required by Legislative Decree 231/2001, employees and other stakeholders can use the "whistleblowing" channel to report suspected cases of corruption or other crimes by email or ordinary mail addressed to the Supervisory Body.



4.3 THE GENERATION OF VALUE



Erion positions itself in the national Collective Schemes landscape as the main non-profit System entirely controlled by Producers, able to create value for its Associates and the chain, by innovating the current waste management models in a circular economy vision. In pursuing its goal, the System is committed daily in the efficiency enhancement of the WEEE and WBA management services that it provides to its associated Producers, promoting constant dialogue with the Institutions and interaction with all those operating in the sector, focusing on innovation to ensure an effective contribution to the development of an even more effective, efficient and sustainable national chain and creating environmental, social and economic value for the benefit of all parties involved.

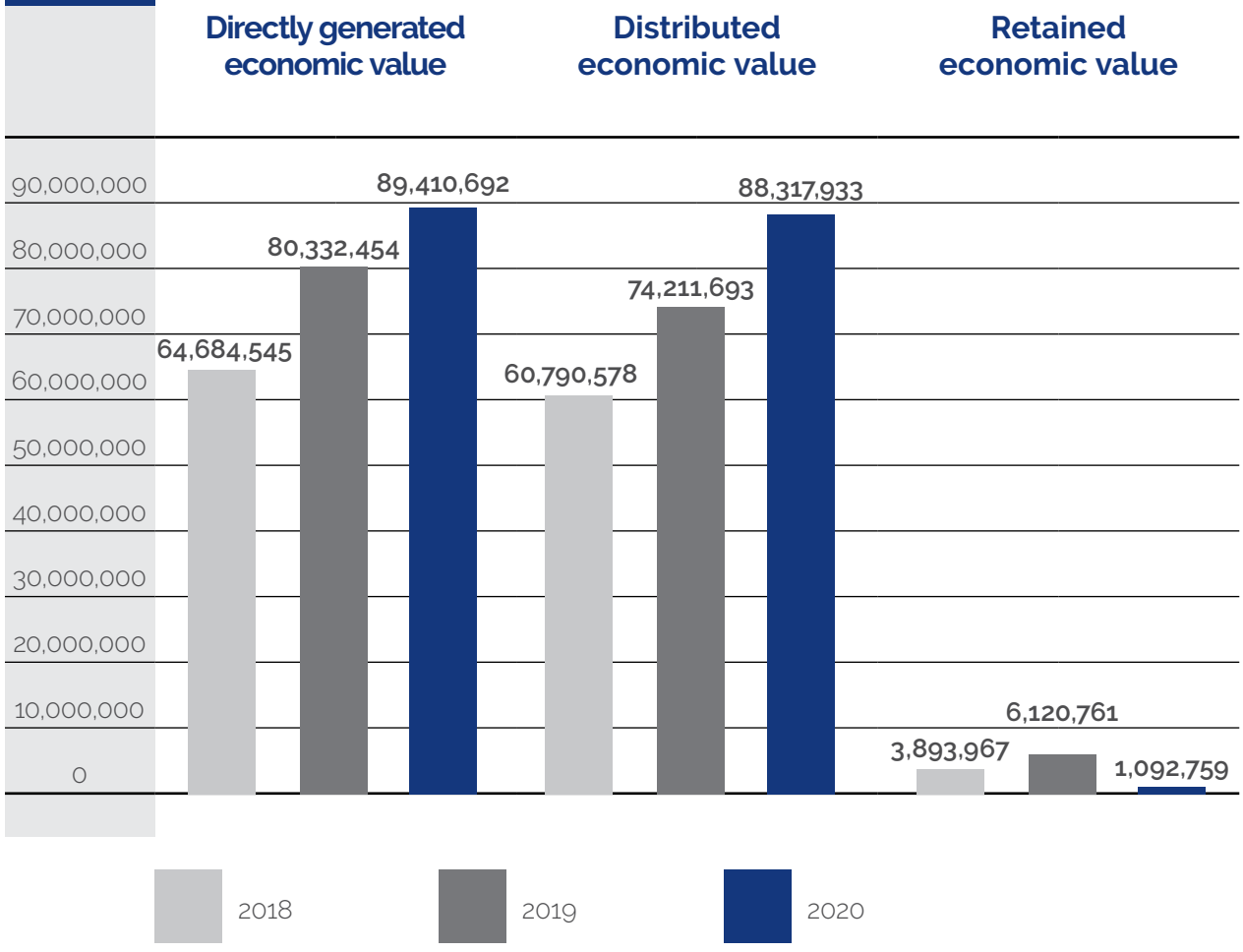
In order to provide a reporting of the economic value generated, distributed to its stakeholders and retained by the System, for the year 2020 Erion has reclassified its income statement by taking into account the flows generated by the four Collective Schemes Erion WEEE, Professional, Energy, Packaging and by ECO.

During the year, the Erion System **generated a total economic value of 89,410,692 €**, **up 11.30%** compared to the combined 2019 performances of Ecodom and Remedia due to the increase in revenues from secondary raw materials and a change in the WEEE Eco-contributions applied to its associated Producers. **The economic value distributed to stakeholders amounted to 88,317,933 €**, **up 19.01%** compared to the previous year. Specifically, as shown in Graph 4.2, 90.21% of the value was distributed to logistics and treatment suppliers and to the Collection Centres/ Grouping Places in the form of efficiency bonuses, representing a higher percentage compared to the previous year (+37.55%), owing both to the increase in tons managed and the involvement of the System in ensuring more fair compensation levels (and thus economically more burdensome) in support of the operational chain. 5.71% was allocated to other operating costs, 3.10% to personnel, 0.56% to the Public Administration for tax payments and 0.42% to communication. The consequence of the increase in cost is that **the economic value retained by the System stands at 1,092,759 €**, **down 82.15%** compared to 2019.

Economic value generated, distributed and retained (EUR)



Graph 4.1

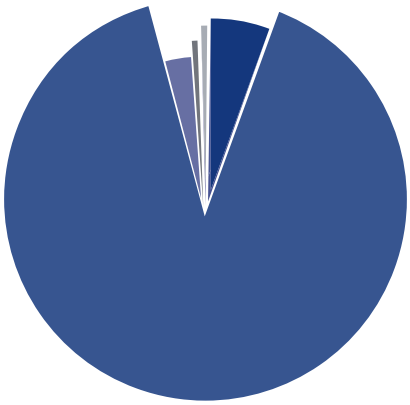


Breakdown of distributed economic value (Year 2020)

Graph 4.2

5.71%
Other operating costs

90.21%
Logistics, treatment and efficiency bonuses



3.10%
Personnel remuneration

0.56%
Public Administration payments

0.42%
Communication

Economic value generated, distributed and retained (EUR)

Table 4.1

	2018	2019	2020
DIRECTLY GENERATED ECONOMIC VALUE	**64,684,545**	**80,332,454**	**89,410,692**
Revenues	64,861,935	78,005,661	89,328,021
Financial income	92,213	2,333,489	270,690
Extraordinary (Expenses) income	-	-	-
Write-downs	-253,103	-339	-188,019
Adjustments to the value of financial assets	-16,500	-6,357	-
DISTRIBUTED ECONOMIC VALUE	**60,790,578**	**74,211,693**	**88,317,933**
Other operating costs	9,055,075	11,797,365	5,042,623
Logistics and treatment	47,543,305	57,921,860	79,674,344
Personnel remuneration	3,491,901	3,765,502	2,737,094
Remuneration of debt capital	1,089	37,822	-
Public Administration payments	264,156	120,550	494,457
Communication	435,052	568,594	369,415
RETAINED ECONOMIC VALUE	**3,893,967**	**6,120,761**	**1,092,759**
Profit/Loss for the period	3,439,184	5,602,932	664,464
Depreciation	454,783	517,829	428,295
Provision for risk	-	-	-

In analyzing the individual Collective Schemes, the most significant value of the entire System was generated by Erion WEEE with 98.59% of the generated economic value, 98.88% of the distributed economic value and 75.12% of the total retained economic value. This results from the fact that the management of Household WEEE, under the responsibility of Erion WEEE Collective Scheme, represents Erion's most significant activity in terms of quantity. As regards the other Collective Schemes, they have a lower impact on the overall economic value of the System. It should be noted that in view of the non-profit nature, the profits of all the Collective Schemes constitute reserves to cover any deficits in subsequent years.

Economic value generated, distributed and retained by Erion WEEE

Table 4.2

ERION WEEE 2020 (€)

Directly generated economic value	88,150,352
Distributed economic value	87,329,434
Retained economic value	820,918

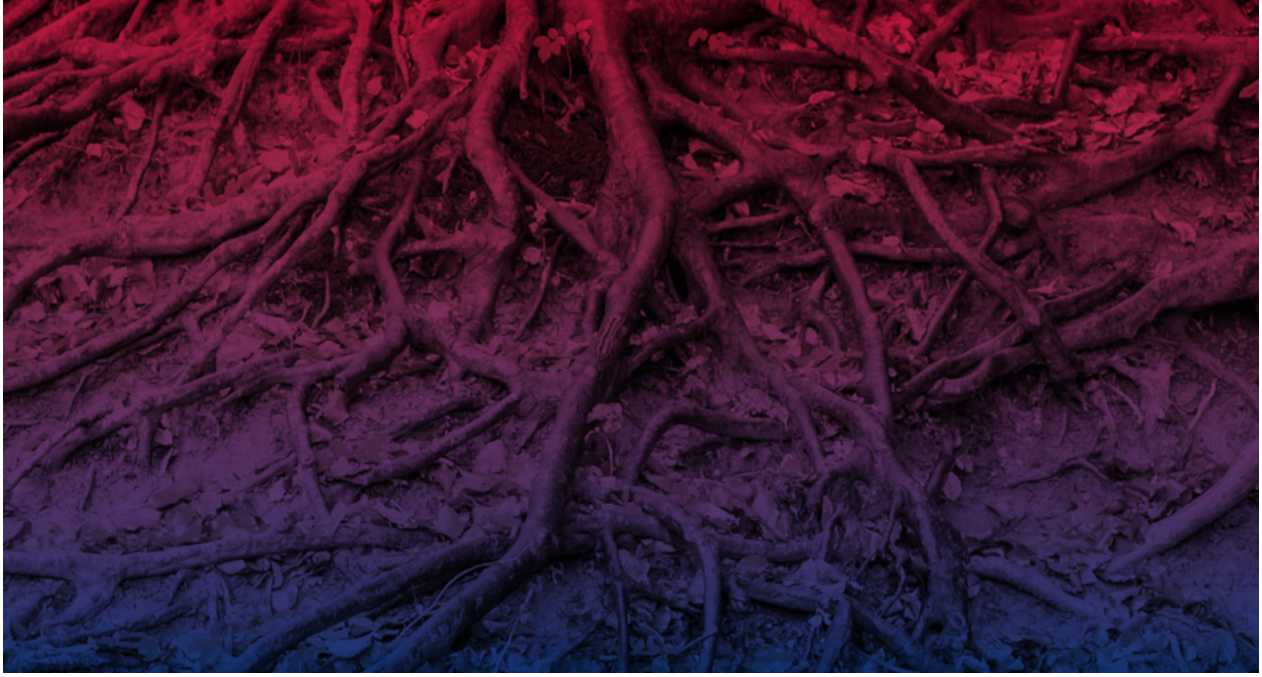
Economic value generated, distributed and retained by Erion Professional

Table 4.3

ERION PROFESSIONAL 2020 (€)

Directly generated economic value	141,911
Distributed economic value	51,608
Retained economic value	90,303





Economic value generated, distributed and retained by Erion Energy

Table 4.4

ERION ENERGY 2020 (€)	
Directly generated economic value	1,118,560
Distributed economic value	925,591
Retained economic value	192,969

Economic value generated, distributed and retained by Erion Packaging

Table 4.5

ERION PACKAGING 2020 (€)	
Directly generated economic value	-131
Distributed economic value	11,300
Retained economic value	-11,431

4.3.1 Indirect economic impacts

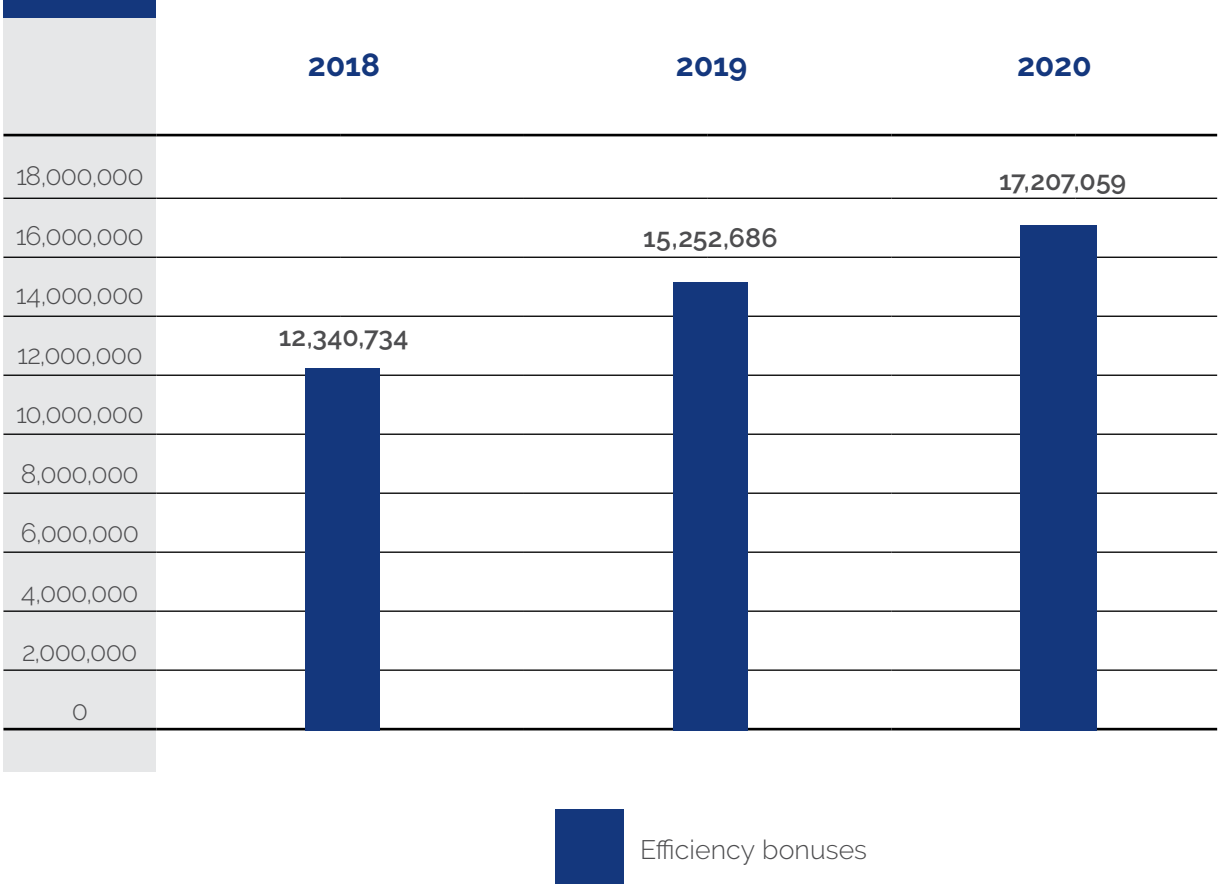
Erion's work aims to support the transition to the circular economy both in terms of operational aspects, thanks to high recycling rates of secondary raw materials, and strategic developments, with studies and research on eco-innovation, combining environmental protection and economic efficiency. To this end, the significant investments made by the System are reflected **in the indirect economic impacts** generated by the positive externalities of its operations, capable of generating significant benefits for stakeholders, such as the creation or maintenance of jobs and efficient waste management and treatment models.



The indirect economic impacts generated by the System are mainly two: the **reduction of charges** for Local Authorities, equal to 41,097,948 €[4] and the **efficiency bonuses to the Collection Centres**[5] **and Grouping Places**, equal to 17,207,059 € (up 12.8% compared to 2019 thanks to the increase in the quantities managed by Erion).

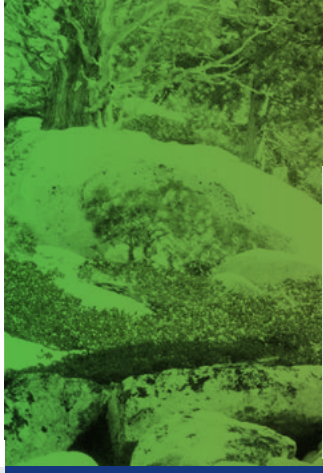
Efficiency bonuses distributed in the three-year period 2018-2020 (EUR)

Graph 4.3



[4] *It should be noted that with reference to 2018 and 2019 this data is not available for Consortium Remedia (the data refers only to Consortium Ecodom), in respect of which the three-year trend has not been commented on.*

[5] *Under the agreement between ANCI and Centro di Coordinamento RAEE, in addition to the efficiency bonuses, the Collective Schemes pay a contribution (equal to 16 €/tonne) to finance the creation or adaptation of Collection Centres. The modernization of the Collection Centres therefore includes two items: the efficiency bonuses pertaining to them and the corresponding contribution of 16 €/tonne.*

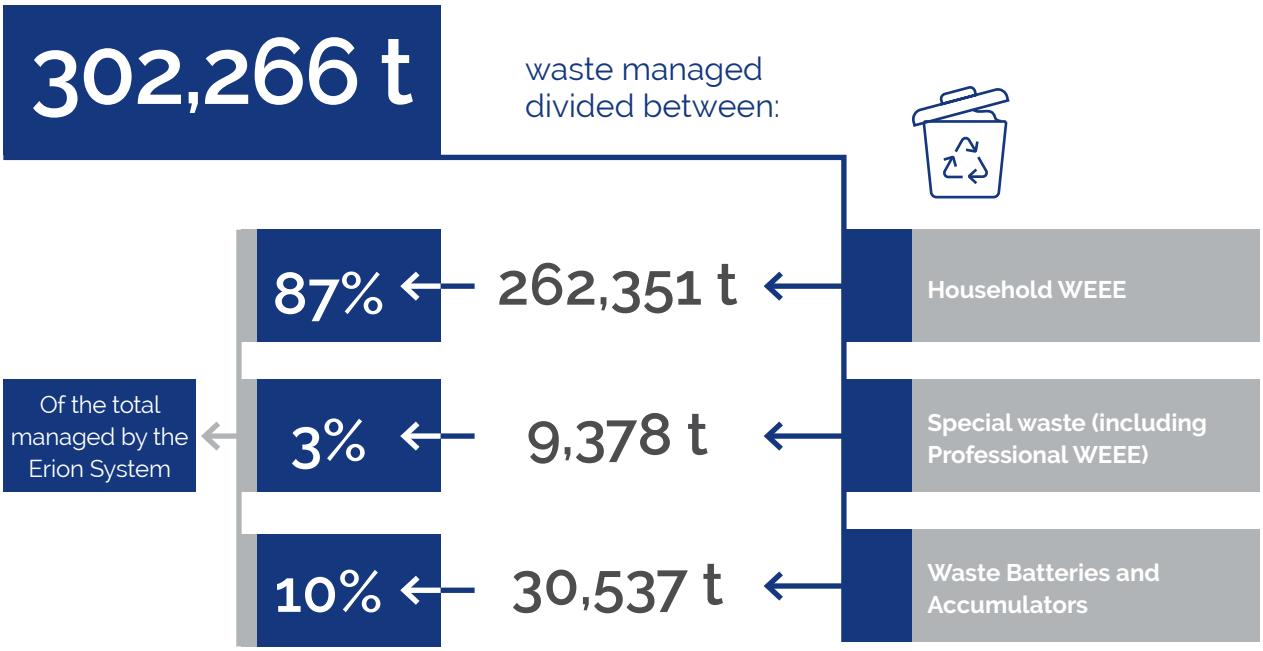


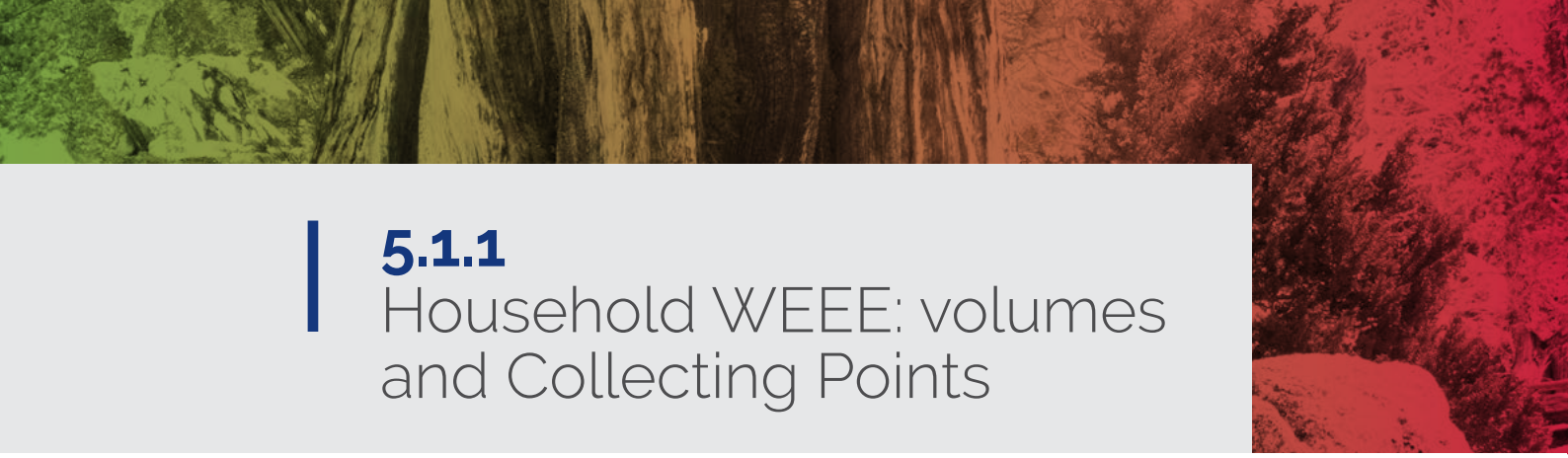
05 ERION ACTIVITIES

5.1 OPERATIONAL WASTE MANAGEMENT

In 2020 Erion managed a total of **302,266 tons of waste** divided between **Household and Professional WEEE**, **Waste Batteries and Accumulators**, and **special waste**. Despite the sanitary emergency which forced the closure of the Collection Centres and Grouping Places during the months of March and May, the new System has seen an increase in total waste collected by almost 5% compared to the previous year.

More explicitly, **262,351 tons of Household WEEE** were treated, equal to 87% of the total managed by the Erion System; **9,378 tons of special waste** (including **Professional WEEE**) equal to 3% of the total, and **30,537 tons of Waste Batteries and Accumulators**, corresponding to 10% of the total. The results obtained for each type of waste are shown in the following paragraphs.





5.1.1 Household WEEE: volumes and Collecting Points

In 2020, the **"formal"**[6] **Italian WEEE System** handled **365,897 tons**, an increase of 6.7% compared to 2019. With respect to the overall figures, Erion WEEE qualified itself as leader in Italy in the Household WEEE sector with a total of 262,351 tons of waste managed in 2020, an increase of 9.3% over 2019 with a **share of responsibility** of 71.7%. Particularly significant is the comparison by single Group: in 2020 Erion WEEE was the first Collective Scheme for quantities of WEEE managed for the Groups R1, R2 and R3, with a share of respectively 81.9%, 89.5% and 71.1% of the total volumes. Then follow Groups R4 and R5, for which Erion WEEE holds a share of 33.2% and 5.8% respectively.

Quantity of Household WEEE managed by Erion WEEE divided by Group in the 2018-2020 three-year period

Table 5.1

Group	Unit of measure	2018	2019	2020
R1	t	65,723	75,455	**79,403**
R2	t	83,504	99,685	**112,482**
R3	t	40,756	41,500	**44,273**
R4	t	18,144	23,151	**26,041**
R5	t	73	161	**153**
TOTAL	**t**	**208,201***	**239,952**	**262,351***

[6] *Made up of the Collective Schemes registered with the CdCRAEE which does not include the unregulated parallel market.*

* *The numbers shown here are subject to rounding and therefore the rounded amounts of the quantities managed for each Group may not always coincide with the rounded total.*

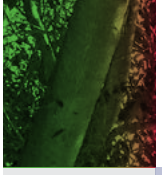
Compared to the previous year, there was an increase in the first four Groups while there was a slight fall in Group R5. The largest increase is that of Group R2, with an improvement of 12.8% for a total of 112,482 tons managed. Then follow Group R4 with an increase of 12.5%, Group R3 with a +6.7%, Group R1 with a +5.2%, while Group R5 recorded a decrease of 5.0% compared to 2019. The increases are in line with what recorded at "formal" WEEE System level, in the same way as the decrease in Group R5 is in line with the decrease in the overall collection in the Country equal to 5.8%.

The Household WEEE collection suffered from the impact of the **COVID-19 pandemic**, especially during the months of total *lockdown* (from March to May), when the Collection Centres remained closed. However, in the following months the quantities collected started to increase again mainly thanks to the so-called **"basements clear-out" effect**. In fact, the people who during the *lockdown* purchased Electrical and Electronic Equipment (such as new screens or TVs), once the Collection Centres reopened, decided to discard their old equipment. This effect has favoured, in the months following the reopening, a significant increase in the collection of WEEE especially for Groups R2, R3 and R4, bringing the annual total above that of the previous year.

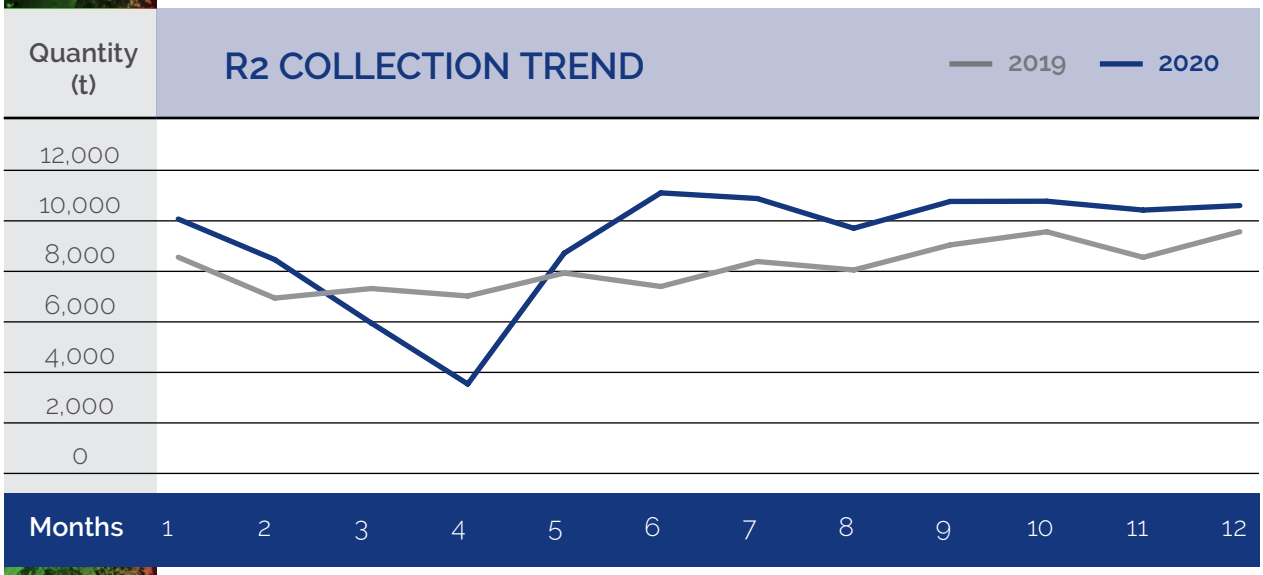
Graph 5.1 shows the trend of the volumes collected by Group during 2020, highlighting the significant increase of the collection in the months following the *lockdown*.

Quantity of Household WEEE collected by month and Group in 2020 (tons)



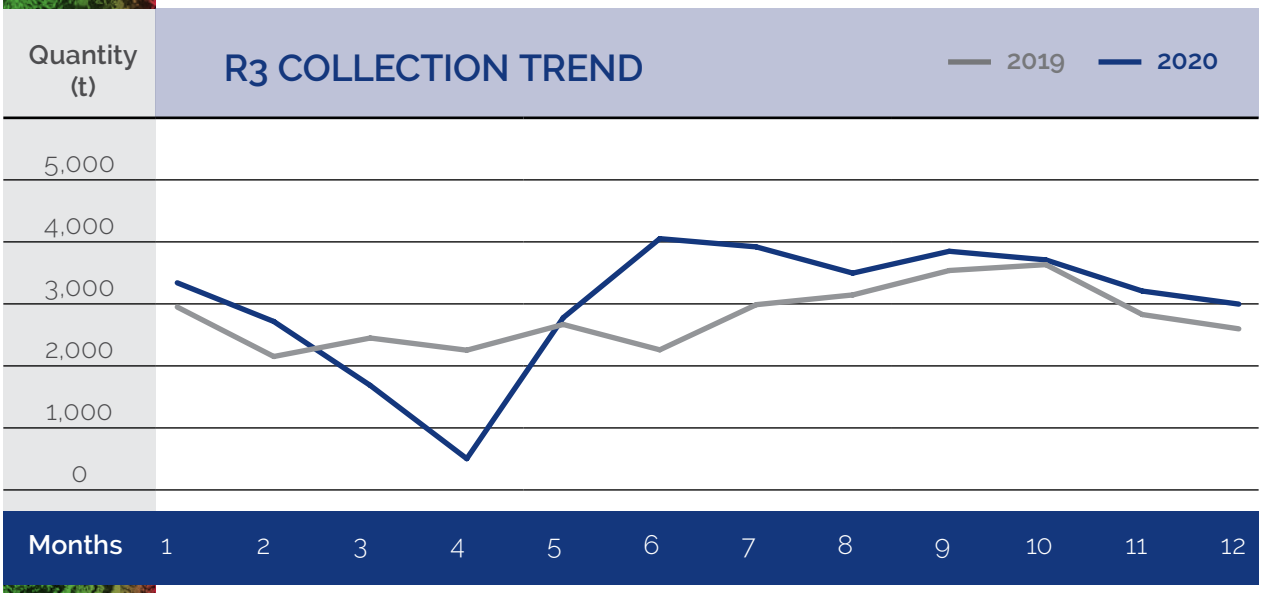


R2 COLLECTION TREND



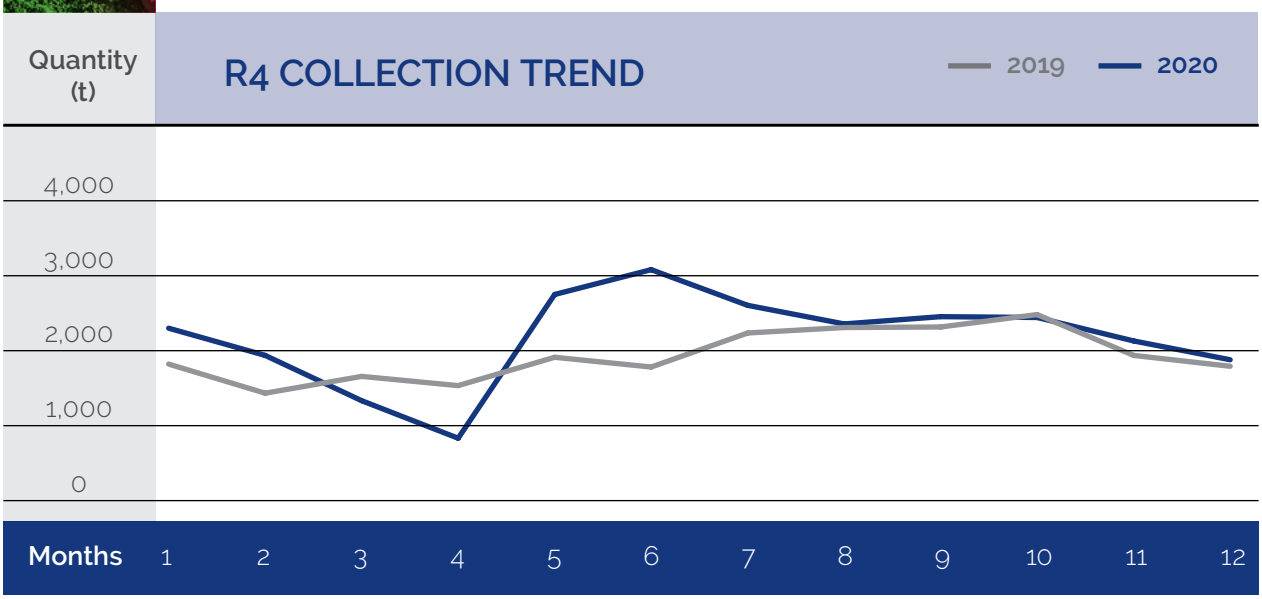


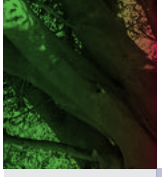
R3 COLLECTION TREND

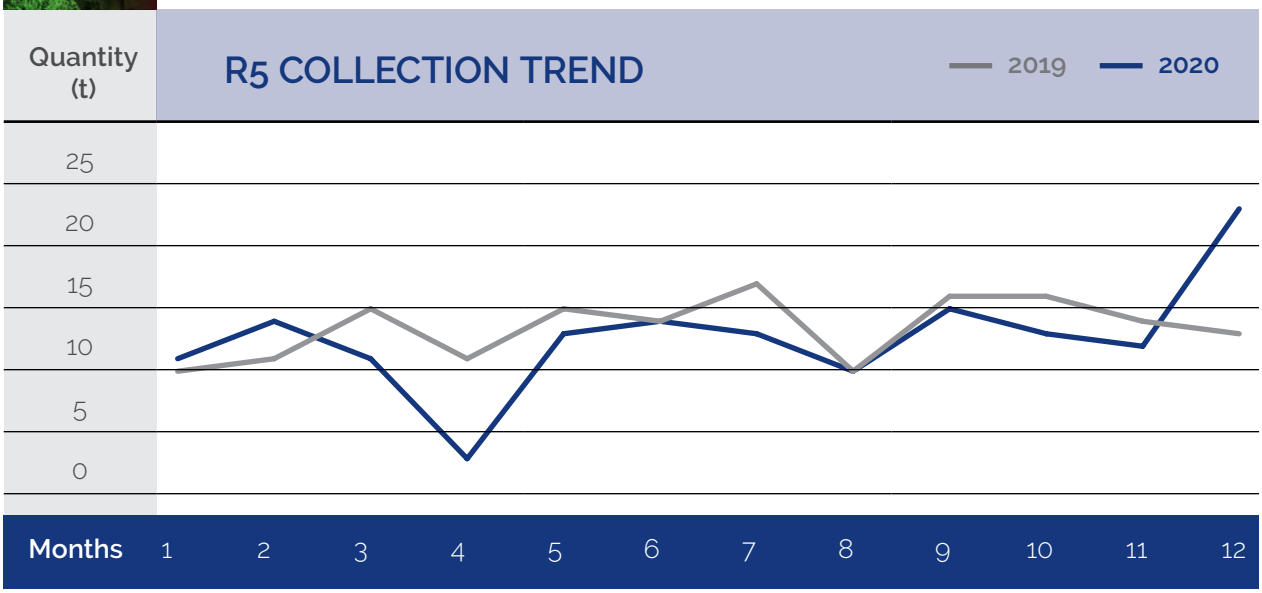




R4 COLLECTION TREND









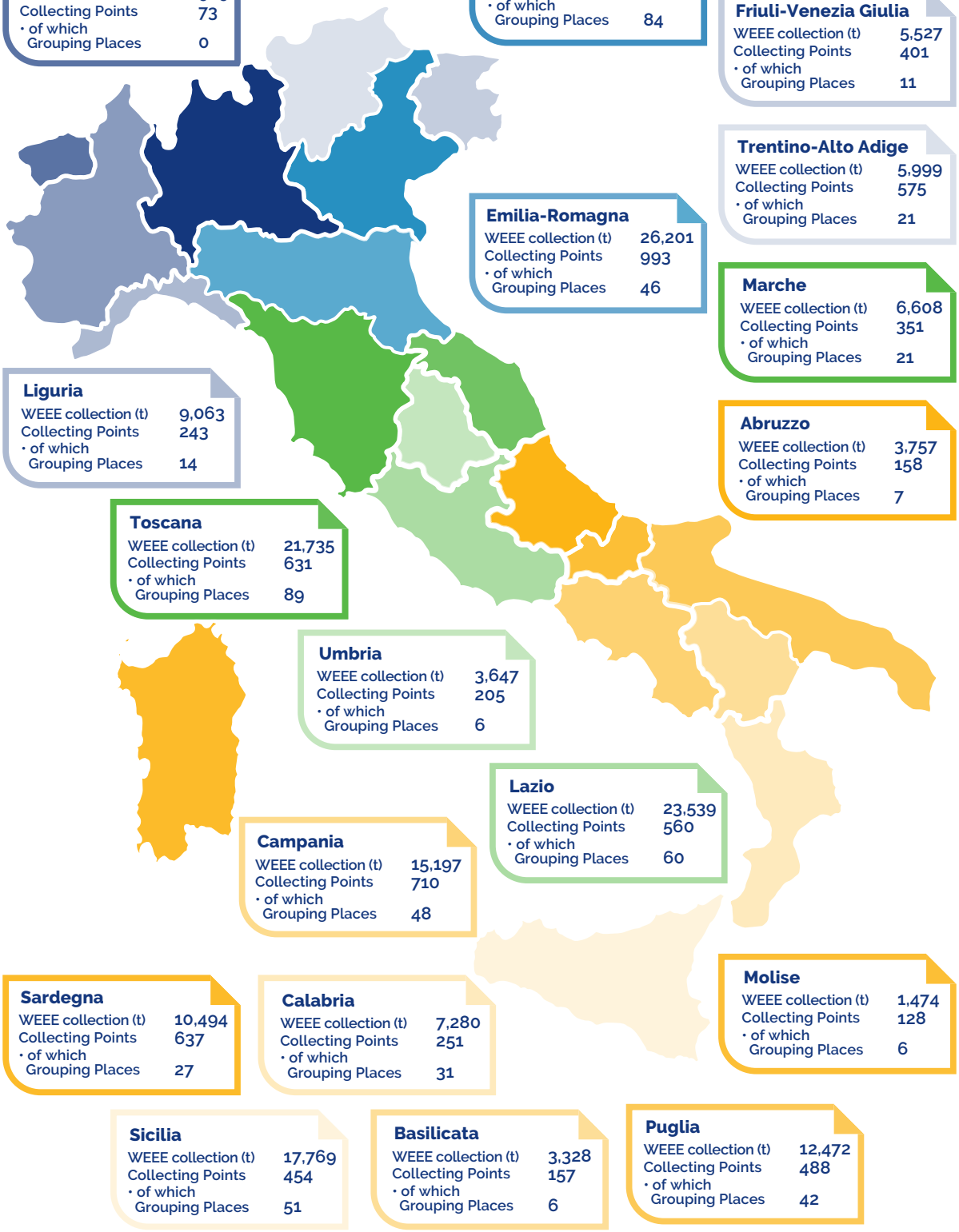
As for the geographical distribution, 51.4% of the waste managed by Erion comes from the **Northern Italian regions** with 135,052 tons of Household WEEE, while the **South and the Islands** account for 27.4% of the total with 71,771 tons. The regions of **Central Italy** close the ranking with 21.2%, corresponding to 55,529 tons.

Every year in May, the CdCRAEE assigns the **Collecting Points** to each Collective Scheme in proportion to the market share achieved in the previous year by the Producers of each Collective Scheme in each Group.

At 31 December 2020 Erion has under its management for Groups R1, R2, R3, R4 and R5 a total of **11,465 Collecting Points** distributed throughout the national territory. Figure 5.1 shows the geographical breakdown of the Collecting Points managed by Erion WEEE in the year. Out of the 11,465 Collecting Points, 689 are located in the Grouping Places organized by the distributors as required by Ministerial Decree No. 65 of 8 March 2010. Most of the Collecting Points assigned to the Collective Scheme are in Northern Italy (58.8% of the Collecting Points in the municipal Collection Centres and 42.9% in the Grouping Places). The South and the Islands follow with 26.0% and 31.6%, while Central Italy closes with 15.2% and 25.5%.

Quantity of Household WEEE and Collecting Points managed by Erion WEEE by region in 2020

Figure 5.1



5.1.2 Professional WEEE (and special waste)

During 2020, a total of **9,378 tons** of **special waste** were managed, of which **4,171 tons** of **Professional WEEE**. The quantities managed were down compared to previous years, with a fall of 55.7% with respect to the results obtained by Ecodom and Remedia in 2019, and by 34.0% compared to those of 2018. This decrease is a consequence of the strategic choices put in place by the new System which, as from 1 July 2020, decided that Erion Professional and Erion WEEE Collective Schemes would exclusively manage Professional WEEE, transferring the management of other special waste (metals, packaging, end-of-life vehicles, components, various other waste) to the operating company Remedia TSR. Furthermore, the COVID-19 pandemic has imposed the temporary closure of a large number of companies throughout the Country, resulting in a decrease in the production of special waste in the first part of the year.

Quantity of special waste managed in the 2018-2020 three-year period (tons)

Table 5.2

	2018	2019	2020
Professional WEEE	5,193	9,037	**4,171**
Components	744	916	**610**
Packaging	5,668	5,873	**2,708**
Metals	1,076	3,651	**1,190**
Various other waste	1,441	1,655	**699**
End-of-life vehicles	84	27	**0**
TOTAL	**14,206**	**21,159**	**9,378**

5.1.3 Waste Batteries and Accumulators

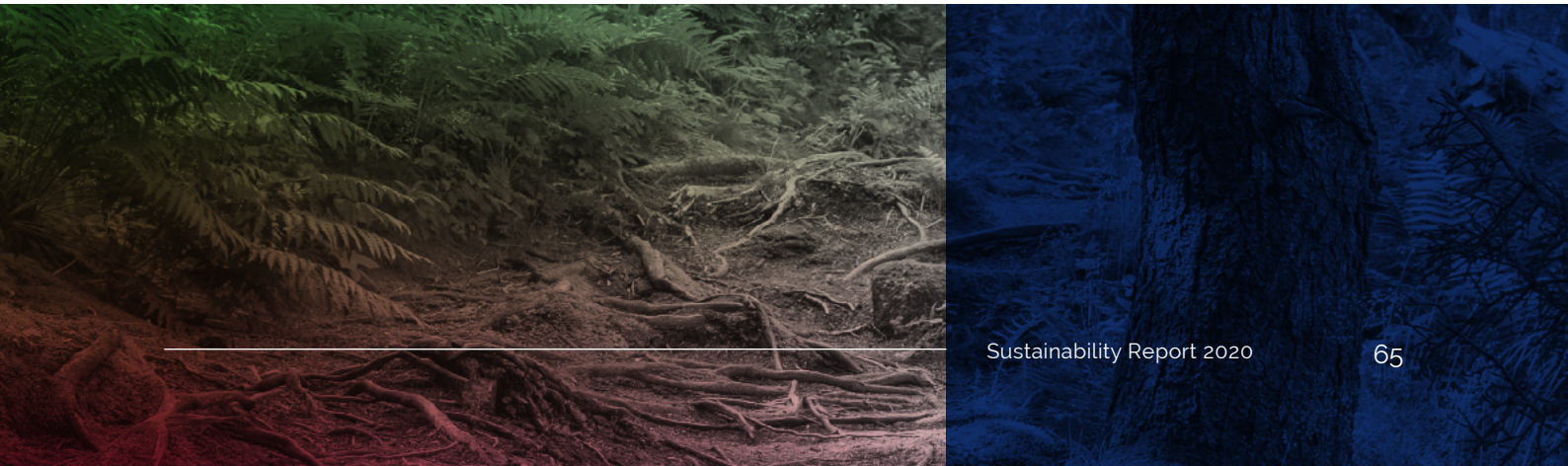
The Erion Energy Collective Scheme has been specifically created for the management of Waste Batteries and Accumulators (WBA). During 2020 a total of **30,537 tons** of **WBA** were managed, 95.1% of which represented by **Automotive Accumulators**, while 3.4% by **Portable Batteries and Accumulators** and the remaining 1.5% by **Industrial Accumulators**.

The COVID-19 pandemic has had limited effects on this sector which has been constantly growing over the last three years. In fact, the quantity managed during 2020 increased by 11.3% compared to the previous year, mainly due to the increased collection of waste Automotive Accumulators which grew by almost 15% compared to 2019.

Quantity of WBA managed in the 2018-2020 three-year period (tons)

Table 5.3

	2018	2019	2020
Portable Batteries and Accumulators	821	1,173	**1,038**
Industrial Accumulators	6,332	952	**453**
Automotive Accumulators	10,116	25,311	**29,046**
TOTAL	**17,269**	**27,436**	**30,537**



5.2 ENVIRONMENTAL BENEFITS OF THE TREATMENT OF HOUSEHOLD WEEE



The aim of the following section is to provide an accounting of **Erion environmental performance**. In fact, the System has among its main objectives that of enhancing its environmental contribution through an increasingly efficient and environmentally conscious waste management. In particular, it should be noted that this chapter will report the environmental performance of the System exclusively with reference to the management of Household WEEE accompanied by an expansion of the reporting area to logistics and treatment suppliers.

5.2.1 Transport of WEEE

With regard to the logistics activities, the transport of WEEE from the Collection Centres/ Grouping Places to the treatment plants falls under the responsibility of Erion WEEE. In 2020 the **level of service** in the collection of WEEE from the Collecting Points stood at 99.50%, higher than that of the Italian "formal" System which remained at 99.32%. In 2020 the number of **transport journeys** was 125,412 (+6.31% over 2019), the **average distance travelled** was 127.2 km/trip (-3.0% over 2019) and the **average load** 2.1 t/trip (+2.8% over 2019), as shown in Table 5.4. The increase in the number of transports is due to the greater quantity of WEEE managed, while the decrease in the average distance is linked to the different location of the Collecting Points assigned annually to Erion WEEE by the Centro di Coordinamento RAEE.

Transport journeys

Table 5.4

	Unit of measure	2018	2019	2020
Transport journeys	No.	102,240	117,970	**125,412**
Average distance (one way)	km/trip	130.2	131.1	**127.2**
Average load	t/trip	2.0	2.0	**2.1**





Erion WEEE's environmental commitment towards transport and logistics service providers takes the form of **control actions and economic incentives**, which in 2020 were maintained for all operators using less polluting vehicles. The incentives are granted according to the Group and the category of the vehicle used through a percentage adjustment of the rates, rising up to a +5% bonus for Euro 6 vehicles: a mechanism aimed at stimulating the transition towards less polluting vehicles. In 2020, 90.1% of the kilometres travelled by Erion WEEE's suppliers was covered with vehicles belonging to the Euro 4, Euro 5 and Euro 6 categories.

Fleet of vehicles, classification by pollutant emissions (% based on the total km travelled)

Table 5.5

Category	2020
EURO 0	0.4%
EURO 1	0.0%
EURO 2	0.8%
EURO 3	8.7%
EURO 4	6.9%
EURO 5	43.5%
EURO 6	39.7%

5.2.2 Recovery, recycling and disposal

In the WEEE sector, there is no doubt that the issue of **hazardous waste** is of considerable importance. For this reason Erion WEEE constantly verifies the regulatory compliance of its suppliers with a monitoring system capable of tracing the flows of hazardous waste that are transported and treated by the plants. During 2020 Erion WEEE handled a total of 128,107 tons of hazardous waste (EWC codes: 200123, 200135 and 200121), 5.9% more than the previous year as shown in Table 5.6.

Amount of hazardous waste per Group managed by Erion WEEE in the three-year period 2018-2020 (tons)

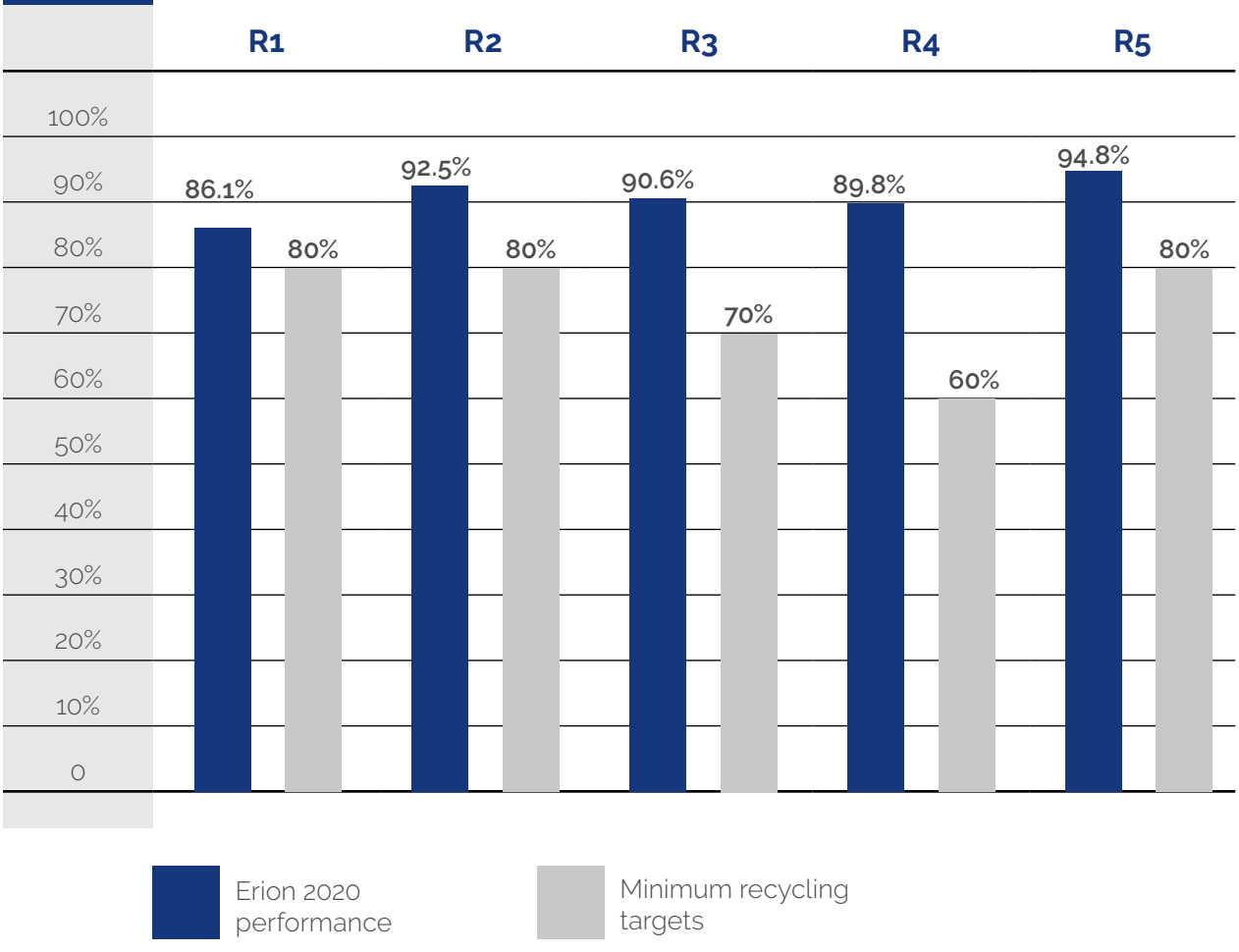
Table 5.6

	2018	2019	2020
R1	65,723	75,455	**79,403**
R2	2,170	2,662	**3,086**
R3	40,756	41,500	**44,273**
R4	1,418	1,224	**1,192**
R5	73	161	**153**
TOTAL OF HAZARDOUS WASTE	**110,140**	**121,002**	**128,107**
TOTAL OF HOUSEHOLD WEEE MANAGED	208,201	239,952	**262,351**

Erion WEEE pays utmost attention to the entire WEEE treatment process. This allows reaching and exceeding the **minimum recovery and recycling targets** set out in Annex V of Legislative Decree 49/2014. In addition to monitoring the logistics and processing activities of its suppliers, Erion WEEE also verifies the destination of the fractions leaving the treatment plants.

Comparison of the recycling performance of Household WEEE by Group and minimum recycling targets set by Legislative Decree 49/2014[7]

Graph 5.2



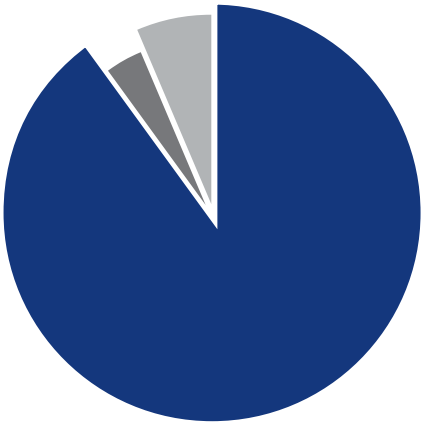
[7] *The minimum targets for the quantities destined to recycling are defined by the legislation in force (Legislative Decree 49/2014) for each category of Electrical and Electronic Equipment: in this graph it has been proceeded to a transposition of these targets for each Group.*

The data reported in the following paragraph are processed starting from self-declarations made by suppliers through the **RepTool software**, developed by the WEEE Forum and made available internationally to help tracing the fractions obtained from the processing of WEEE. During the year 2020, out of the 262,351 tons of Household WEEE treated, 236,056 tons (equal to 90.0%) were sent for **recycling**, with an increase of +9.8% compared to 2019 (in line with the rise in the quantities managed), 3.8% (equal to 10,060 tons) to **energy recovery**, while the remaining 6.2% (equal to 16,236 tons) to **thermal or landfill disposal**.

Percentage of materials destined for recycling, energy recovery and disposal in 2020



Graph 5.3



90.0%
Recycling

3.8%
Energy recovery

6.2%
Disposal



The efficiency of the recycling activity, measured as the ratio between tons of recycled materials and tons of WEEE managed, was almost unchanged compared to the previous year and in line with the three-year period.

Table 5.7

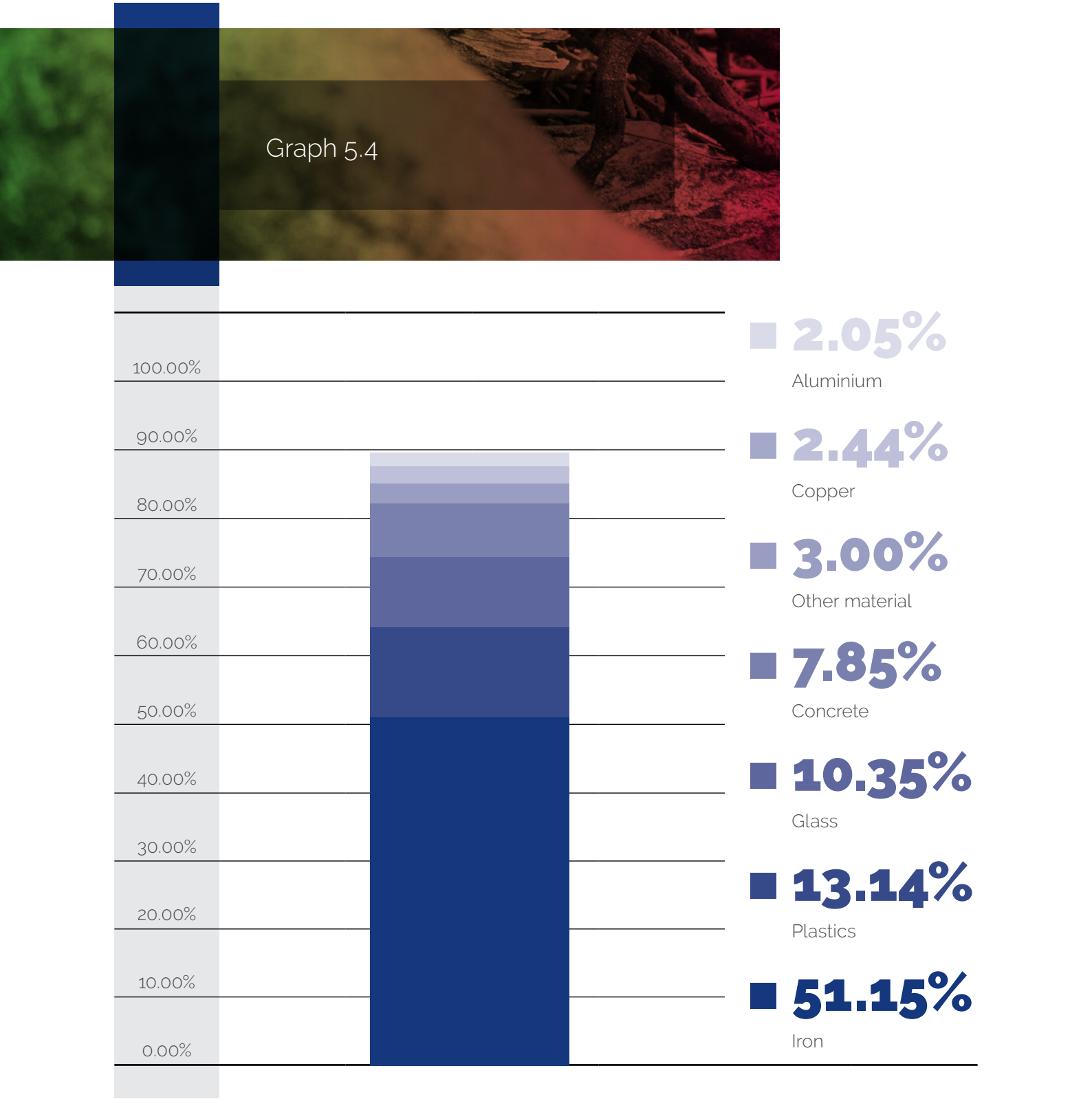
Quantities and percentages recycled by Group in the three-year period 2018-2020

Group	2018		2019		2020	
	% recycled on the total	Tons recycled	% recycled on the total	Tons recycled	% recycled on the total	Tons recycled
R1	83.4%	54,777	84.9%	64,017	86.1%	68,367
R2	92.5%	77,275	92.4%	92,180	92.5%	104,047
R3	90.4%	36,811	90.3%	37,473	90.6%	40,111
R4	91.7%	16,626	91.6%	21,195	89.8%	23,386
R5	91.5%	67	90.8%	146	94.8%	145
TOTAL	**89.1%**	**185,556**	**89.6%**	**215,011**	**90.0%**	**236,056**

As shown in Graph 5.4, among the various materials obtained from recycling the main one is **iron**, with 51.15% of the quantities, followed by **plastics** (13.14%), **glass** (10.35%) and **concrete** (7.85%).

Recycled quantities by type of material out of the total Household WEEE managed in 2020

Graph 5.4

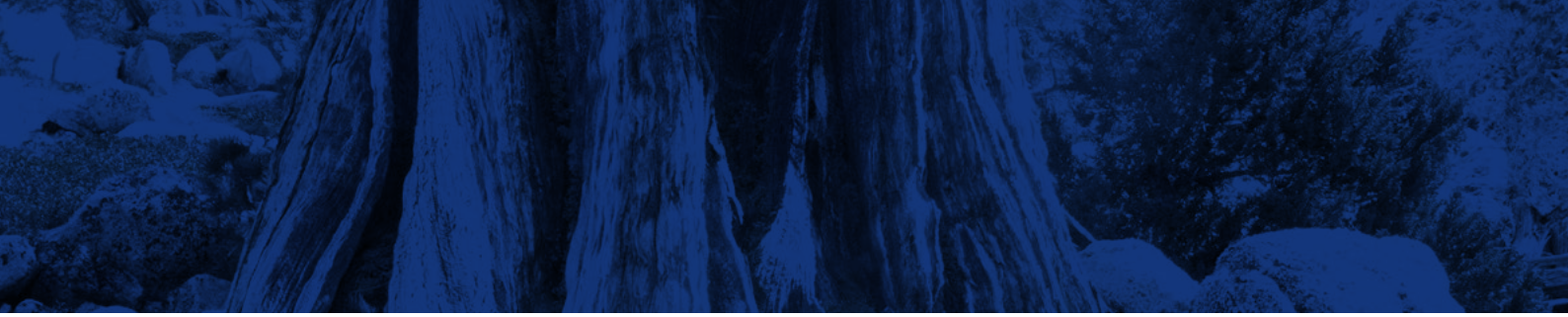


The amount of recycled **iron**, equal to **134,200 tons**, corresponds to the quantity needed to build **18 Eiffel Towers**

The amount of recycled **copper**, equal to **6,393 tons**, corresponds to the quantity needed for covering **70 Statues of Liberty**

The amount of recycled **aluminium**, equal to **5,371 tons**, corresponds to the quantity needed to produce more than **330 million cans**





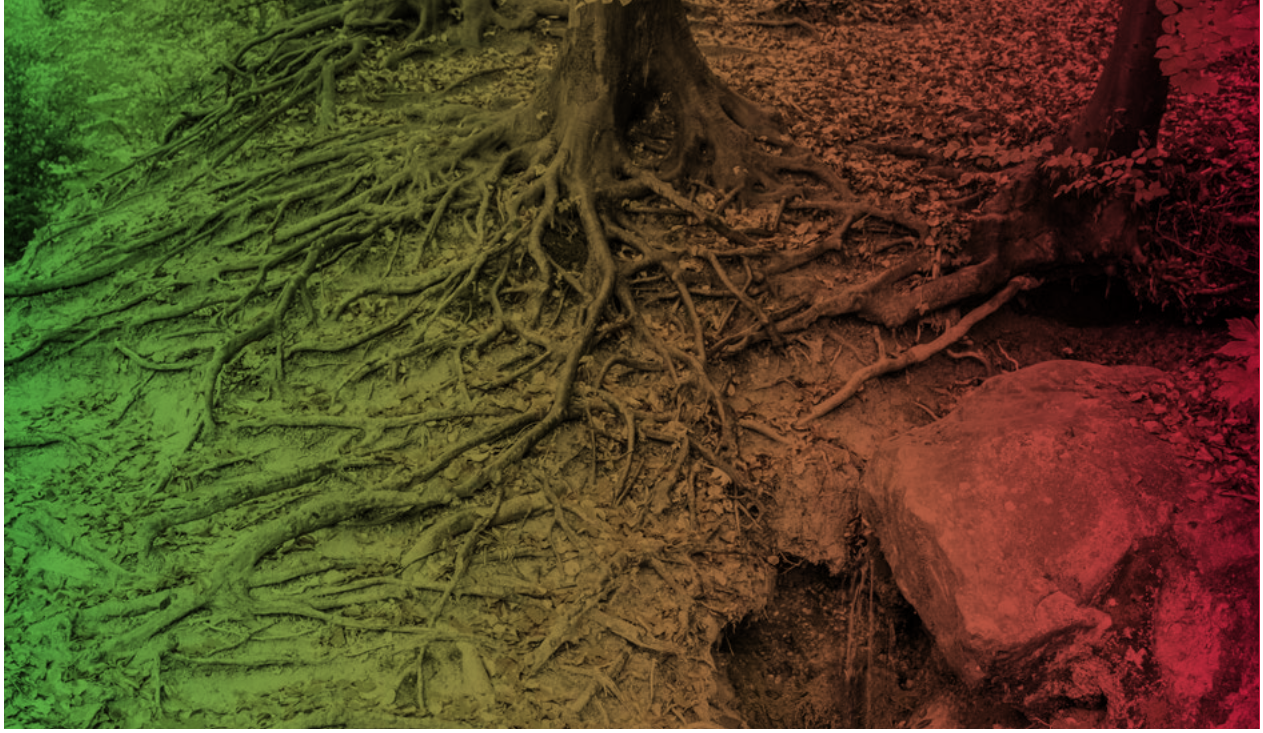
In 2020, 10,060 tons were sent to **energy recovery**, equal to 3.8% of the Household WEEE managed in the year, recording a slight decrease (-0.6%) compared to 2019 (Table 5.8). Lastly, the quantities destined to **disposal** in 2020 were 16,236 tons, 9.6% more than the previous year (Table 5.8), of which 14,939 tons sent to **disposal in landfill** and 1,297 tons to **thermal disposal without energy recovery**. This increase is in line with the increase of the quantities managed.

Trend in energy and material recovery and disposal in the three-year period 2018-2020

Table 5.8

	2018		2019		2020	
	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)
Recycling	89.1%	185,556	89.6%	215,011	90.0%	236,056
Energy recovery	4.6%	9,581	4.2%	10,121	3.8%	10,060
Disposal	6.3%	13,063	6.2%	14,820	6.2%	16,236
TOTAL		**208,201***		**239,952**		**262,351***

**The numbers shown in this technical document are subject to rounding and therefore the rounded amounts of the quantities sent for recycling, energy recovery and disposal may differ from the rounded total quantity.*



Trend in energy and material recovery and disposal by Group in 2020

Table 5.9

	R1		R2		R3		R4		R5	
	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)
Recycling	86.1%	68,367	92.5%	104,047	90.6%	40,111	89.8%	23,386	94.8%	145
Energy recovery	8.5%	6,749	0.4%	449	3.4%	1,506	5.2%	1,354	1.3%	2
Disposal	5.4%	4,287	7.1%	7,986	6.0%	2,656	5.0%	1,301	3.9%	6
TOTAL		**79,403**		**112,482**		**44,273**		**26,041**		**153**

See Insight A for further details on the trend in energy and material recovery and disposal for the individual Groups for the years 2018-2019.

Fractions by composition in tons for the year 2020

Table 5.10

Output fractions		Fractions not intended for disposal		Fractions intended for disposal	
Type	Quantity obtained (t)	Recycling (t)	Energy recovery (t)	Thermal disposal (t)	Landfill disposal (t)
Ferrous Metals	134,200	134,200	0	-	-
Plastics	37,349	34,479	2,466	185	219
Concrete	20,584	20,584	-	-	0
Glass	17,710	17,631	-	-	79
Non-hazardous waste	13,840	437	845	689	11,869
Polyurethane	10,957	1,985	6,749	-	2,223
Cone glass	9,740	9,519	-	0	221
Copper	6,393	6,393	-	-	-
Aluminium	5,371	5,371	-	-	-
Other Metals	2,835	2,835	-	0	0
Wood	2,200	2,200	-	-	-
CFC	397	-	-	397	-
Oils	318	318	0	-	-
Hazardous waste	255	0	0	0	255
Capacitors	96	0	-	26	70
Cartridges/Toner	78	78	-	0	-
Batteries/Accumulators	26	26	-	0	0
Dust and Mercury	3	-	-	-	3
OVERALL TOTAL	**262,351***	**236,056**	**10,060**	**1,297**	**14,939**

See Insight B for further details on the percentages of output fractions destined for recycling, energy recovery and disposal for the individual Groups in 2020.

**The numbers shown in this technical document are subject to rounding and therefore the rounded amounts of the quantities may differ from the rounded total quantity.*

5.2.3 Energy consumption

Energy consumption plays a very important role in assessing the overall impacts. This is why Erion WEEE carries out monitoring activities of all its suppliers in order to promote energy efficiency.

The reporting area in respect of energy consumption includes both the **internal impacts**, generated by Erion WEEE and its suppliers, and the **external impacts**, generated by other parties upstream and downstream of Erion WEEE and its suppliers. It is instead excluded from the report the not very significant energy consumption referring to Erion's premises (heating, cooling, etc.) and staff duty travel as its impact is considered to be non-material compared to the consumption generated by the Household WEEE management activity.

ENERGY CONSUMPTION WITHIN THE ORGANIZATION

In reporting the consumption of energy within the organization are considered the **transport operations from the Collection Centres/Grouping Places to treatment plants** and those related to the **treatment of Household WEEE**. The attention paid by Erion WEEE is mainly focused on the energy efficiency of the plants and the vehicles used by the logistics suppliers.





Table 5.11 shows the **energy consumption within the organization**. More specifically, **transport** activities have seen a rise of +3.1% in energy consumption compared to 2019. Even though the quantities of WEEE managed in 2020 increased by +9.3%, the average distance travelled decreased by -3.0% and the average load increased by 2.8%, which led to a non-proportional increase in consumption linked to transport activities compared to the increase in the quantities managed.

As for the consumption resulting from the **treatment of WEEE**, there is an increase of +8.4% compared to the previous year, which is directly proportional to the increase in the quantity of WEEE managed. The energy needs of the processing plants are met by electricity from different sources according to the choices made by each supplier.

Energy consumption within the organization by source and process

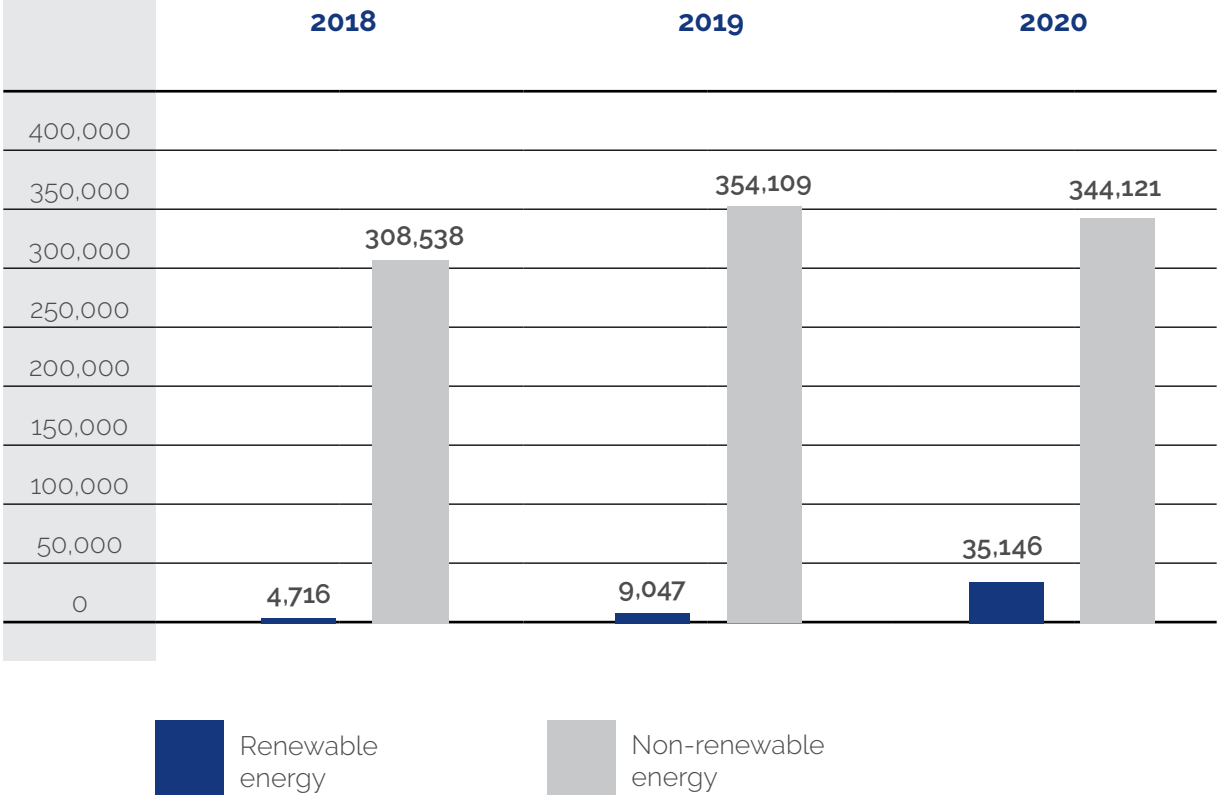
Table 5.11

	Unit of measure	2018	2019	2020
TRANSPORT				
Fuel (diesel) for WEEE transport from Collection Centres/Grouping Places to treatment plant	GJ	235,535	273,648	**282,243**
TREATMENT				
Electricity from the grid (non-renewable)	GJ	67,646	76,774	**55,167**
Electricity from the grid (renewable)	GJ	-	394	**29,148**
Diesel (self-production)	GJ	5,357	3,687	**6,711**
Electricity from photovoltaic energy (renewable self-production)	GJ	4,716	8,653	**5,998**
TOTAL	**GJ**	**313,254**	**363,156**	**379,267**

In 2020 the **energy used from renewable sources** increased significantly compared to the previous year, rising from 2.5% to 9.3% of Erion WEEE's energy consumption. This rise is related to the treatment phase of Household WEEE, where 36.2% of electricity, equal to 35,146 GJ, comes from renewable sources. The increase in renewable energy, made possible thanks to the efficiency and modernization measures implemented by the plants and supported by Erion WEEE through an incentive scheme, is due to the purchase and use by suppliers of **electricity from *green* sources**. The renewable energy used in the treatment of WEEE also partly derives from self-produced energy through the installation of **photovoltaic panels**, which in 2020 amounted to 5,998 GJ (Graph 5.5).

Energy consumption from renewable and non-renewable sources within the organization (GJ)





In terms of **energy intensity** from non-renewable sources there was an improvement: in 2020 1.45 GJ per tonne managed were consumed compared to 1.51 GJ per tonne in the previous year.

Energy intensity per tonne of WEEE managed

Table 5.12

	Unit of measure	2018	2019	2020
Transport Collection Centres/ Grouping Places - treatment plant	GJ/t	1.13	1.14	**1.08**
Treatment	GJ/t	0.37	0.37	**0.37**
TOTAL	**GJ/t**	**1.50**	**1.51**	**1.45**



ENERGY CONSUMPTION EXTERNAL TO THE ORGANIZATION

Energy consumption external to the organization includes that resulting from the:

- transport of WEEE from citizens' homes to Collection Centres and Grouping Places;
- transport of fractions leaving the treatment plants for the recycling, energy recovery and disposal plants (which include landfills and thermal disposal plants);
- industrial recycling activities;
- disposal and energy recovery activities.

During 2020, the consumption deriving from operations upstream and downstream of Erion WEEE remained more or less unchanged (+1.0%) compared to 2019. This trend is of little significance as in 2020 the optimization of the parameters of the WEEE tool that, compared to the increase in the quantities managed by Erion WEEE, led to a non-proportional increase in consumption external to the organization. In compliance with the WEEE Forum approach, the value quoted for the energy recovery activity is expressed in a negative number since it refers to the production of energy resulting from the exploitation of the heat generated by the combustion of waste.

Summary of energy consumption external to the organization

Table 5.13

Activity	Unit of measure	2018	2019	2020
WEEE transport home - Collection Centres/Grouping Places	GJ	51,741	56,588	**46,226**
Subsequent transport	GJ	42,509	47,549	**40,205**
Industrial recycling	GJ	1,181,308	1,350,583	**1,385,050**
Thermal disposal with energy recovery, thermal/landfill disposal (energy recovery and disposal)	GJ	-127,637	-133,474	**-136,712**
TOTAL	**GJ**	**1,147,921**	**1,321,246**	**1,334,769**

5.2.4 Emissions

Just as energy consumption, also emissions are of major importance in the management of WEEE, especially in relation to the Collective Scheme's environmental protection mission. In the same way as energy consumption, a double reporting is performed also for emissions, based on the impacts generated both inside and outside the boundary of the organization. As far as internal impacts are concerned, it should be noted that emissions relating to Erion's offices have not been taken into account as their impact has to be considered negligible compared to the emissions generated by the management of Household WEEE.

With regard to emissions, a distinction must be made between:

- **direct emissions (Scope 1)** arising from the use of fuels for transport as well as from the direct production of electricity, heat and cooling generated by machinery;
- **indirect emissions (Scope 2)** arising from the production of electricity purchased by the organization and its suppliers and not directly produced;
- **indirect emissions (Scope 3)** arising from activities not directly controlled by the System, but whose emissions are indirectly due to Erion WEEE activity.



EMISSIONS GENERATED WITHIN THE ORGANIZATION

DIRECT EMISSIONS - SCOPE 1

They depend on the **use of fuels by Erion WEEE suppliers for the transport of WEEE** from the Collection Centres/Grouping Places to the treatment plants **and on the consumption deriving from plants using self-produced energy**.

During 2020, Erion WEEE generated direct emissions of 104,508 tons of CO_2eq[8], of which 99.5% from activities related to the transport of WEEE and the remaining 0.5% from WEEE treatment activities, with an increase of +3.3% compared to 2019. As with internal energy consumption, the decrease in average distance travelled and the increase in average load has led to an increase in transport-related emissions not proportional to the increase in the quantities managed.



Direct greenhouse gas emissions - GHG in t CO_2eq (Scope 1)

Table 5.14

Activity	Energy source	Unit of measure	2018	2019	2020
Transport Collection Centres/ Grouping Places - treatment plant	Diesel	t CO_2eq	86,806	100,859	**104,009**
WEEE Treatment	Diesel	t CO_2eq	399	274	**499**
TOTAL		**t CO_2eq**	**87,205**	**101,133**	**104,508**

[8] *Emissions are expressed in terms of CO_2 equivalent, so as to take into account, in addition to the contribution generated by the production of CO_2, the impact on global warming generated by other greenhouse gases, especially methane (CH_4) and nitrous oxide (N_2O).*

INDIRECT EMISSIONS - SCOPE 2

Compared to the previous year, Erion WEEE performance in terms of Scope 2 emissions had a significant improvement with a 28.1% reduction in emissions generated by the treatment of WEEE, due to the purchase by suppliers of renewable energy supported by Erion through an incentive scheme.



Table 5.15

Indirect greenhouse gas emissions - GHG in t CO_2eq (Scope 2)

Activity	Energy source	Unit of measure	2018	2019	2020
WEEE Treatment	Electricity from the grid (non-renewable)	t CO_2eq	8,118	9,213	**6,620**
TOTAL		**t CO_2eq**	**8,118**	**9,213**	**6,620**

Total emissions generated within the organization

Table 5.16

	Unit of measure	2018	2019	2020
Scope 1 Emissions (arising from transport and treatment)	t CO_2eq	87,205	101,133	**104,508**
Scope 2 Emissions (arising from treatment)	t CO_2eq	8,118	9,213	**6,620**
TOTAL	**t CO_2eq**	**95,323**	**110,346**	**111,128**

As for the energy intensity, also as regards the **intensity of greenhouse gas emissions**, Erion WEEE performance improved in the last year compared to the previous two years, going from 0.46 tons of CO_2eq per tonne of WEEE managed to 0.42 (Table 5.17). Similarly to the energy intensity, this improvement is due to the energy efficiency of the plants and the reduction of the average distance travelled, with the increase in average load, during transport activities.

Greenhouse gas emission intensity - GHG in t CO_2eq/t WEEE

Table 5.17

	Unit of measure	2018	2019	2020
Scope 1 Emissions/t WEEE	t CO_2eq/t WEEE	0.42	0.42	**0.39**
Scope 2 Emissions/t WEEE	t CO_2eq/t WEEE	0.04	0.04	**0.03**
TOTAL	**t CO_2eq/t WEEE**	**0.46**	**0.46**	**0.42**

EMISSIONS GENERATED OUTSIDE THE ORGANIZATION

OTHER INDIRECT EMISSIONS – SCOPE 3

In order to assess the overall emission balance so as to calculate the benefit of proper management, it is also necessary to monitor the **emissions that occur along the value chain upstream and downstream of the organization**.



Also known as indirect Scope 3 emissions, they include those arising from:

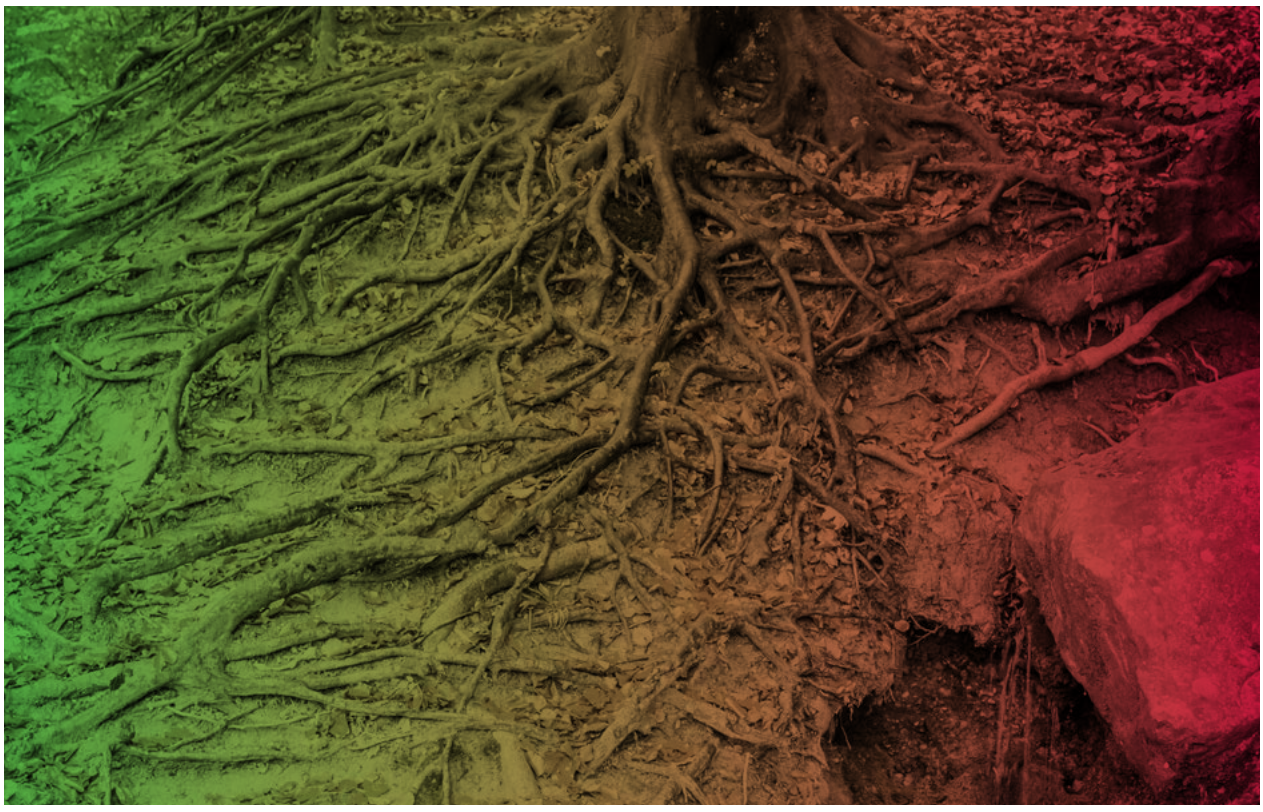
- transport of WEEE from citizens' homes to Collection Centres and Grouping Places;
- subsequent transport of the fractions leaving treatment plants to recycling, energy recovery and disposal plants (which include landfills and thermal disposal plants);
- industrial recycling activities;
- disposal and energy recovery activities.

Similarly to what happened for Scope 2 emissions, also **Scope 3 emissions** fell by 3.3% from 2019 to 2020, in contrast to what happened between 2018 and 2019 when they increased by 12.9%. In line with energy consumption outside the organization, also this trend is of little significance due to the optimization of the WEEE tool parameters.

Other indirect greenhouse gas emissions - GHG in t CO_2eq (Scope 3)

Table 5.18

Activity	Unit of measure	2018	2019	2020
WEEE transport home - Collection Centres/Grouping Places	t CO_2eq	6,890	7,551	**6,119**
Subsequent transport	t CO_2eq	24,039	26,992	**21,735**
Industrial recycling	t CO_2eq	83,275	95,108	**97,038**
Thermal disposal with energy recovery, thermal/landfill disposal (energy recovery and disposal)	t CO_2eq	23,846	26,175	**25,785**
TOTAL	**t CO_2eq**	**138,050**	**155,826**	**150,677**



5.2.5 Comparison scenarios

All the Collective Scheme's activities are aimed at protecting the environment. Every year Erion WEEE assesses the effectiveness of pursuing this objective by comparing the consumption and emissions arising from its operational activities with those generated in a hypothetical scenario where the management of Household WEEE is carried out in the absence of Erion WEEE.



Specifically, the two scenarios compared are the following:

Scenario A - Proper management of WEEE: it represents the current scenario in which Erion WEEE operates and whose indicators have been reported in the previous paragraphs;

Scenario B - Partial management of WEEE: it represents the hypothetical comparison scenario in which, in the absence of Erion WEEE, the same quantity of treated WEEE is managed:

- 50% by "scrap dealers", entities whose sole aim is to maximise profits without worrying about the environmental consequences of their activities. For this reason they only recover raw materials with a positive economic value (iron, aluminium, copper). From a logistical point of view, the assumption is that these entities make use of treatment plants located closer to the Collection Centres/Grouping Places than those used by Erion WEEE;
- 50% by the same plants currently used by Erion WEEE, which however operate with a very low recovery rate of ozone-depleting gases (CFC/HCFC), equal to that measured in the first year of activity of the Collective Schemes (2008). In this case, it is assumed that without the commitment to continuous improvement of the quality of the treatment required by Erion WEEE in the agreements with its suppliers, the plants operate under the initial conditions, without taking efficiency and improvement actions.

It should be noted that for Scenario B also the consumption and emissions arising from the production of certain virgin raw materials were reported, in so far as in this scenario there is no recycling of these materials (plastic, glass, paper and cardboard, etc.) as they are considered not economically attractive. Table 5.19 compares the consumption and emissions of the two alternative scenarios.

Comparison of energy consumption and emissions under different scenarios[9]

Table 5.19

	Scenario A		Scenario B	
Activity	**GJ**	**t CO_2eq**	**GJ**	**t CO_2eq**
WEEE transport home - Collection Centres/Grouping Places	46,226	6,119	46,226	6,119
WEEE transport Collection Centres/ Grouping Places - treatment plant	282,243	104,010	241,012	88,894
WEEE Treatment	97,025	7,120	86,289	8,093
CFC emissions due to treatment	-	-	-	1,692,735
Subsequent transport	40,205	21,735	26,656	15,626
Industrial recycling	1,385,050	97,037	1,141,585	79,807
Thermal disposal with energy recovery, thermal/landfill disposal	-136,712	25,785	-45,452	49,359
Production of semi-finished goods resulting from profit-maximizing plants	-	-	1,733,749	132,885
TOTAL	**1,714,036***	**261,805***	**3,230,067****	**2,073,517***

[9] *For further information, please refer to the Appendix section - Insight C.*

**In this technical document the numbers shown are subject to rounding: the sum of the individual items relating to energy consumption differs by 1 GJ while that relating to emissions differs by 1 t CO_2eq.*

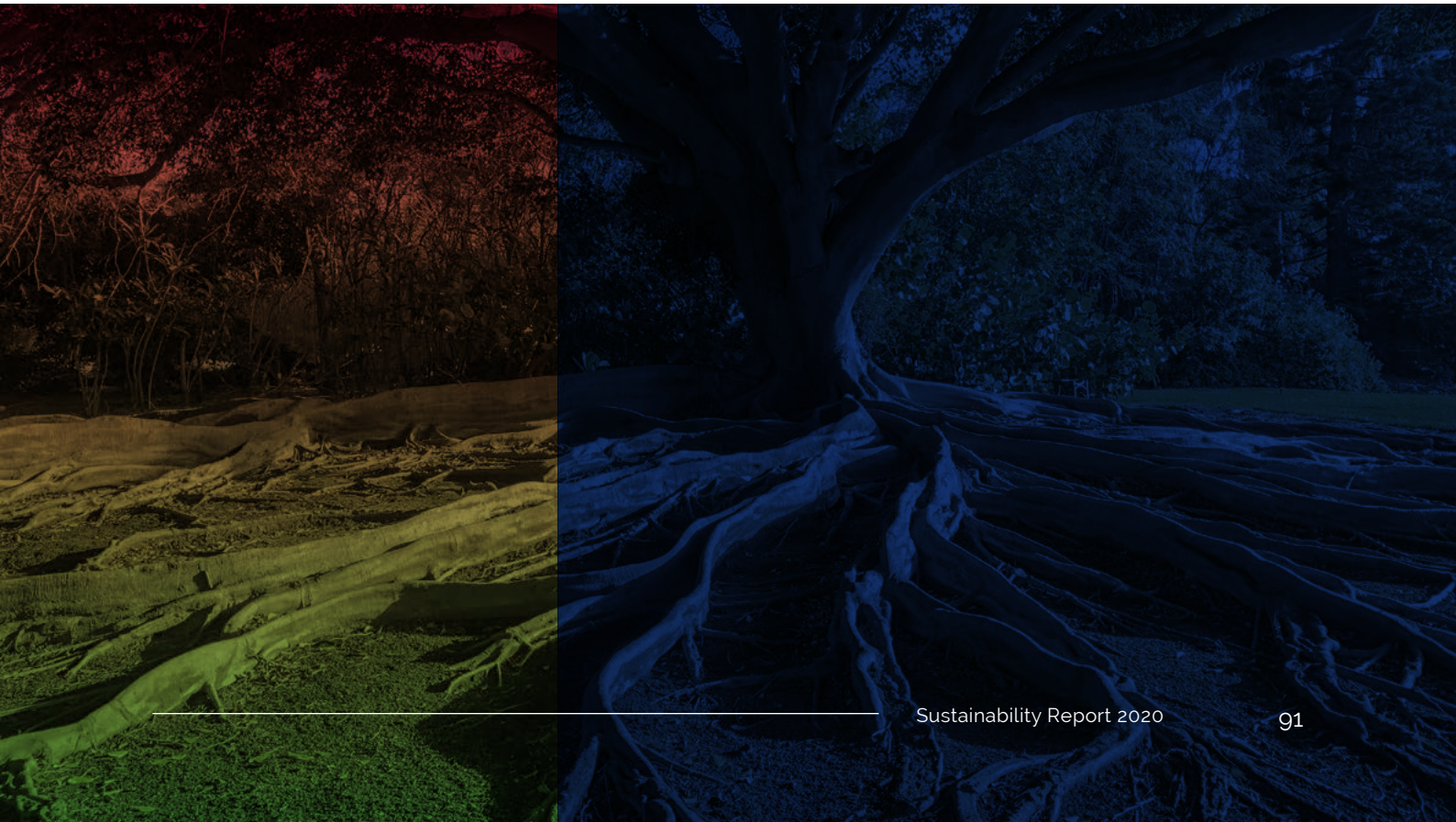
***In this technical document the numbers shown are subject to rounding: the sum of the individual items relating to energy consumption differs by 2 GJ.*

The comparison of the two scenarios (Table 5.20) clearly shows the crucial role played by Erion WEEE in mitigating the impacts generated by the management of Household WEEE both in terms of energy consumption and greenhouse gas emissions. In particular, in 2020 **the benefit deriving from the proper management of Household WEEE** is quantifiable in savings of **more than 1.5 million GJ** and **more than 1.8 million tons of CO_2eq**.

Benefits deriving from the proper management of Household WEEE by Erion WEEE

Table 5.20

	2018		2019		2020	
	GJ	t CO_2eq	GJ	t CO_2eq	GJ	t CO_2eq
SCENARIO A	1,461,174	233,370	1,684,401	266,172	1,714,036	261,805
SCENARIO B	2,541,157	1,540,257	2,961,467	1,742,203	3,230,067	2,073,517
B-A	**1,079,983**	**1,306,887**	**1,277,066**	**1,476,031**	**1,516,031**	**1,811,712**



Benefit per tonne of WEEE and per Group deriving from the proper management of Household WEEE by Erion WEEE

Table 5.21

Group	2018		2019		2020	
	GJ/t WEEE	t CO_2eq/t WEEE	GJ/t WEEE	t CO_2eq/t WEEE	GJ/t WEEE	t CO_2eq/t WEEE
R1	6.86	19.48	7.33	19.14	8.07	21.60
R2	2.82	0.16	2.77	0.15	2.72	0.16
R3	5.30	0.25	5.31	0.28	7.20	1.66
R4	9.78	0.20	9.83	0.20	9.63	0.21
R5	-0.48	-0.72	0.54	-0.12	-1.56	-1.12
TOTAL	**5.19**	**6.28**	**5.32**	**6.15**	**5.78**	**6.91**

1.5 million GJ saved represent **more than 420 million kWh**, equal to the electricity consumption of a city like **Florence (380,000 inhabitants)**

Avoiding the emission of over **1.8 million tons of CO_2eq** means eliminating the **emissions generated by the vehicle fleet of the entire province of Milan** for a period of **66 days**

5.2.6 Alternative national scenarios

As described in this document, in 2020 Erion WEEE managed 71.7% of the total Household WEEE collected by the "formal" Italian System, which according to the data available from the document E-Waste Monitor 2020 intercepted during the year about 35% of the 1,043,726 tons of WEEE generated in our Country. All the rest, with the exception of what remains in the Italians homes even if no longer functioning, is managed by entities other than Collective Schemes, giving rise to substantial flows of "parallel" WEEE, sometimes even illegal, which are beyond the control of the chain and represent a serious environmental and social threat. In order to measure and better understand the extent of the damage caused by this phenomenon and quantify the benefits that would be obtained if all WEEE generated in Italy were managed with an environmental performance equal to that of Erion WEEE, two models based on the total quantities of WEEE generated in Italy were compared:



Model 1 - "Italian WEEE System": it describes the real situation; all WEEE generated in Italy are managed:

- for the part declared in 2020 by the CdCRAEE, by the plants used by the formal WEEE System with the same performance level as that achieved by Erion WEEE in 2020;
- for the remaining part by the "parallel" system in two ways:
  - 50% by "scrap dealers", entities whose sole aim is to maximise profits without worrying about the environmental consequences of their activities. For this reason they only recover raw materials with a positive economic value (iron, aluminium, copper). From a logistical point of view, the assumption is that these entities use treatment plants located closer to the Collection Centres/ Grouping Places than those used by Erion WEEE;
  - 50% by the same plants currently used by Erion WEEE, which however operate with a very low recovery rate of ozone-depleting gases (CFC/HCFC).

Model 2 - "Italian WEEE System" with Erion performance level: it represents the optimal condition in which all WEEE generated are managed with same performance level as that achieved by Erion WEEE in 2020.

Consumption and emissions: Model 1 – Italian WEEE System

Table 5.22

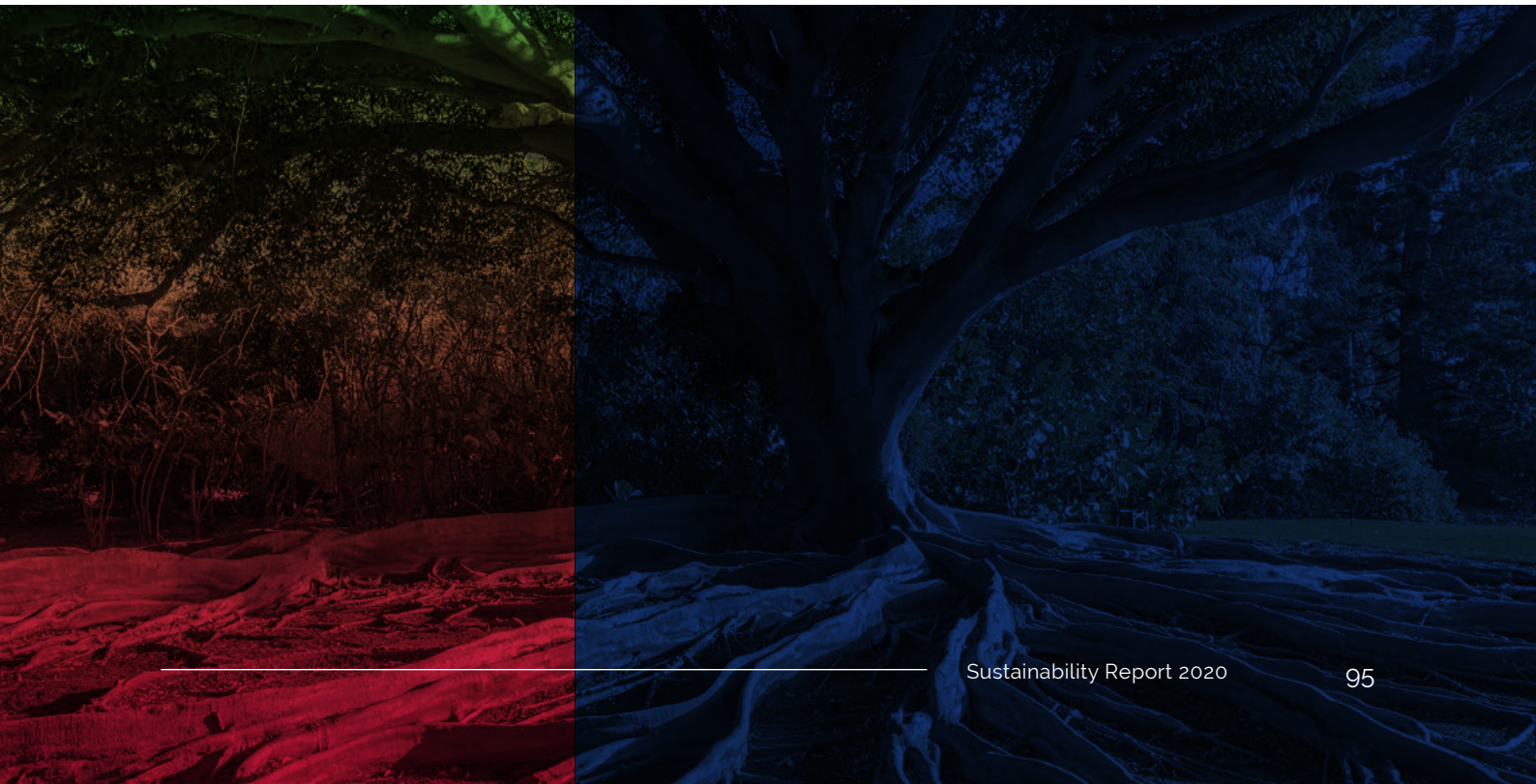
	GJ	t CO_2eq
Transport	1,378,701	501,851
Treatment	347,094	29,953
CFC Emissions	-	3,086,894
Recycling	5,033,462	355,190
Energy recovery and disposal	-343,331	161,201
Production of semi-finished goods	5,048,740	226,569
TOTAL	**11,464,666**	**4,361,658**



Consumption and emissions: Model 2 – Italian WEEE System with Erion performance level

Table 5.23

	GJ	t CO_2eq
Transport	1,521,143	557,678
Treatment	366,949	26,835
Recycling	5,615,753	397,298
Energy recovery and disposal	-592,271	107,699
TOTAL	**6,911,574**	**1,089,510**





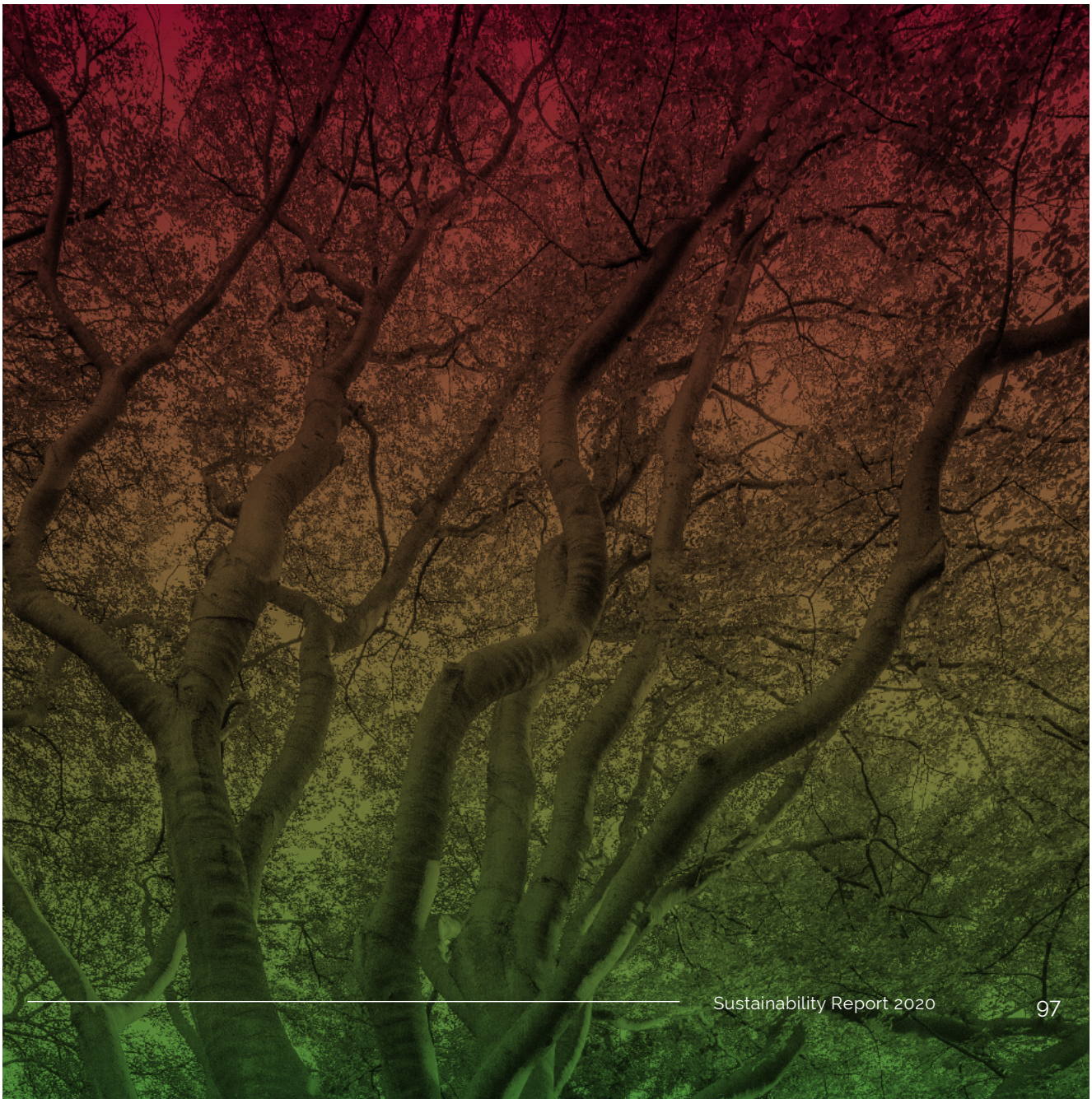
Potential overall energy and emissions savings

Table 5.24

	GJ	t CO_2eq
Model 1 - Italian WEEE System	11,464,666	4,361,658
Model 2 - Italian WEEE System with Erion performance level	6,911,574	1,089,510
POTENTIAL OVERALL SAVINGS	**4,553,092**	**3,272,148**

4.6 million GJ saved represent **more than 1,200 million kWh**, equal to the electricity consumption of a city like **Naples (1,150,000 inhabitants)**

3.3 million tons of CO_2eq correspond to the amount absorbed in one year by a **forest of over 3,200 sq km**, as large as the entire **Aosta province**



5.3 RESEARCH AND INNOVATION FOR THE CIRCULAR ECONOMY



5.3.1 European research projects

Erion's commitment to make a tangible contribution to the Italian transition to the Circular Economy goes beyond its activity in the field of waste management associated with electronic products and the valorisation of the secondary raw materials that compose them. As the European waste hierarchy points out, being sustainable means doing everything to prevent at source their production and encourage the reuse and recycling of end-of-life products. It is for this reason that Erion collaborates with scientific organizations, industrial enterprises and universities on European research projects on the eco-innovation of products and manufacturing processes, on new business models for the Electrical and Electronic Equipment and Batteries and Accumulators sectors and on the reconditioning and recycling of products at the end-of-life. Erion is also involved in training activities especially for young students on topics such as Critical Raw Materials and climate change, and supports the development of innovative models and services. In 2020 our **Projects and Innovation (P&I)** team took part in 12 programs funded by **EIT – Raw Materials**, **EIT – Climate KIC** and **Horizon 2020**.





5.3.1.1 Educational projects

RM@Schools (completed in 2020)

RM@Schools, funded by EIT – Raw Materials during the 2018-2020 three-year period, is a European project designed to train students aged 10 to 19 on topics in the field of science and technology applied to the Raw Materials sector. The project involved a consortium of 19 partners from 12 European countries and a series of local networks made up of research institutes, high schools and businesses. In 2020, Erion's specialists developed the "*Rare Earths Palette*" educational kit, created the video "*The journey of your broken game console*" and implemented a wide-ranging scientific dissemination campaign both on online platforms and with events such as the European Researchers' Night organized in Brindisi on 27 November 2020.

RAISE

RAISE (EIT – Raw Materials) is an internship program aimed at high school students to allow them to gain work experience in businesses and research laboratories on the subject of raw materials. Erion, which takes part in the project together with 9 others international partners, deals with the definition of educational approaches and methodologies. Since the health emergency made it impossible to host students in Erion offices, the experience was translated into digital and on 4 December 2020 our experts took part in the online workshop "*Recycling and Circular Economy: key steps for a sustainable future*" organized by the University of Milano-Bicocca, with a speech entitled *"A tour in the WEEE jungle"*.

Young Innovators 2 (completed in 2020)

Young Innovators 2 (EIT – Climate KIC) aims to bring climate change as a central topic in schools by inviting teachers to stimulate the critical and innovative thinking of young students. During 2020, the year of completion of the project, Erion organized in-person and online training for about 50 people, including teachers and representatives of non-profit organizations. The experts of the P&I team also supervised 70 young students from Cormano (Milan) and Cava de' Tirreni (Salerno) through group works presented at the Young Climathon, the hackathon on climate change organized in cities across Europe.

Circucity

Circucity (EIT – Raw Materials) is a summer camp organized throughout Europe to encourage students to develop innovative solutions for sustainable cities, raising awareness on the scarcity of Critical Raw Materials (CRMs) and policy decisions. During the 2020 summer camp, Erion's specialists held a lesson on the sustainable management of WEEE, with a particular focus on the environmental benefits and the CRMs contained in electronic waste.





5.3.1.2 Technological innovation projects

PolyCE

Promoting the use of recycled plastic in the production of new EEE is the goal of PolyCE (Horizon 2020). The strategy of the program is to involve the entire WEEE management chain for improving the plastic recovery system, avoiding the use of new virgin material. Erion, which takes part in the PolyCE project together with 19 other international partners, mapped the flows of WEEE collected in Italy and Europe to calculate the potential quantity of plastic that can be sent to recycling process. With the collaboration of both industrial (Whirlpool, Philips, MGG) and academic (KUL, University of Ghent) partners, clusters of products to be sent for treatment were defined with the aim of improving the quality of the plastic obtained. For one of the defined clusters, for example, Erion organized the collection and treatment of washing machines to obtain recycled polypropylene filled with calcium carbonate (rPP-$CaCO_3$) to be used in the production of new washing machines.

NONTOX

The aim of the NONTOX (Horizon 2020) project in which Erion takes part with 11 other European partners is to increase the volume of recycled plastic by removing the hazardous substances that currently limit its re-use. The overall objective is to increase by 2022 the recycled fraction of plastic deriving from WEEE, end-of-life vehicles and construction and demolition waste, by eliminating additives and hazardous substances. The strategy is to introduce innovative recycling processes that will allow to produce high quality secondary plastics. Erion collaborates in the mapping of the chain and of the European standards that regulate it, as well as in the development of an environmental and economic assessment study on the introduction of recycled plastics in new products.



5.3.1.3 System innovation projects

CEWASTE

The CEWASTE (Horizon 2020) project plan is to make the current models for recovering CRMs from specific types of waste, including WEEE, more sustainable. The program strategy provides for the introduction of a voluntary certification scheme for the collection, transport and treatment of waste containing a significant amount of CRMs. Erion's mission is to analyze the current barriers to CRMs recycling and conduct field audits to test the certification scheme. Among our tasks there is also that of sharing the results obtained with the key players operating in the WEEE sector.

InnoWEEE

Tracking small WEEE to increase its collection and develop technologies to extend the life of products are the two pillars of the InnoWEEE program funded by EIT – Climate KIC, which sees Italy and England working together. Erion's contribution to the project is to organize WEEE collection events in various cities in Trentino-Alto Adige, in Cava de' Tirreni (Salerno) and in Bathnes (UK). Our experts are also involved in the coordination of the treatment plants to evaluate processes for the re-use of WEEE. A final phase of the program will see Erion involved in the assessment of the environmental impacts associated with the pilot actions tested during the project, in terms of avoided CO_2 emissions, materials recovered and energy savings produced.

BELT

In view of the entry into force on 1 March 2021 of the new energy labelling system for household appliances in Europe, the Horizon 2020 program funded the BELT project with the aim of guiding consumers in more conscious and environmentally sustainable purchasing choices. BELT also aims to support Producers, distributors and citizens in managing the transitional period towards the changeover to the new labelling system. Erion takes part in the project together with Altroconsumo, SOFIES and other European consumer associations.

C-SERVEES

The aim of the C-SERVEES (Horizon 2020) project is to promote the adoption of circular business models in the world of EEE to ensure a more efficient use of resources. The strategy is to adapt and apply the typical services of Industry 4.0 to four types of products: large household appliances, IT equipment, telecommunications devices and consumer electronics. Erion is part of the team dedicated to studying the feasibility of the solutions under consideration: eco-leasing, product customization, optimization of WEEE management processes and the use of ICT technologies. Our experts are in charge of drafting guidelines for the implementation of new policies aimed at overcoming legislative barriers and the development of the Circular Economy.

Lions2Life

Lions2Life (EIT – Climate KIC) was created to develop and install into the electricity grid of a sustainable district of Valencia an energy storage system consisting of batteries from the electric mobility sector (electric bikes, e-mopeds, electric scooters). Reuse of accumulators is technically feasible, but requires an as yet unstructured industrial approach. Erion's task is to gather the different information coming from collection and treatment operators and recyclers, as well as from European associations and Producers.

Circular Housing (completed in 2020)

The main objective of the Circular Housing (EIT – Climate KIC) project is to define a new sustainable business model applicable to the rental of household appliances and furnishings. The project explored the possibility of offering tenants mobile and "circular" Electrical and Electronic Equipment, i.e. reusable, refurbishable and recyclable. Erion contributed by creating a network of actors to involve in the program and provided the relevant economic and environmental assessment data. The results obtained from the study, presented in December 2020, demonstrated the feasibility of the model and aroused interest in its practical application from various industrial and commercial businesses.



5.3.2 Innovation projects



The Erion System makes available to its associated Producers, support in the design and implementation of innovative programs and customized solutions for the circular economy together with the investee company Remedia TSR, a reference point in the waste recycling and *reverse logistics* sector.

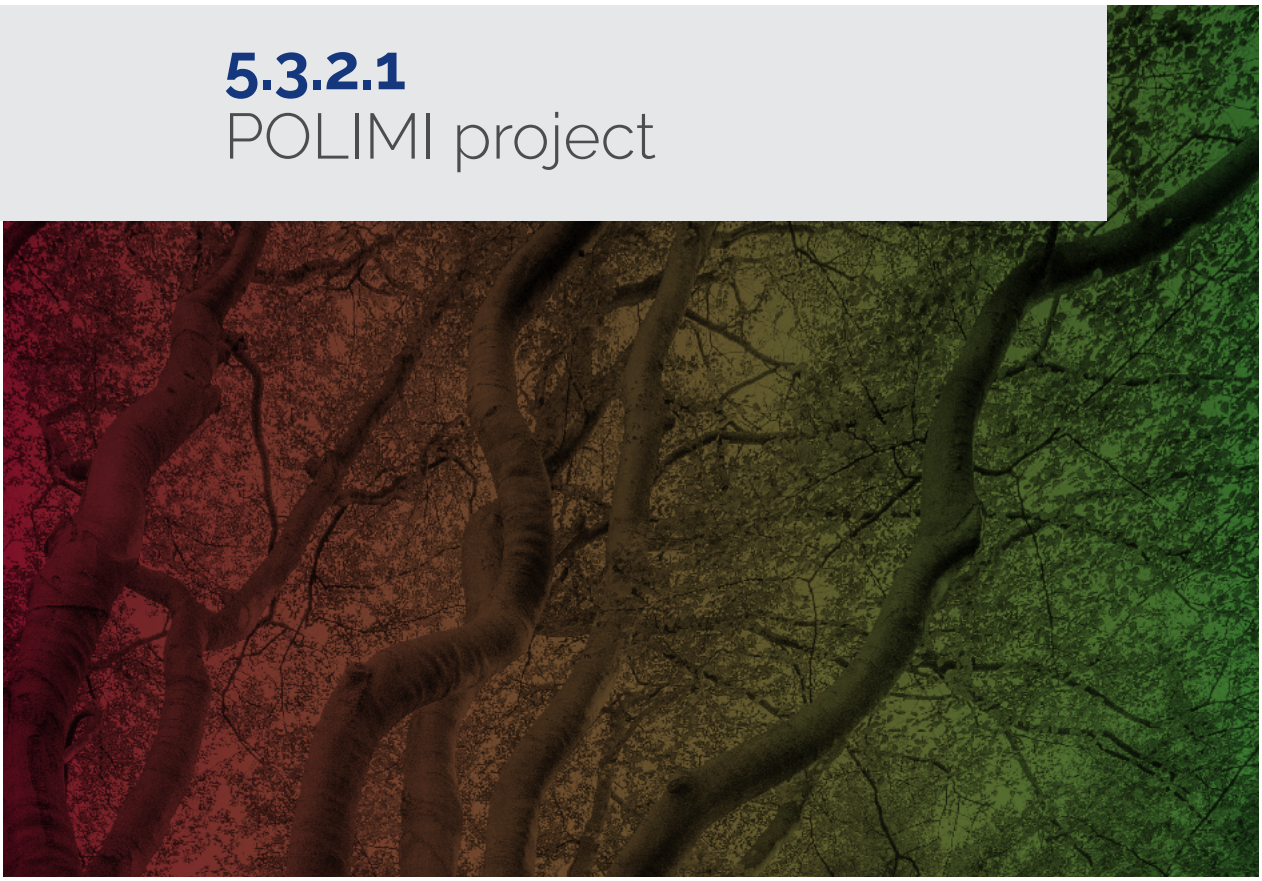
In particular, the main services offered include:

- operational models for the preparation for re-use;
- eco-design: analysis and development of products based on principles such as re-use, simplicity in unpacking, recyclability and use of recycled material for the manufacture of new products;
- transition from the sale of products to the pay-per-use model;
- environmental accountability and non-financial reporting;
- *green marketing* and visibility campaigns in terms of corporate environmental and social responsibility;
- traceability of waste management processes and design of innovative *reverse logistics* models.

The Erion System supports companies with research projects designed to develop **innovative and circular solutions**, **new business models and production processes** and **sustainable product design**. In addition, it **raises awareness among citizens and consumers** about circular economy issues through events, communication campaigns and targeted information projects such as the **Italian Atlas of Circular Economy**, ***EconomiaCircolare.com*** magazine and the **Erion per Voi** digital platform.

In particular, we present two specific initiatives: the research project **POLIMI** conducted in cooperation with the Department of Management Engineering of Politecnico di Milano on WEEE flows related to the professional printer sector, and the **Exceed Clima** project.

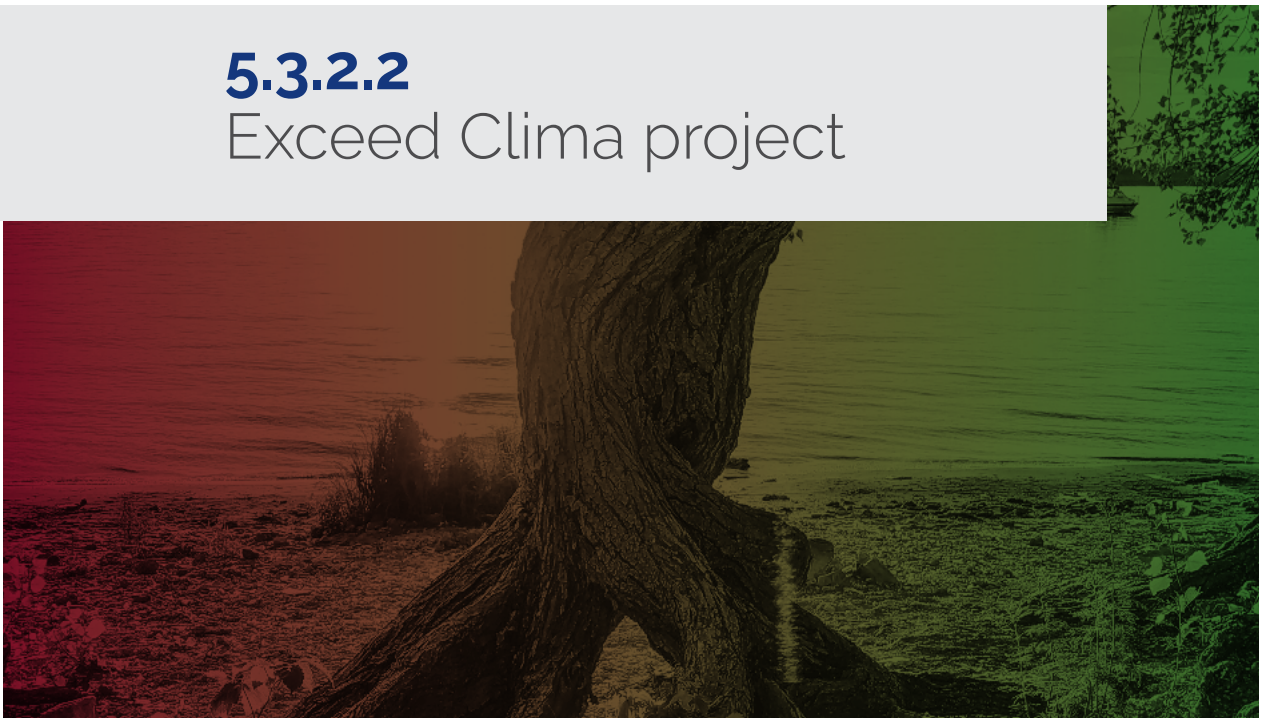
5.3.2.1 POLIMI project



Erion collaborated with the Management Engineering Department of Politecnico di Milano on the research project **"Quantification of flows of Waste from Electrical and Electronic Equipment in the professional printer sector"**. The main objective of the program was to reconstruct the flows of the professional printing chain in Italy, with particular attention to the destination and characteristics of the waste derived from this type of EEE.

The project consisted of two phases. The first, led by Erion, involved the reconstruction of the structure of the chain controlled by the Producers, while the second phase of analysis, conducted by the POLIMI researchers, allowed the final mapping of the chain, the quantification of flows and the definition of areas of discussion for the future improvement of end-of-life treatment and the encouragement of re-use in this sector. In conclusion, the study was able to reconstruct the Italian chain of professional printers, the main actors and the relative waste streams, making emerge as the impact of foreign markets – which account for a large quantity of reconditioned or refurbishable printers – strongly affects the failure to reach the collection targets and highlighting the key role played by retailers in ensuring proper waste disposal.

5.3.2.2
Exceed Clima project



The **Exceed Clima** project represents the first **generational voluntary system for the collection and recycling of Professional WEEE**, enabling Erion's Members to overcome the old B2B (*Business-to-Business*) compliance management models by proactively committing to creating value for the environment and their own sales networks. The project relieves Producers from dealing directly with the management of their Professional WEEE as Erion takes care of managing the collection requests from end-users and/or the network. In this way, Producers associated with the Erion System have greater certainty of contributing to the achievement of the European collection target which from 2019 is equal to 65% of the quantity placed on the market. Italy is still very far from achieving this objective due to the dispersion of B2B flows, the poor engineering of collection processes and the borderline behaviour of the operators in the chain, often generated by poor environmental information and training.

The program, currently launched and designed with the participation of **Producers of the air conditioning sector**, foresee the payment by the Members of a voluntary €/kg contribution for equipment placed on the market up to August 2020 and thereafter a €/unit contribution, aimed at financing the collection of waste from air conditioning systems. This project was made possible thanks to the creation of a network of plumbing installers who collect the old air conditioners from the user when new equipment is installed. The economic commitment of the Producers is rewarded by a significant simplification of the management of the collection process and by a greater value distributed over the entire commercial network. The initiative represents an added value not only for Producers of professional EEE, who in this way contribute positively to the achievement of the collection targets while offering high value-added services to their sales network, but also for the installers themselves who, thanks to Erion, can simplify their work in total safety and in full compliance with the relevant legislation.

In order to promote the success of this initiative and greatly simplify its implementation, a special mobile App has been created with which it is possible to manage environmental documentation and collection requests and which also contains a section dedicated to training in e-learning mode.

5.4 DIALOGUING WITH SOCIETY AND STAKEHOLDERS



Communicating the world of Erion means informing Producers, Institutions, Media and consumers about our activities, our initiatives and daily commitment to safeguarding the environment and protecting human health. For Erion, communicating means respecting every day our first promise, "We will go a long way together", and involving our stakeholders in this journey, sharing with them our values and our work for the circular economy, research and technological innovation. Since day zero, our **Communications Team** has faced this challenge with the one great goal of creating, developing and sustaining Erion's image and reputation and its role as a leader among Producer Responsibility Organizations (PRO) for the management of WEEE (Household and Professional), Waste Batteries and Accumulators and (in the future) Packaging Waste. The current hyper-technological society in which web communication is a central factor and the social restrictions imposed by the health emergency have reduced the possibility of creating public moments, have made it necessary to set up a more integrated and digital communication strategy capable of conveying messages, news and information regarding the world of Erion and its associated Producers in a safe and fast way. Erion Communication has embraced this method with the objective of telling its stakeholders about the System in an authoritative, simple and most complete way, adding to the more traditional means those typically digital such as websites, social networks and e-newsletters.



COMMUNICATIONS

This section of the Sustainability Report takes into account the initiatives launched and the results achieved by Erion Communication in the period 15 September to 31 December 2020.

SOCIAL

- **100** post
- **37,173** views
- **1,624** interactions

- **69** post
- **29,578** views
- **2,251** interactions

- **56** post
- **20,228** views
- **1,156** interactions

- **5** videos
- **272** views

PRESS

- **6** press releases
- **282** articles
  - **21** press agencies
  - **14** newspapers
  - **232** online news
  - **10** magazines
  - **5** radio e Tvs

Most valued in 2020

- Erion born, Ecodom-Remedia merger
- Smart Bin launch
- Erion Energy: Batteries recycling
- EconomiaCircolare.com launch
- Energy labels
- Mobile phones reconditioning
- Exceed project launch
- Climate's appeal
- 2020 data/basements clear out
- Circular Housing

6 WEBSITES

WEB

On 15 September 2020, the day of Erion's presentation, the System's six official websites were launched: Erion.it/en, the institutional website, Erionpervoi.it, the website dedicated to consumers and the four Collective Schemes' websites, Erionweee.it/en, Erionprofessional.it/en, Erionenergy.it/en, Erionpackaging.it/en. Designed with the aim of opening a constantly updated information channel on the organization, services and activities of the System, the official websites have been enriched by a news section that includes exclusive articles on the most important events and news related to the world of environmental sustainability, technological innovation and the Circular Economy. The data for the first quarter of activity show a significant appreciation by stakeholders in terms of total views and number of users reached.

Erion.it/en

It is the System's institutional website with all the information on the Organization, network, values and activities for the Circular Economy as well as a section dedicated to all the news on our company and sector.

- **15,867** users
- **34,777** views

Erionpervoi.it

It is the website dedicated to environmental awareness and the importance of recycling waste associated with electronic products. A journey to make together with citizens through *best practices*, news from all over the world, useful information, curiosities, ideas to copy and much more.

- **13,038** users
- **18,736** views

Erionweee.it/en

The Collective Scheme's website dedicated to the management of Household WEEE which contains useful information on the sector's reference legislation, the Household WEEE System and the community, news and contacts for Producers, and a Q&A section.

- **2,016** users
- **6,045** views

Erionprofessional.it/en

The Collective Scheme's website dedicated to the management of Professional WEEE which contains useful information on the sector's reference legislation, the Professional WEEE System and the community, news and contacts for Producers, and a Q&A section.

- **793** users
- **2,180** views

Erionenergy.it/en

The Collective Scheme's website dedicated to the management of Waste Batteries and Accumulators which contains useful information on the sector's reference legislation, the WBA System and the community, news and contacts for Producers, and a Q&A section.

- **1,174** users
- **2,963** views

Erionpackaging.it/en

The website of the project dedicated to the management of Packaging Waste which contains useful information on the sector's reference legislation, the Packaging Waste System, news and contacts for Producers and the community, and a Q&A section.

- **271** users
- **615** views

E-newsletter

On 4 November 2020, **ErionNews**, **Erion's quarterly e-newsletter**, was launched. It is designed to offer original in-depth articles on issues linked to our activity, our research projects, and the e-waste and Circular Economy sectors.

- **5,561** sent mailings
- **2,122** total openings





TOPICS

FOCUS – THE EVENTS

Despite the restrictions due to COVID-19, it has been possible to meet the stakeholders and share with them two important moments where the guests were able to participate to the events both in person and by live streaming.

Rome 15 September 2020

In the splendid setting of the Palazzo delle Esposizioni, the first official event was held during which the Erion project, a strategic evolution of the experiences of the Ecodom and Remedia Consortia, was presented to the Institutions. An event which saw among its participants keynote speakers such as Enrico Giovannini, current Minister of Infrastructure and Transport and spokesperson of ASviS, and Mattia Pellegrini, Head of Unit for Raw Materials, Metals, Minerals and Forest-based industries, Directorate General for Enterprise and Industry, European Commission. This was followed by an all-female round table, where representatives of Institutions and sector Associations discussed the topic of *"Sustainable production and consumption models for relaunching the economy"*.
The video of the event is viewable on-demand:

SCAN ME

Milan 14 October 2020

Two weeks after Erion's inception and in concurrence with the International E-Waste Day promoted by the WEEE Forum – the European Association of WEEE management Collective Systems of which Erion is a member, Spazio Base hosted *"Erion - Together into the change"*, a special event divided into two parts. A first opening part dedicated exclusively to our Producers to share the strategic potential, the plusses and services of the new System, followed by a second part, open to a wider audience, in which was presented ***EconomiaCircolare.com***, the first e-magazine promoted with the Environmental Conflicts Documentation Centre (CDCA) entirely dedicated to the Circular Economy. The evening hosted in-person and online speeches by several Italian and international speakers who discussed the importance of a cultural change for a true Italian and European transition to the Circular Economy.

The video of the event is viewable on-demand:

SCAN ME

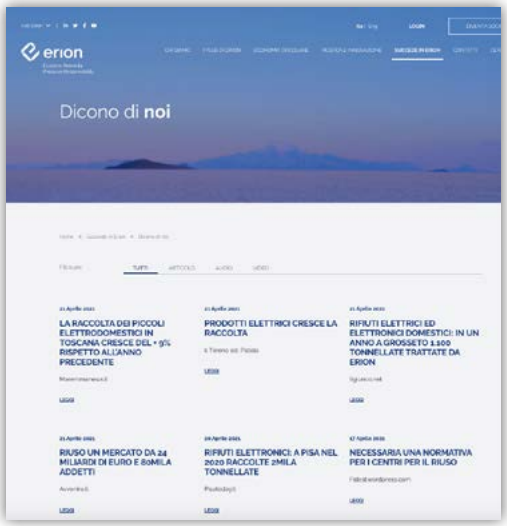
EconomiaCircolare.com

An important project and the first Erion "gift" dedicated to its Members and to all stakeholders as evidence of its constant commitment to research and development of innovative solutions for the benefit of a virtuous economy. The web magazine, created together with the CDCA, is a sector publication dedicated to the circular economy and boasts scientific partnerships with major Italian research institutions active in innovation and research in the industrial and environmental fields, such as ENEA - National Agency for New Technologies, Energy and Sustainable Economic Development, CNR - National Research Council, ISPRA - Higher Institute for Environmental Protection and Research, UNI - Italian Standardization Body, and POLIEDRA - Environmental Research Centre of the Politecnico di Milano. ***EconomiaCircolare.com*** offers analysis, in-depth studies and dissemination content intended for professionals and environmental issues enthusiasts with the aim of providing a space for accredited information and extended discussion on the subject.

It happens in Erion

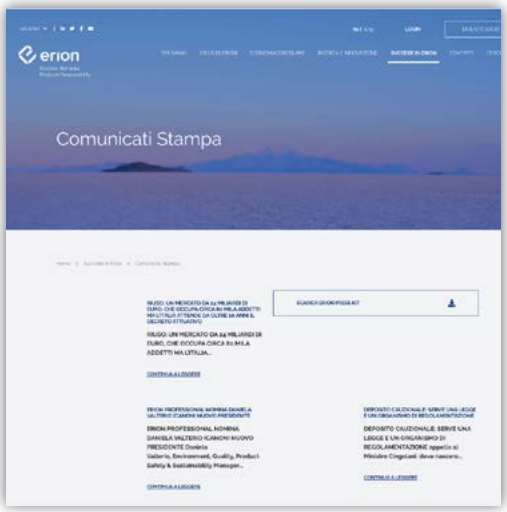
See here all the news headlines:

https://erion.it/en/what-they-say-about-us/



And here the press releases:

https://erion.it/en/press-releases/



06 THE PEOPLE OF ERION



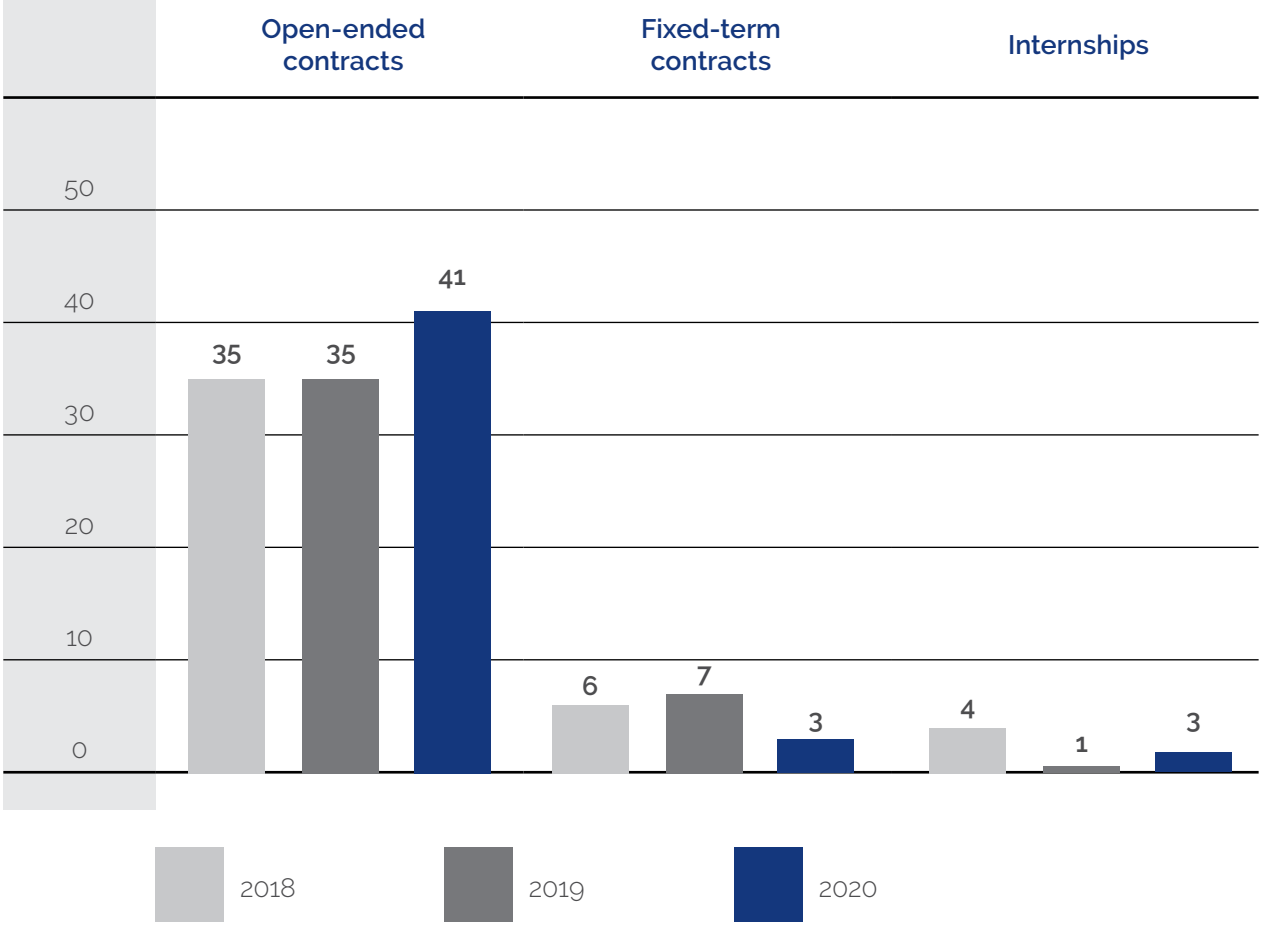
6.1 WORKING IN ERION

People represent the most valuable resource for Erion, who decided to keep intact the wealth of experience and skills of Ecodom and Remedia. In fact, the merger did not result in redundancies as all the staff has been integrated either into ECO or Remedia TSR, the subsidiary service company. In a particularly difficult and challenging historical moment, we have chosen to value this wealth by providing greater contractual stability and continue to ensure a correct work-life balance and fair treatment, regardless of age, gender, political, religious and sexual orientation. Moreover, in view of the new activities to be carried out by ECO in favour of the four Compliance Schemes of the Erion System, further recruitment has recently taken place.

Erion Compliance Organization relies on a dynamic and young team (with an average age of 39 years), which at 31 December 2020 consisted of 44 employees, in addition to three interns who were trained during the year. 93% of the staff has an open-ended contract, while the remaining 7% (engaged in fixed-term research projects) currently has a fixed-term contract. Erion considers essential to establish and maintain lasting employment relationships In fact, in 2020, its workforce increased by 5% compared to the previous year, and fixed-term contracts decreased from 7 to 3. Furthermore, 77% of employees are women, marking a 13% increase compared to 2019.

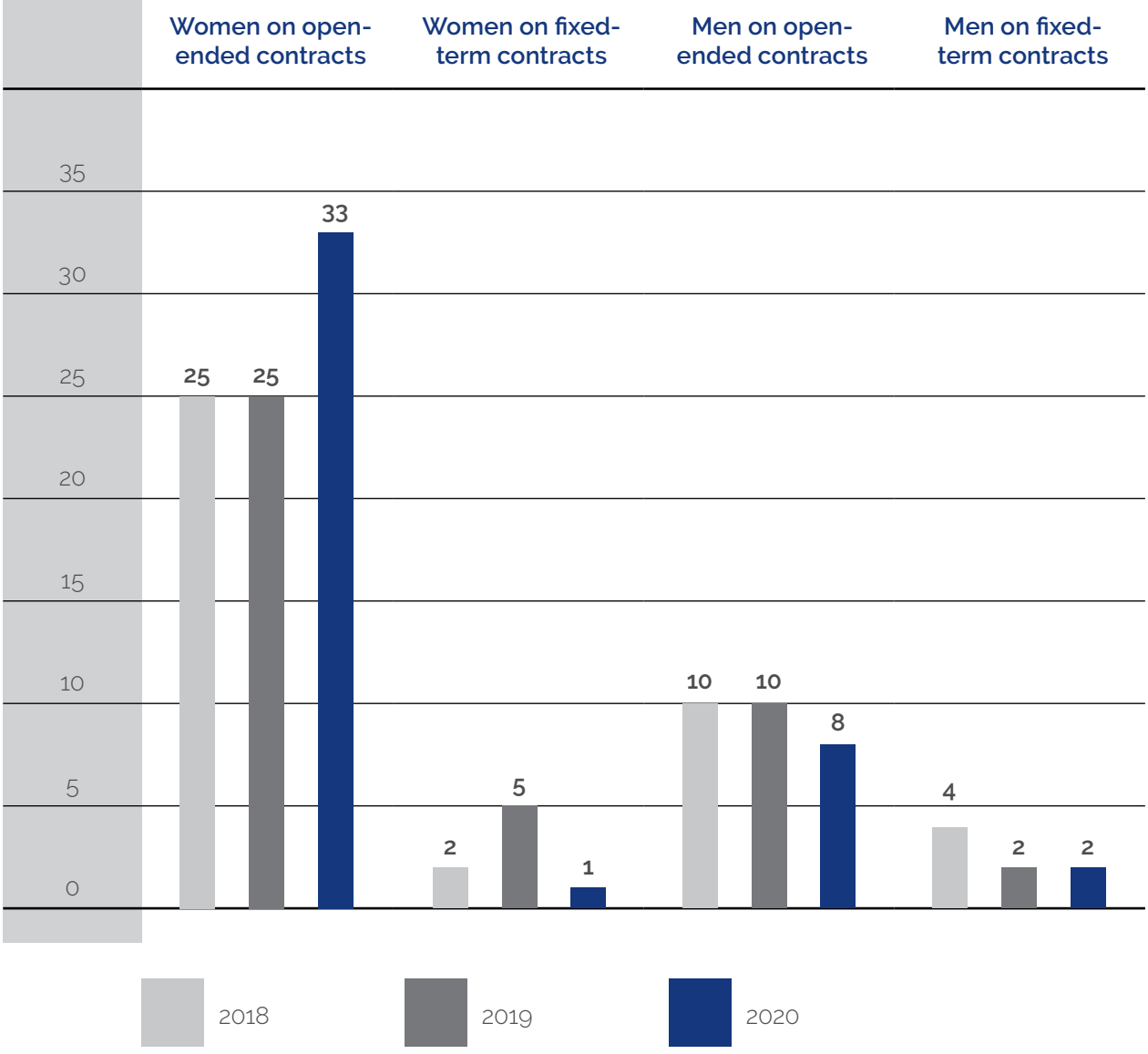
Employees by type of contract in the three-year period





Employees by type of contract and gender in the three-year period

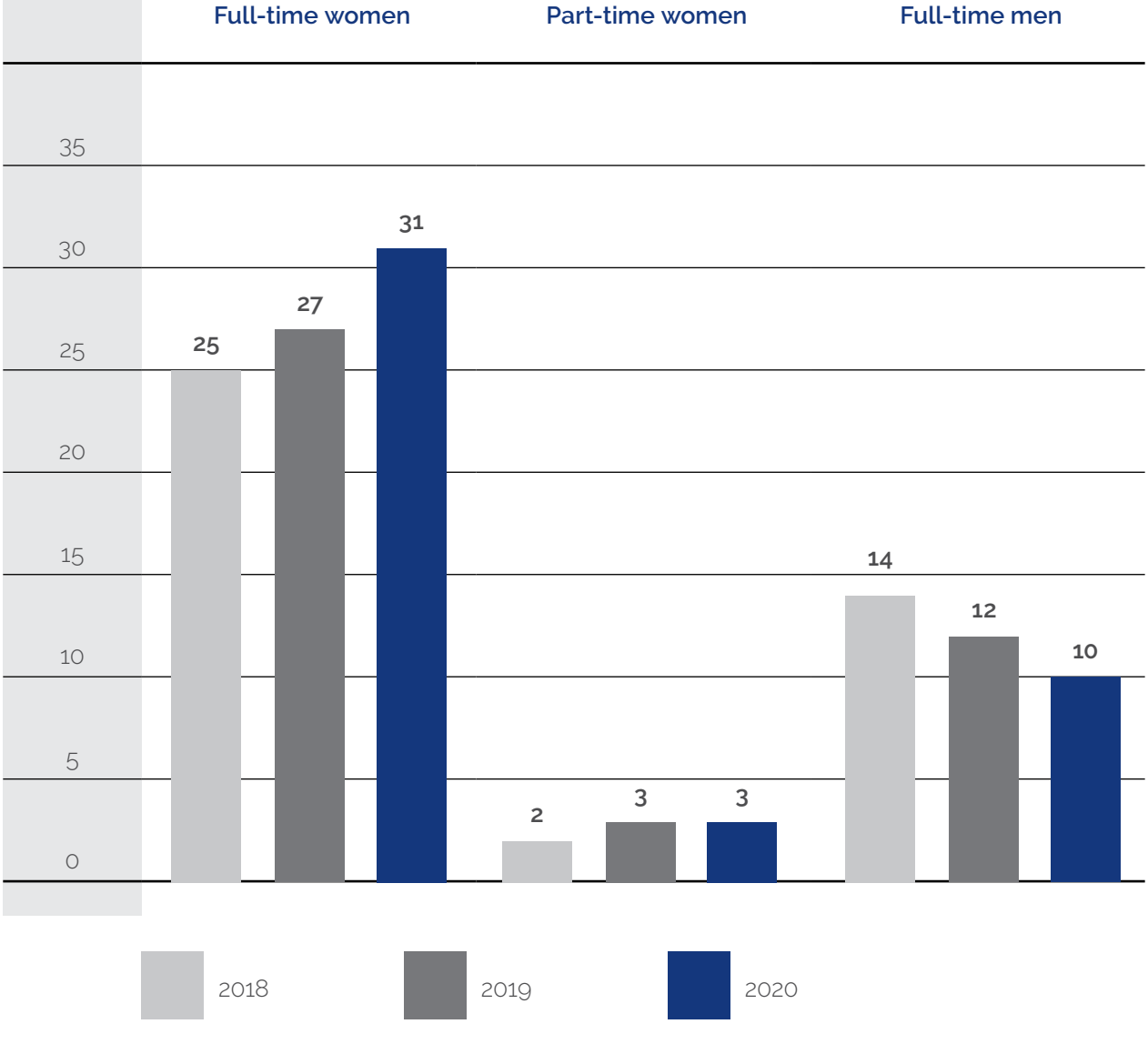




In 2020, 3 females (7% of the total) had a part-time contract, while the remaining 93% (31 females and 10 males) was employed full-time.

Employees by type of employment and gender in the three-year period

Graph 6.3



During the year, 12 new employees were recruited, two of which coming from the Remedia TSR service company, with a recruitment rate of 27%; 10 people have instead terminated their employment relationship with ECO, with an outgoing turnover rate of 23%: however, 6 of these 10 employees were reallocated to the Remedia TSR service company.

Recruitments by gender and age

Table 6.1

	Male	Female	Total
< 30 years of age	2	3	5
30 to 50 years of age	1	6	7
TOTAL	3	9	12

Terminations by gender and age

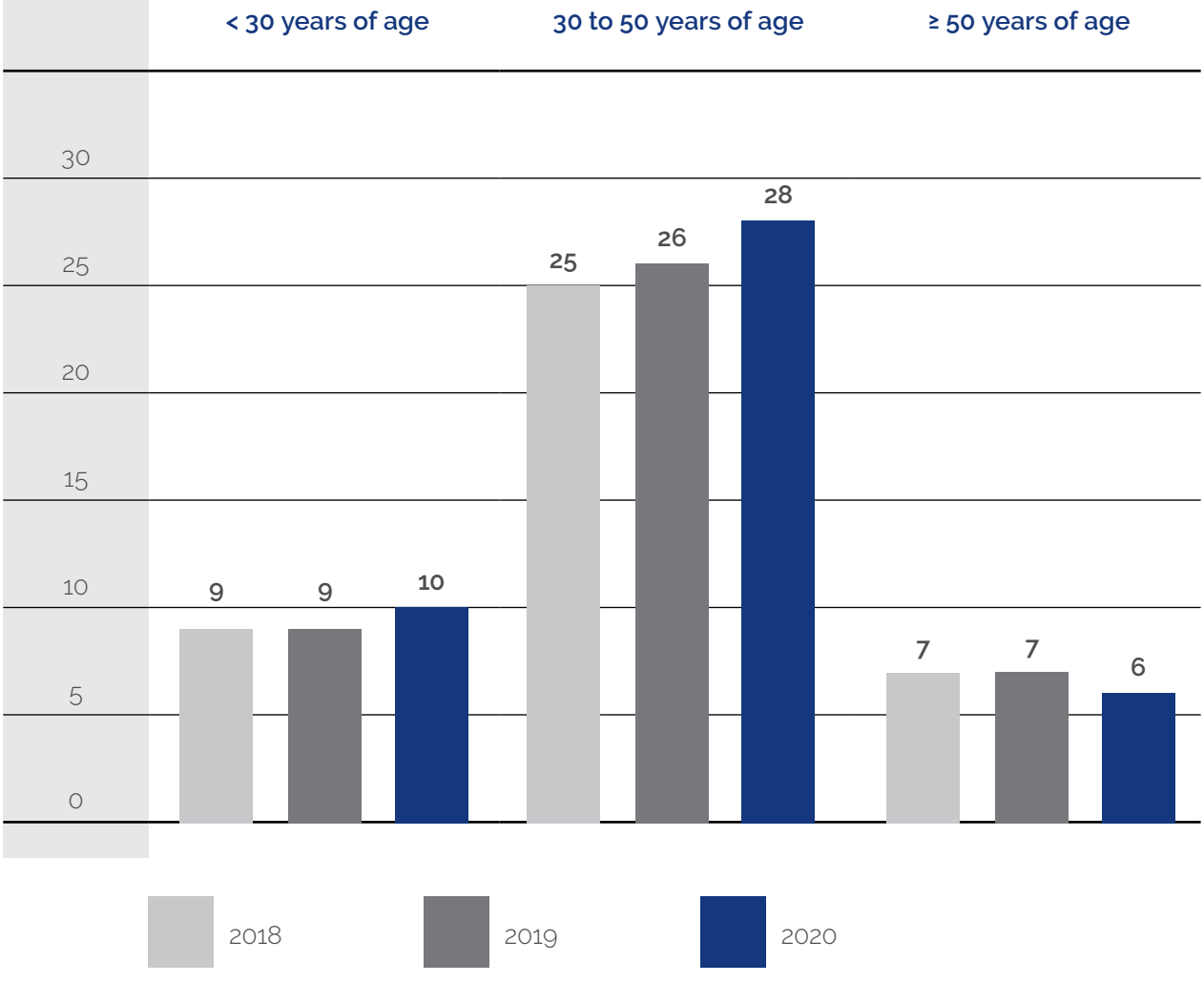
Table 6.2

	Male	Female	Total
< 30 years of age	2	2	4
30 to 50 years of age	2	3	5
≥ 50 years of age	1	0	1
TOTAL	5	5	10

The breakdown by age group remained broadly in line with the previous two-year period: 63% of ECO employees are aged between 30 and 50, 23% are under the age of 30, while the remaining 14% are over-50.

Employees by age group in the three-year period

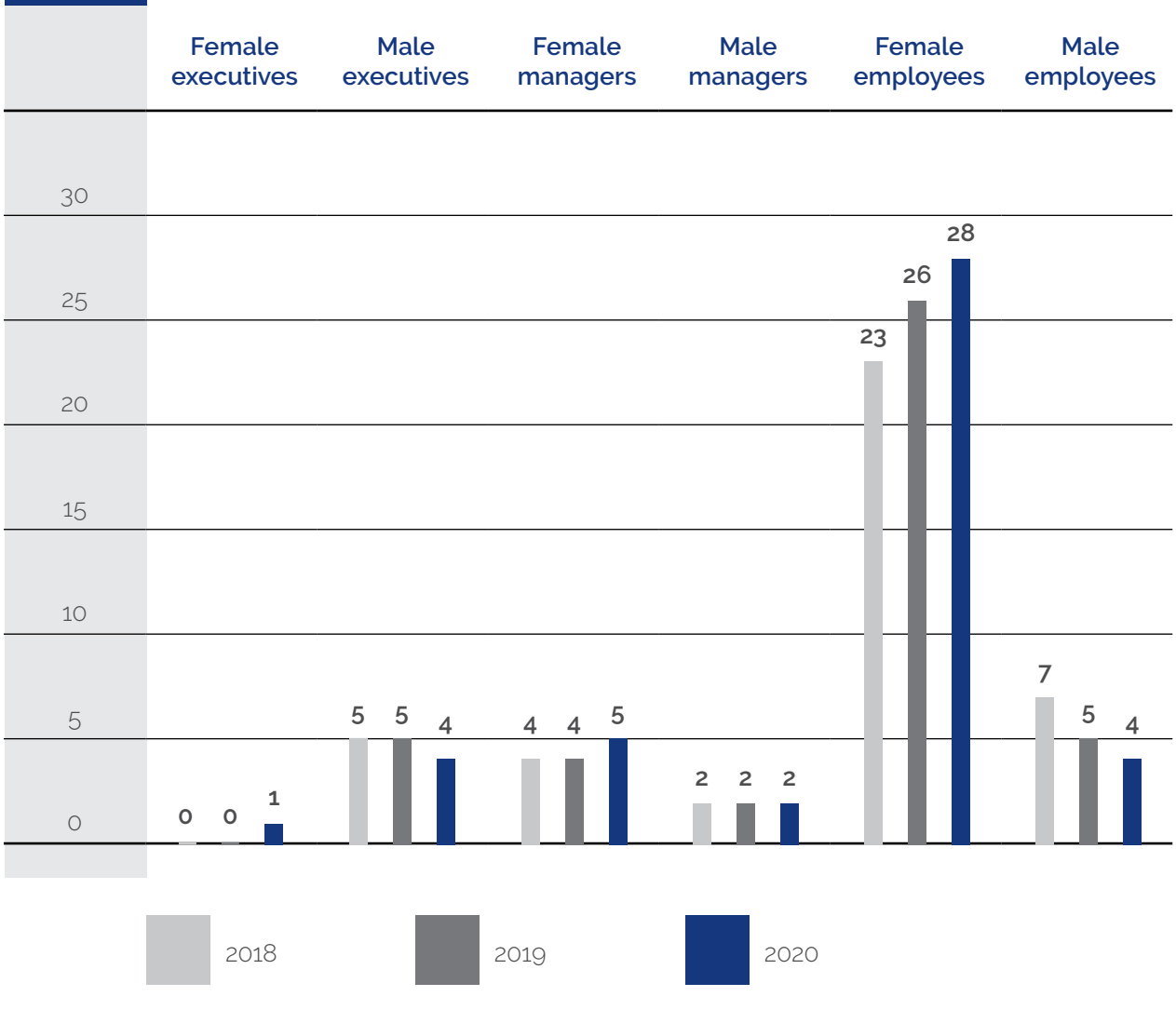




73% of Erion's staff are employees, of whom 28 are women and 4 are men, 16% are managers, of whom 5 are women and 2 are men, and 11% are executives, of whom 1 is a woman and 4 are men.

Employees by category and gender in the three-year period





In order to guarantee the best contractual conditions for all team staff, following the merger of Ecodom and Remedia, ECO decided to adopt the "**National Collective Bargaining Agreement for Employees in the Trade Sector**" (previously used in Remedia), with the addition of some improvement aspects provided for by the "National Collective Bargaining Agreement for the Metalworking Industry" (previously used by Ecodom), thereby promoting and ensuring the principle of equal remuneration for men and women workers for work of equal value.

All employees on open-ended contract and fixed-term contract with a duration of more than six months will continue to enjoy the benefits already granted to them by Ecodom and Remedia, including the extension of the personal accident insurance to all employees, as well as the alignment to the higher value of the meal vouchers.

Erion Compliance Organization attaches great importance to the well-being of its employees and is committed to ensuring a friendly and serene working environment. More specifically, during 2020, following the establishment of the new System, several initiatives were implemented aimed at fostering greater cohesion among employees. The pandemic and the related containment measures have not facilitated the achievement of this goal. However, efforts were made to promote team building activities conducted mainly through digital channels. In addition, a **"Development Plan and Objectives"** has been defined which will become active starting from 2021, with the aim of strengthening the sense of belonging of each employee to Erion and its values, as well as defining a growth path based on measurable and personalized objectives.



6.1.1 Training

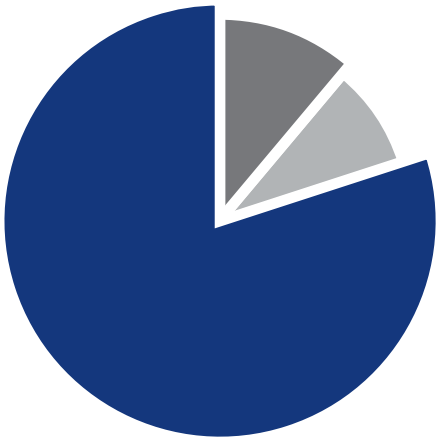
For Erion Compliance Organization, the constant investment in training and development of personnel skills is the most effective way to ensure the quality of its work. By investing in the professional growth of its people, ECO can benefit from more competent employees and ensure high quality and consistent performance, creating a more stimulating internal environment aimed at continuous learning.

For the implementation of the training program, ECO relies on third parties and staff within the organization. During 2020, 678 hours of training were provided, marking a significant decrease compared to the previous two-year period (-56% compared to 2019 and -73% compared to 2018).

The main reasons for the decrease are both the consequences deriving from the COVID-19 pandemic (which forced the suspension of all classroom training activities) and the efforts that the merger between Ecodom and Remedia required from all employees, especially from the Company's managers. 79% of the total training hours concerned **technical and professional** topics, 11% concerned matters relating to the **regulatory** framework, and the remaining 10% concerned **management and relational** matters. The professional category that benefited from the highest number of training hours is the employees' category, with an average of 19 hours per capita. The average hours of training per capita were 6.9 for managers and 4.6 for executives.

Total hours of training by type in 2020

Graph 6.6



73.5
Regulatory framework

65.0
Management and relational

539.5
Technical and professional

Total hours of training

Table 6.3

2018	2019	2020
2,499	1,527	**678**

Average hours of training by professional category and gender

Table 6.4

	2018	2019	2020
Male employees	82.0	48.6	**41.5**
Female employees	61.0	36.6	**15.8**
Male managers	22.3	48.5	**12.3**
Female managers	49.1	36.3	**4.7**
Male executives	56.1	18.2	**4.1**
Female executives	0.0	0.0	**6.5**



6.2 HEALTH AND SAFETY

As was already the case in the two former Consortia, Erion System decided to devote particular efforts to ensuring full compliance with **occupational health and safety regulations**, recognizing the extreme importance of this aspect in protecting the well-being of its workers. Erion System manages its activities in compliance with current law on health and safety at work (Legislative Decree 81/2008). Given the low risk of accidents that its activities entails, Erion decided not to certify its occupational health and safety management system. It should be noted that no accident of any kind occurred in 2020. However, ECO carried out a comprehensive risk assessment of its work and working environments, implementing the necessary prevention and protection measures. Indeed, ECO carried out the health surveillance activities required by law, integrating them with further policies, such as health promotion activities and the definition of written instructions for staff, with related training and information initiatives. In addition, a competent medical doctor has been appointed who, on the basis of the risk assessment, defined the health surveillance protocol applicable to its staff.

ECO ensures that the Workers' Safety Representatives (WSR) are involved in the risk assessment process and, through the company intranet, makes available the relevant health and safety information to its employees. The provision of mandatory health and safety training takes place in e-learning mode, which makes its use more fluid and flexible, allowing employees to manage it independently. There are also educational and informative projects on specific issues to which the employees concerned are invited to participate, as happened during last year for the safety aspects related to Smart Working. Furthermore, ECO provides training and information on health and safety for all employees who may carry out inspections in outdoor areas, providing them with the necessary protective safety devices.

As regards initiatives aimed at promoting health and safety, ECO offers its employees the possibility to benefit from a supplementary healthcare insurance policy, in addition to that provided by the category fund. The Company also promotes other voluntary initiatives aimed at improving the well-being of its employees, such as actions to reduce risks related to health and stress.

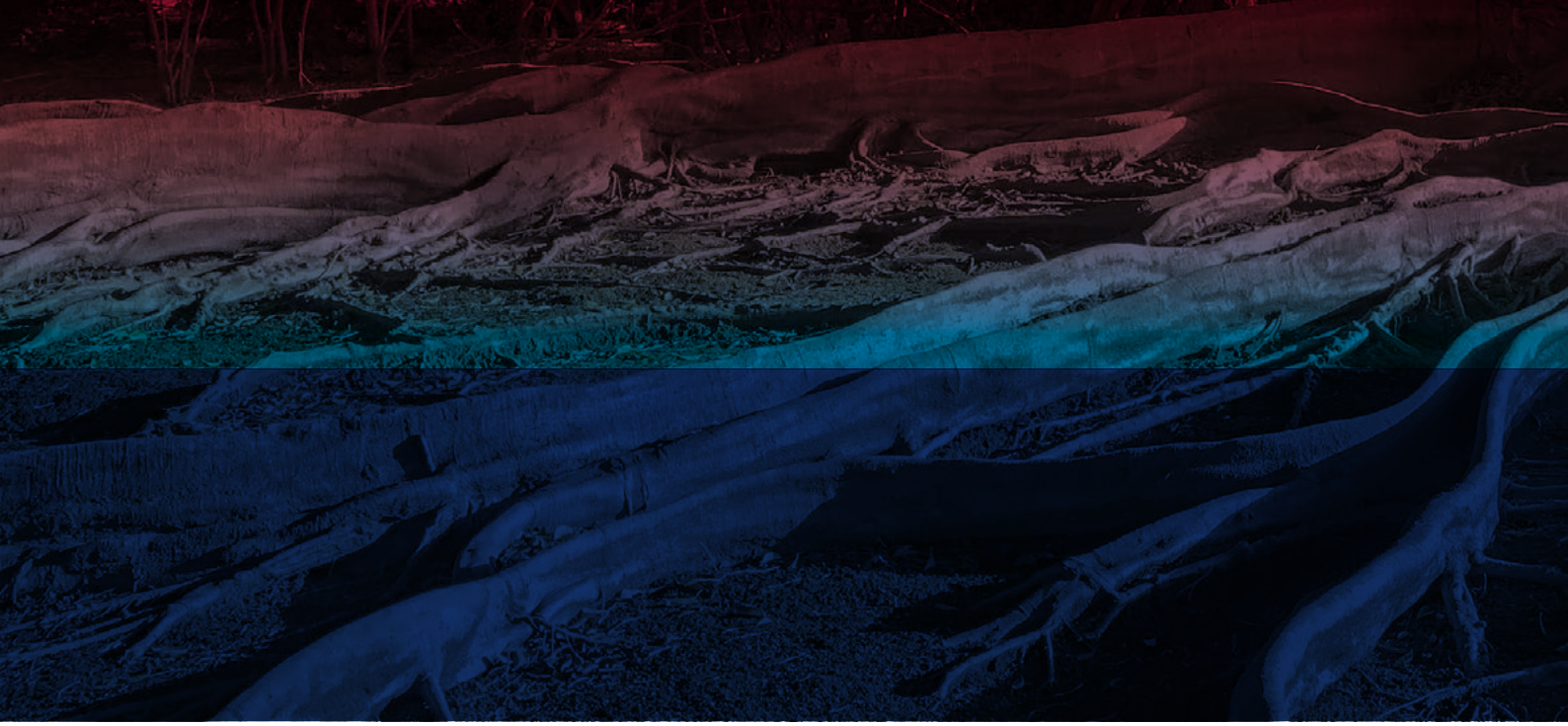
In order to prevent and combat the spread of COVID-19 as effectively as possible and avoid unnecessary risks of transmission, as from March 2020 the presence in the office is optional and subject to a specific protocol, which also provides for a maximum number of daily attendances and a booking system. Additionally, all those who decide to work in the office have at their disposal single-use face masks and sanitizing liquids. Whereas, to facilitate remote work, larger monitors, headphones and ergonomic chairs have been distributed to the employees.



Accidents at work

Table 6.5

	Unit of measure	2018	2019	2020
Hours worked	Hr	46,670	70,150	**61,649**
Total number of recorded accidents at work, including deaths	n.	0	1	**0**
- which resulted in serious consequences	n.	0	0	**0**
- which resulted in fatalities	n.	0	0	**0**
Occupational diseases	n.	0	0	**0**
Rate of recorded accidents at work	%	0.0	1.4	**0.0**
Rate of accidents at work with serious consequences	%	0.0	0.0	**0.0**
Death rate	%	0.0	0.0	**0.0**
Rate of occupational diseases	%	0.0	0.0	**0.0**



METHODOLOGICAL NOTE

The first **Sustainability Report** (hereafter also the "document") presented by Erion (hereafter also the "System"), with registered office at Via Messina 38, Milan, and operational headquarters at Via Lepetit 40, Lainate, provides information on the significant aspects and impacts of sustainability in economic, environmental and social terms of the System. Specifically, the document reports the 2020 performance relating to the issues considered "material" for Erion and its stakeholders (see the chapter "Stakeholders and materiality"). The reporting standard used by Erion for the preparation of this document corresponds to the *GRI Sustainability Reporting Standards*, issued by the *Global Reporting Initiative (GRI)*, according to the "*In accordance-Core*" option. Please note that as regards the topic related to Waste, the most up-to-date version of the GRI 306 (Waste) indicator, issued in 2020, has been adopted. The drafting of this document was guided by the GRI principles of definition and quality of the content, such as Stakeholders' inclusiveness, Sustainability context, Materiality, Completeness, Accuracy, Balance, Clarity, Comparability, Reliability and Timeliness. This document describes the main initiatives and performances in respect of the period from 01/01/2020 to 31/12/2020, which derive from the combination of the performance of the former Ecodom and Remedia Consortia for the period January - September 2020 and those of Erion for the period October - December 2020, as well as the performances of the years 2018 and 2019 deriving from the combination of the sum of the performances of Ecodom and Remedia so as to have a three-year comparison of the results.



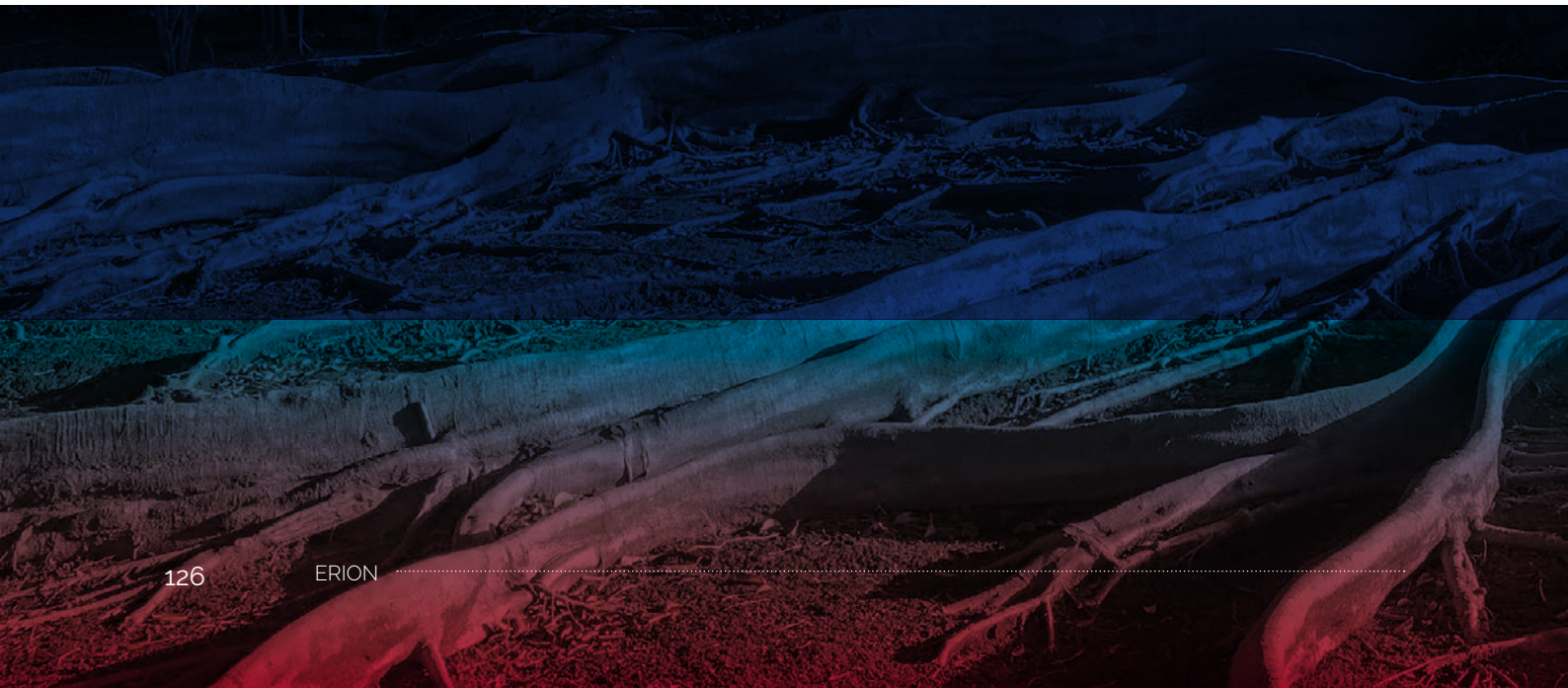
Ecodom's 2019 Sustainability Report and Remedia's 2019 Sustainability Report, published in 2020, constitute the reference reports for the data relating to the year 2018 and 2019 which were here integrated to produce the Erion data for the years 2018 and 2019. The Sustainability Report is published annually. The reporting boundary of the economic data includes the four Erion System Collective Schemes (Erion WEEE, Erion Professional, Erion Energy and Erion Packaging) and the data relating to personnel refer to Erion Compliance Organization (ECO). With reference to environmental performance, in this document are reported the impacts relating to the management of **Household WEEE**, thus excluding from the report those related to the management of **Professional WEEE**, **special waste** and **WBA**. This decision is dictated by the fact that the methodology for calculating environmental impacts is based on a model (the WEEE Forum tool) developed exclusively for the Household WEEE chain. The tool is fed with data on the performance of logistics and treatment providers and of the actors acting upstream and downstream of them, through which the real contribution of the System is measured (direct and indirect environmental impacts), as their monitoring and improvement entail the active involvement of operators who on behalf of Erion recover, transport and treat waste. While for Household WEEE this contribution has been calculated and validated over time, for the other types of waste (with lesser volumes compared to Household WEEE) there are no tools for calculating the impacts and it will therefore be necessary to develop specific assessment methodologies in the coming years. Further specific limitations or methodologies used are appropriately reported in the document.

The definition of the contents of this Sustainability Report was entrusted to a dedicated Working Group which involved the main functions concerned. The limited review of the 2020 Sustainability Report was entrusted to the independent auditing firm BDO Italia S.p.A., whose report is presented in the "Assurance" section. Information and specific requests regarding the content of this Sustainability Report are available at the following email address: **progetti@erion.it**.

BOUNDARY OF IMPACTS OF MATERIAL ASPECTS

The table below shows the boundary of impacts of Erion's 2020 material topics.

Material topic	GRI Aspect	Boundary		
		Internal	External	Limitations
Economic performance and value creation	GRI 201 Economic performance	Erion	-	-
Indirect economic impacts	GRI 203 Indirect economic impacts	Erion	Suppliers	-
Business integrity and fight against corruption	GRI 205 Anti-corruption	Erion	Suppliers	-
Non-competitive behaviour	GRI 206 Anti-competitive behaviour	Erion	-	-
Materials	GRI 301 Materials	-	Suppliers	-
Energy consumption	GRI 302 Energy	-	Suppliers	-
Climate change	GRI 305 Emissions	-	Suppliers	-
Waste management	GRI 306 Waste	-	Suppliers	-



Material topic	GRI Aspect	Boundary		
		Internal	External	Limitations
Compliance with environmental legislation	GRI 307 Environmental compliance	Erion	Suppliers	-
Environmental assessment of suppliers	GRI 308 Environmental assessment of suppliers	Erion	Suppliers	-
Attraction and retention of staff	GRI 401 Employment	Erion	-	-
Health and safety of workers	GRI 403 Occupational health and safety	Erion	Suppliers	The impact generated by suppliers is not reported in this document
Staff training and development	GRI 404 Training and education	Erion	-	-
Diversity and equal opportunities	GRI 405 Diversity and equal opportunities	Erion	-	-
Promotion of initiatives and involvement of local communities	GRI 413 Local communities	Erion	-	-



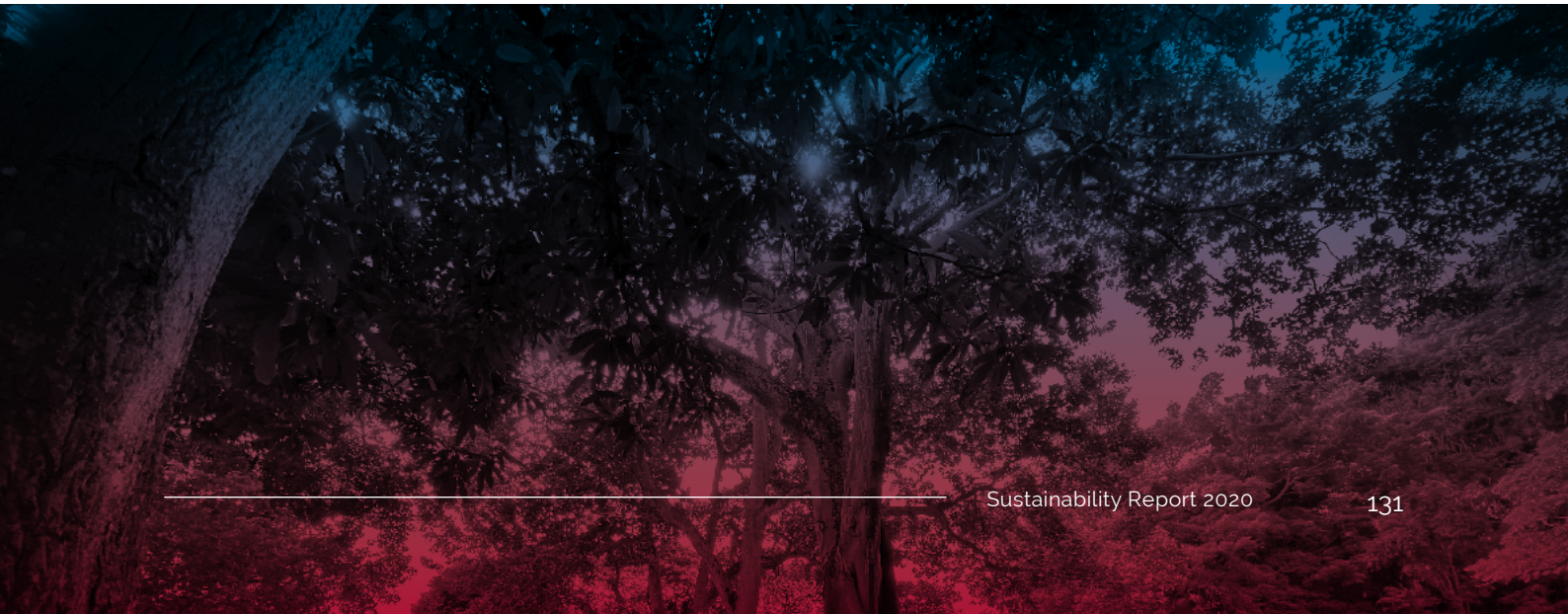
GRI CONTENT INDEX

GRI Indicator	Description	Reference (Page)	Notes
General Standard Disclosure			
Organization profile			
102-1	Name of organization	Methodological note (124)	
102-2	Activities, brands, products and services	4. Erion, towards a sustainable future - 4.1 The new System (37)	
102-3	Location of headquarters	Methodological note (124)	
102-4	Location of operations	4. Erion, towards a sustainable future - 4.1 The new System (37)	
102-5	Ownership and legal form	4. Erion, towards a sustainable future - 4.1 The new System (37)	
102-6	Markets served	1. The reference framework (12) 4. Erion, towards a sustainable future - 4.1 The new System (37)	
102-7	Scale of the organization	4. Erion, towards a sustainable future - 4.1 The new System (37), 4.3 The generation of value (50) 5. Erion activities - 5.1 Operational waste management (58), 5.2 Environmental benefits of the treatment of Household WEEE (66) 6. The people of Erion - 6.1 Working in Erion (112)	
102-8	Information on employees and other workers	6. The people of Erion - 6.1 Working in Erion (112)	
102-9	Supply chain	1. The reference framework (12) 3. Erion and the circular economy (30)	

GRI Indicator	Description	Reference (Page)	Notes
102-10	Significant changes to the organization and its supply chain	Methodological note (124)	
102-11	Precautionary principle	4. Erion, towards a sustainable future - 4.1 The new System (37)	
102-12	External initiatives	5. Erion activities (58) - 5.4 Dialoguing with society and stakeholders (107)	
102-13	Membership of associations	2. Stakeholders and materiality - 2.1 The stakeholders strategic role (18) 5. Erion activities (58) - 5.4 Dialoguing with society and stakeholders (107)	
	Strategy		
102-14	Statement from senior decision-maker	Letter to stakeholders (6)	
	Ethics and integrity		
102-16	Values, principles, standards, and norms of behaviour	4. Erion, towards a sustainable future - 4.1 The new System (37)	
102-17	Mechanisms for advice and concerns about ethics	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	
	Governance		
102-18	Governance structure	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	
102-22	Composition of the highest governance body and its committees	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	
102-23	Chair of the highest governance body	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	
102-24	Nominating and selecting the highest governance body	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	

GRI Indicator	Description	Reference (Page)	Notes
	Stakeholders' engagement		
102-40	List of stakeholders groups	2. Stakeholders and materiality - 2.1 The stakeholders strategic role (18)	
102-41	Collective bargaining agreements	6. The people of Erion - 6.1 Working in Erion (112)	
102-42	Identifying and selecting stakeholders	2. Stakeholders and materiality - 2.1 The stakeholders strategic role (18)	
102-43	Approach to stakeholders engagement	2. Stakeholders and materiality - 2.1 The stakeholders strategic role (18)	
102-44	Key topics and concerns raised	2. Stakeholders and materiality - 2.1 The stakeholders strategic role (18)	
	Reporting practices		
102-45	Entities included in the consolidated financial statements	Methodological note (124)	
102-46	Defining report content and topic boundaries	Methodological note (124)	
102-47	List of material topics	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26)	
102-48	Restatements of information	Methodological note (124)	
102-49	Changes in reporting	Methodological note (124)	
102-50	Reporting period	Methodological note (124)	
102-51	Date of most recent report	Methodological note (124)	
102-52	Reporting cycle	Methodological note (124)	

GRI Indicator	Description	Reference (Page)	Notes
102-53	Contact point for questions regarding the report	Methodological note (124)	
102-54	Claims of reporting in accordance with the GRI Standards	Methodological note (124)	
102-55	GRI content index	GRI Content Index (128)	
102-56	External assurance	Assurance (142)	
Specific Standard Disclosure			
GRI 200: ECONOMIC			
Economic Performance			
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	4. Erion, towards a sustainable future (37) - 4.3 The generation of value (50)	
103-3	Evaluation of the management approach	4. Erion, towards a sustainable future (37) - 4.3 The generation of value (50)	
201-1	Value generated and distributed	4. Erion, towards a sustainable future (37) - 4.3 The generation of value (50)	



GRI Indicator	Description	Reference (Page)	Notes
		Indirect Economic Impacts	
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	4. Erion, towards a sustainable future (37) - 4.3 The generation of value (50)	
103-3	Evaluation of the management approach	4. Erion, towards a sustainable future (37) - 4.3 The generation of value (50)	
203-1	Infrastructural investments and financed services	4. Erion, towards a sustainable future (37) - 4.3 The generation of value (50)	
203-2	Significant indirect economic impacts	4. Erion, towards a sustainable future (37) - 4.3 The generation of value (50)	
		Anti-corruption	
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	
103-3	Evaluation of the management approach	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	
205-2	Communication and training about anti-corruption policies and procedures	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	
205-3	Confirmed incidents of corruption and actions taken	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47) GRI Content Index (128)	In 2020, there were no incidents of corruption

GRI Indicator	Description	Reference (Page)	Notes
		Anti-competitive behaviour	
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	
103-3	Evaluation of the management approach	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	
206-1	Legal actions for anti-competitive behaviour, anti-trust and monopoly practices	GRI Content Index (128)	In 2020, there were no legal actions related to anti-competitive behaviour, antitrust and monopolistic practices
		GRI 300: ENVIRONMENTAL	
		Materials	
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
103-3	Evaluation of the management approach	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
301-1	Materials used by weight and volume	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	The indicator has been adapted to the specific characteristics of Erion's business

GRI Indicator	Description	Reference (Page)	Notes
		Energy	
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
103-3	Evaluation of the management approach	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
302-1	Energy consumption within the organization	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
302-2	Energy consumption outside the organization	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
302-3	Energy intensity	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
302-4	Reduction of energy consumption	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
302-5	Reductions in energy requirements of products and services	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	

GRI Indicator	Description	Reference (Page)	Notes
		Emissions	
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
103-3	Evaluation of the management approach	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
305-1	Direct Scope 1 GHG emissions	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
305-2	Indirect Scope 2 GHG emissions	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
305-3	Other indirect Scope 3 emissions	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
305-4	GHG emissions intensity	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	
305-5	Reduction of GHG emissions	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	

GRI Indicator	Description	Reference (Page)	Notes
		Waste	
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	5. Erion activities - 5.1 Operational waste management (58)	
103-3	Evaluation of the management approach	5. Erion activities - 5.1 Operational waste management (58)	
306-1	Waste generation and significant waste-related impacts	1. The reference framework (12) 5. Erion activities - 5.1 Operational waste management (58), 5.2 Environmental benefits of the treatment of Household WEEE (66)	
306-2	Management of significant waste-related impacts	1. The reference framework (12) 5. Erion activities - 5.1 Operational waste management (58), 5.2 Environmental benefits of the treatment of Household WEEE (66)	
306-3	Waste generated	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	The indicator has been adapted to the specific characteristics of Erion's business
306-4	Waste diverted from disposal	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	The indicator has been adapted to the specific characteristics of Erion's business
306-5	Waste directed to disposal	5. Erion activities (58) - 5.2 Environmental benefits of the treatment of Household WEEE (66)	The indicator has been adapted to the specific characteristics of Erion's business

GRI Indicator	Description	Reference (Page)	Notes
		Environmental Compliance	
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	
103-3	Evaluation of the management approach	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47)	
307-1	Non-compliance with environmental laws and regulations	GRI Content Index (128)	In 2020, there were no instances of non-compliance in environmental matters
		Environmental assessment of suppliers	
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	3. Erion and the circular economy (30) - 3.2 Erion's value chain (33)	
103-3	Evaluation of the management approach	3. Erion and the circular economy (30) - 3.2 Erion's value chain (33)	
308-1	New suppliers that were screened using environmental criteria	3. Erion and the circular economy (30) - 3.2 Erion's value chain (33)	



GRI Indicator	Description	Reference (Page)	Notes
GRI 400: SOCIAL			
Employment			
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	6. The people of Erion - 6.1 Working in Erion (112)	
103-3	Evaluation of the management approach	6. The people of Erion - 6.1 Working in Erion (112)	
401-1	New employee hires and employee turnover	6. The people of Erion - 6.1 Working in Erion (112)	



GRI Indicator	Description	Reference (Page)	Notes
		Health and safety at work	
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	6. The people of Erion (112) - 6.2 Health and safety (122)	
103-3	Evaluation of the management approach	6. The people of Erion (112) - 6.2 Health and safety (122)	
403-1	Occupational health and safety management system	6. The people of Erion (112) - 6.2 Health and safety (122)	
403-2	Hazard identification, risk assessment, and incident investigation	6. The people of Erion (112) - 6.2 Health and safety (122)	
403-3	Occupational health services	6. The people of Erion (112) - 6.2 Health and safety (122)	
403-4	Worker participation, consultation and communication on occupational health and safety	6. The people of Erion (112) - 6.2 Health and safety (122)	
403-5	Worker training on occupational health and safety	6. The people of Erion (112) - 6.2 Health and safety (122)	
403-6	Promotion of worker health	6. The people of Erion (112) - 6.2 Health and safety (122)	
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	6. The people of Erion (112) - 6.2 Health and safety (122)	The health and safety risks of workers in the Erion System are limited to office activities and are therefore not significant

GRI Indicator	Description	Reference (Page)	Notes
403-9	Work-related injuries	6. The people of Erion (112) - 6.2 Health and safety (122)	
403-10	Work-related ill health	6. The people of Erion (112) - 6.2 Health and safety (122)	
	Training and Education		
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	6. The people of Erion - 6.1 Working in Erion (112)	
103-3	Evaluation of the management approach	6. The people of Erion - 6.1 Working in Erion (112)	
404-1	Average hours of training per year per employee	6. The people of Erion - 6.1 Working in Erion (112)	
404-3	Percentage of employees receiving regular performance and career development reviews	6. The people of Erion - 6.1 Working in Erion (112)	
	Diversity and equal opportunities		
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47) 6. The people of Erion - 6.1 Working in Erion (112)	

GRI Indicator	Description	Reference (Page)	Notes
103-3	Evaluation of the management approach	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47) 6. The people of Erion - 6.1 Working in Erion (112)	
405-1	Diversity of governance bodies and employees	4. Erion, towards a sustainable future (37) - 4.2 Governance and integrity (47) 6. The people of Erion - 6.1 Working in Erion (112)	
	Local Communities		
103-1	Explanation of the material topic and its boundary	2. Stakeholders and materiality (18) - 2.2 The materiality matrix (26) Methodological note (124)	
103-2	The management approach and its components	5. Erion activities (58) - 5.4 Dialoguing with society and stakeholders (107)	
103-3	Evaluation of the management approach	5. Erion activities (58) - 5.4 Dialoguing with society and stakeholders (107)	
413-1	Operations with local community engagement, impact assessments and development programs	5. Erion activities (58) - 5.4 Dialoguing with society and stakeholders (107)	

ASSURANCE

ERION WEEE, ERION PROFESSIONAL, ERION ENERGY, ERION PACKAGING, ERION COMPLIANCE ORGANIZATION S.C.A.R.L.

("SISTEMA ERION")

Independent auditors' report
on the Sustainability Report

For the year ended on December 31st, 2020

This report has been translated into English from the original, which was prepared in Italian and represents the only authentic copy, solely for the convenience of international readers.

AMN/FMG/rgm - RC112372020BD2277

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20131 Milano

Independent auditors' report on the Sustainability Report

To the Board of Directors of
ERION WEEE

We have been engaged to perform a limited assurance engagement on the Sustainability Report of ERION System for the year ended on December 31st, 2020.

Directors' responsibility on the Sustainability Report

The Directors of ERION WEEE are responsible for the preparation of the Sustainability Report of ERION System in accordance with the "GRI Sustainability Reporting Standards (GRI Standards)" issued in 2016 by the GRI - Global Reporting Initiative, as described in the paragraph "Methodology" of the Sustainability Report of ERION System.

The Directors of ERION WEEE are responsible for that part of the internal control that they consider necessary in order to enable the preparation of a Sustainability Report that is free from material misstatements, whether due to frauds or unintentional behaviors or events.

The Directors of ERION WEEE are also responsible for the definition of the objectives regarding the sustainability performance and the reporting of the achieved results, as well as for the identification of the stakeholders and the significant matters to report.

Auditors' independence and quality control

We are independent in accordance with the ethics and independence principles of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, based on fundamental principles of integrity, objectivity, professional competence and diligence, confidentiality and professional behaviour. Our audit firm applies the International Standards on Quality Control 1 (ISQC Italia 1) and, consequently, maintains a quality control system that includes documented policies and procedures, regarding compliance with ethical requirements, professional standards and applicable laws and regulations.

Auditors' responsibility

It is our responsibility to express, on the basis of the procedures performed, a conclusion about the compliance of the Sustainability Report of ERION System with the requirements of the GRI Standards. We conducted our work in accordance with the principles included in the "International Standard on Assurance Engagements 3000 (Revised)- Assurance Engagements other than Audits or Reviews of Historical Financial Information" ("ISAE 3000 Revised"), issued by the International Auditing and Assurance Standards Board (IAASB) for limited assurance engagements. This standard requires the planning and execution of procedures in order to obtain limited assurance that the Sustainability Report is free from material misstatement.

Therefore, the extent of work performed in our examination was lower than that required for a full examination in accordance with ISAE 3000 Revised ("reasonable assurance engagement") and, hence, it does not provide assurance that we have become aware of all significant matters and events that would have been identified during a reasonable assurance engagement.

Bari, Bologna, Brescia, Cagliari, Firenze, Genova, Milano, Napoli, Padova, Palermo, Roma, Torino, Verona,

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Codice Fiscale, Partita IVA e Registro Imprese di Milano n. 07722780967 - R.E.A. Milano 1977842
Iscritta al Registro dei Revisori Legali al n. 167911 con D.M. del 15/03/2013 G.U. n. 26 del 02/04/2013
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The procedures performed on the Sustainability Report of ERION System were based on our professional judgement and included inquiries, primarily with company's personnel responsible for the preparation of the information included in the Sustainability Report, document analysis, recalculations and other procedures in order to obtain evidences considered appropriate.

In particular, we have performed the following procedures:

1. Analysis of the process relating to the definition of material aspects included in the Sustainability Report, with reference to the criteria applied to identify priorities for the different stakeholder categories and to the internal validation of the process results;
2. comparison of economic and financial data included in the paragraph "Value generation" of the Sustainability Report with those included in the Financial Statements of the ERION System;
3. analysis of processes that support the generation, collection and management of data and information to the department responsible for the preparation of the Sustainability Report. In particular, we have performed interviews and discussions with the management of ERION COMPLIANCE ORGANIZATION S.C.A.R.L. to gather information about the accounting and reporting systems used in preparing the Sustainability Report, as well as on the internal control procedures supporting the gathering, aggregation, processing and transmission of data and information to the department responsible for the preparation of the Sustainability Report of ERION System;

Furthermore, for the most important information, taken into consideration the activities and the characteristics of the ERION System:

a. with reference to the qualitative information contained in the Sustainability Report, we carried out interviews and we have acquired supporting documentation to verify their consistency with the available evidence;
b. with reference to quantitative information, we carried out both analytical procedures and limited checks to ascertain the correct aggregation of data on a sample basis.

Conclusion

Based on the work performed, nothing has come to our attention that causes us to believe that the Sustainability Report of ERION System for the period ended on December 31st, 2020 is not prepared, in all material respects, in accordance with the "GRI Sustainability Reporting Standards (GRI Standards)" issued in 2016 by the GRI - Global Reporting Initiative, as stated in the paragraph "Methodology" of the Sustainability Report of ERION System.

Milan May 21st, 2021

BDO Italia S.p.A.
Signed in the original by
Andrea Meneghel
Partner

This report has been translated into English from the original, which was prepared in Italian and represents the only authentic copy, solely for the convenience of international readers.



APPENDIX

Insight A

Tables A.1 and A.2 show the details for the years 2018-2019 of the tons and percentages destined for energy and material recovery and disposal for the individual Groups.

Trend in energy and material recovery and disposal by Group in 2019

Table A.1

	R1		R2		R3		R4		R5	
	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)
Recycling	84.9%	64,017	92.4%	92,180	90.3%	37,473	91.6%	21,195	90.8%	146
Energy recovery	10.0%	7,576	0.4%	353	3.2%	1,328	3.7%	862	1.3%	2
Disposal	5.1%	3,862	7.2%	7,152	6.5%	2,699	4.7%	1,094	7.9%	13
TOTAL		**75,455**		**99,685**		**41,500**		**23,151**		**161**

Trend in energy and material recovery and disposal by Group in 2018

Table A.2

	R1		R2		R3		R4		R5	
	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)	% on total WEEE managed	Quantity (t)
Recycling	83.4%	54,777	92.5%	77,275	90.4%	36,811	91.7%	16,626	91.5%	67
Energy recovery	11.4%	7,496	0.2%	167	3.0%	1,238	3.7%	679	1.4%	1
Disposal	5.2%	3,450	7.3%	6,062	6.6%	2,707	4.6%	839	7.1%	5
TOTAL		**65,723**		**83,504**		**40,756**		**18,144**		**73**





Tables B.1, B.2, B.3, B.4 and B.5 show the details of the percentages of the output fractions destined for recycling, energy recovery and disposal (thermal and landfill disposal) for the individual Groups in 2020.

Output fractions for Group R1

Table B.1

Group R1

Fraction	Recycling	Energy recovery	Thermal disposal	Landfill disposal
Aluminium	3.1%	-	-	-
Other Metals	0.5%	-	-	-
CFC	-	-	0.5%	-
Wood	0.3%	-	-	-
Ferrous Metals	61.3%	-	-	-
Oils	0.4%	0.0%	-	-
Plastics	14.8%	0.0%	0.0%	0.0%
Polyurethane	2.5%	8.5%	-	2.8%
Copper	2.3%	-	-	-
Non-hazardous waste	-	0.0%	0.1%	1.9%
Glass	0.9%	-	-	0.1%
OVERALL TOTAL	**86.1%**	**8.5%**	**0.6%**	**4.8%**



Output fractions for Group R2

Table B.2

Group R2

Fraction	Recycling	Energy recovery	Thermal disposal	Landfill disposal
Aluminium	1.4%	-	-	-
Other Metals	0.5%	-	0.0%	-
Concrete	18.3%	-	-	0.0%
Wood	0.9%	-	-	-
Ferrous Metals	59.8%	-	-	-
Plastics	8.1%	0.1%	0.0%	0.0%
Copper	1.8%	-	-	-
Non-hazardous waste	0.2%	0.3%	0.2%	6.9%
Glass	1.5%	-	-	-
OVERALL TOTAL	**92.5%**	**0.4%**	**0.2%**	**6.9%**

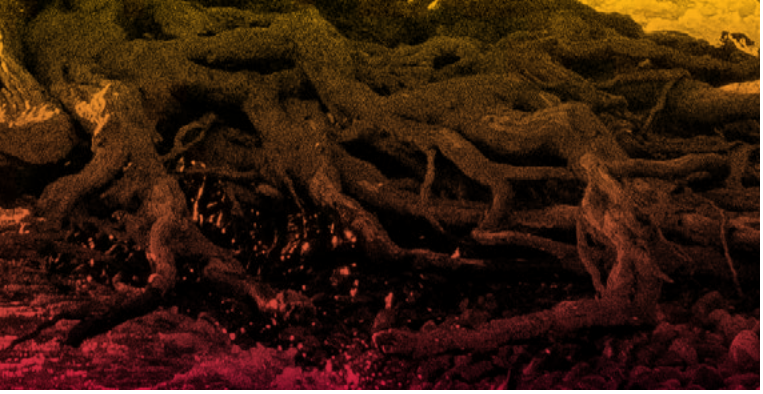


Output fractions for Group R3

Table B.3

Group R3

Fraction	Recycling	Energy recovery	Thermal disposal	Landfill disposal
Aluminium	0.9%	-	-	-
Other Metals	2.4%	-	-	-
Capacitors	-	-	0.0%	0.1%
Wood	1.5%	-	-	-
Ferrous Metals	13.7%	-	-	-
Plastics	13.8%	3.2%	0.3%	0.2%
Copper	2.8%	-	-	-
Non-hazardous waste	0.0%	0.2%	0.4%	4.1%
Hazardous waste	0.0%	0.0%	0.0%	0.4%
Glass	34.0%	-	-	0.0%
Cone glass	21.5%	-	-	0.5%
OVERALL TOTAL	**90.6%**	**3.4%**	**0.7%**	**5.3%**



Output fractions for Group R4

Table B.4

Group R4

Fraction	Recycling	Energy recovery	Thermal disposal	Landfill disposal
Aluminium	3.6%	-	-	-
Other Metals	3.1%	-	-	0.0%
Batteries/Accumulators	0.1%	-	0.0%	0.0%
Cartridges/Toner	0.3%	-	0.0%	-
Capacitors	0.0%	-	0.1%	0.1%
Wood	1.1%	-	-	-
Ferrous Metals	46.8%	0.0%	-	-
Plastics	28.8%	3.6%	0.2%	0.5%
Copper	5.0%	-	-	-
Non-hazardous waste	0.8%	1.6%	0.8%	3.0%
Hazardous waste	0.0%	0.0%	0.0%	0.3%
Glass	0.2%	-	-	-
OVERALL TOTAL	**89.8%**	**5.2%**	**1.1%**	**3.9%**



Output fractions for Group R5

Table B.5

Group R5

Fraction	Recycling	Energy recovery	Thermal disposal	Landfill disposal
Glass	81.7%	-	-	-
Plastics	3.9%	-	-	-
Ferrous Metals	2.6%	-	-	-
Non-ferrous Metals	3.9%	-	-	-
Other materials (e.g. paper and cardboard)	2.7%	1.3%	-	2.2%
Dust and Mercury	-	-	-	1.7%
OVERALL TOTAL	**94.8%**	**1.3%**	**-**	**3.9%**

Insight C

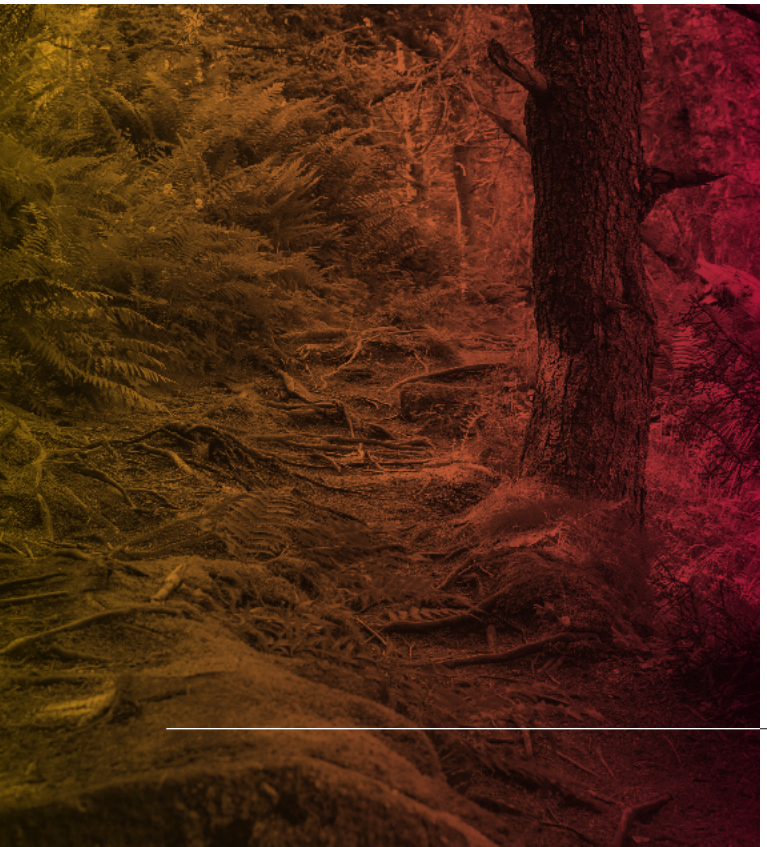
In this in-depth analysis are presented the two scenarios used to calculate the environmental benefits. The first scenario, relating to the "Proper management of WEEE", was calculated using Scenario A of the WEEE Forum tool, while the second scenario "Partial management of WEEE" derives from Scenario E of the WEEE Forum tool. In order to avoid discontinuity with the past, in this technical document we have decided to continue to indicate the "Partial management of WEEE" scenario as Scenario B.

SCENARIO A: ENERGY BALANCE

The energy consumption relating to the "Proper management of WEEE" scenario (Scenario A) refers to the following stages of the Household WEEE value chain:

WEEE transport from the home to the Collection Centre/Grouping Place: it provides for the collection of Household WEEE and its transport to the Collection Centre/Grouping Place, for which it was assumed that:

- 50% of R1, R2 and R3 is delivered directly by the citizens to the Collection Centre (for R4 and R5 it is considered that citizens do not travel to the Collection Centre solely for these types of electronic waste);
- the remaining 50% by public and private collection vehicles.



Transport from the Collection Centre/Grouping Place to the treatment plant: WEEE is collected and transported to the appropriate treatment plant.

Treatment: it involves a first pre-treatment phase for the depollution of WEEE (removal of certain hazardous components), the disassembly of the compressor and some moving parts. This is followed by the shredding of the non-reusable parts and the subsequent selection of the outgoing materials which are then sent for industrial recycling. Fractions that cannot be recycled are sent to energy recovery or final disposal.

Transport from the treatment plant to the plants for industrial recycling, energy recovery or final disposal: these transports take place with different types of diesel powered vehicles on the basis of tons per journey.

Industrial recycling: it consists in the transformation of the fractions leaving the treatment plants (iron, other metals, plastic, etc.) into material ready for a new use.

Disposal (thermal and in landfill) and energy recovery: for non-recyclable fractions the destination is landfill disposal, thermal destruction (thermal disposal) or energy recovery.

SCENARIO B: ENERGY BALANCE

In the "Partial management of WEEE" scenario (Scenario B), the following stages of the Household WEEE value chain were taken into account:

WEEE transport from the home to the Collection Centre/Grouping Place: it follows the same assumption used for Scenario A.

Transport from the Collection Centre/Grouping Place to the treatment plant:

- 50% of WEEE is managed by entities whose sole aim is to maximise profits: the distances involved are lower than those of Scenario A since there is no need to use treatment plants that guarantee quality;
- 50% of WEEE is managed by the same entities used by Erion WEEE: the distances involved are the same as those of Scenario A.

Treatment:

- 50% of WEEE is managed by entities whose sole aim is to maximise profits: the unit energy consumption is equal to that of the R2 plants;
- 50% of WEEE is managed by the same entities used by Erion WEEE: the unit energy consumption is equal to that of Scenario A.

Transport from the treatment plant to the plants for industrial recycling:

- entities whose sole aim is to maximise profits send only the fractions of value (iron, copper, aluminium) to the same plants as in Scenario A;
- the same entities used by Erion WEEE send all their recyclable output fractions to the plants considered in Scenario A.

Industrial recycling:

- for entities whose sole aim is to maximise profits is calculated only for the fractions of value (iron, copper, aluminium);
- for the same plants used by Erion WEEE is calculated as in Scenario A.

Disposal (thermal and in landfill) and energy recovery:

- entities whose sole aim is to maximise profits send the non-valuable fractions to landfill disposal;
- the same plants used by Erion WEEE send all their non-recyclable output fractions for energy recovery or disposal as in Scenario A.

Production of semi-finished goods:

- for entities whose sole aim is to maximise profits, the energy consumption necessary for the production of semi-finished products is taken into account for the non-value fractions;
- for the same plants used by Erion WEEE there is no production of semi-finished products as these plants operate in the same way as those of Scenario A.



The data used for scenarios A and B are derived from the following sources and from the coefficients listed successively:

- as regards transport, the calculation was made on the basis of the average distance between the different points of origin and destination, based on the number of journeys made for each single trip and on the basis of the constants present in the WEEE Forum tool;
- for the purpose of calculating the energy consumption and emissions generated by the treatment process, the data collected by Erion and the coefficients provided by the WEEE Forum tool were used;
- for the estimation of energy consumption and emissions from industrial recycling, thermal and landfill disposal and disposal with energy recovery processes, the energy consumption (CED) and emission factors present in the WEEE Forum tool were used, selected from among those provided by the Ecoinvent database;
- for the estimation of energy consumption and emissions relating to the production of semi-finished goods, the energy consumption (CED) and the emission factors present in the WEEE Forum tool, selected from those provided by the Ecoinvent database, were used.

SCENARIOS A AND B: BALANCE OF EMISSIONS

The emissions related to the two Scenarios A and B refer to the same stages of the value chain presented in the energy balance. Compared to the latter, however, Scenario B contains an additional item that relates to CFC emissions caused by the incorrect treatment of WEEE, which does not have an impact from an energy point of view as it is unrelated to energy consumption. The first assumption concerning "CFC emissions" is that in the absence of the correct treatment process the harmful substances (CFC/HCFC/HFC/HC) contained in WEEE are released into the atmosphere in two different ways:

- for 50% of WEEE treated by entities aiming exclusively at maximising profits, the harmful substances are released entirely since these entities do not care/do not have the technologies necessary to intercept the gases in the refrigerant circuits and the gases present in expanded foams;
- for the remaining 50% treated by the same plants used by Erion WEEE it is expected a partial capture of the harmful substances and, therefore, were taken into account the same performance levels recorded in Italy in 2008, year in which Erion WEEE measured the state-of-the-art of the performance of the plants operating in the absence of controls on the quality of the treatment.

For the assessment of the emissions generated by the full release of the harmful substances, the results of the audits on treatment plants were used, assuming that the recovery performance of CFC/HCFC/HFC/HC remains constant throughout the year. For the purpose of calculating the emissions, the WEEE Forum tool uses the IPCC emission factors.



COEFFICIENTS USED

- WEEE transport from the home to the Collection Centre/Grouping Place

Average load and average distance per Group (R1, R2, R3), transport WEEE house - Collection Centre/Grouping Place

Table C.1

	Citizens		Collection vehicles	
Group	**Average load (t/trip)**	**Average distance (km/trip)**	**Average load (t/trip)**	**Average distance (km/trip)**
R1	0.042	4.4	1	18.2
R2	0.065	4.4	1.5	18.2
R3	0.015	4.4	0.4	18.2

- Transport from the Collection Centre/Grouping Place to the treatment plant

Average load and average distance per Group, transport Collection Centre/ Grouping Place – treatment plant

Table C.2

Group	**Average load (t/trip)**	**Average distance (km/trip)**
R1	1.90	136.8
R2	2.88	90.1
R3	1.55	162.2
R4	1.74	128.4
R5	0.15	159.5

- Treatment

Specific consumption for treatment activities divided by Group

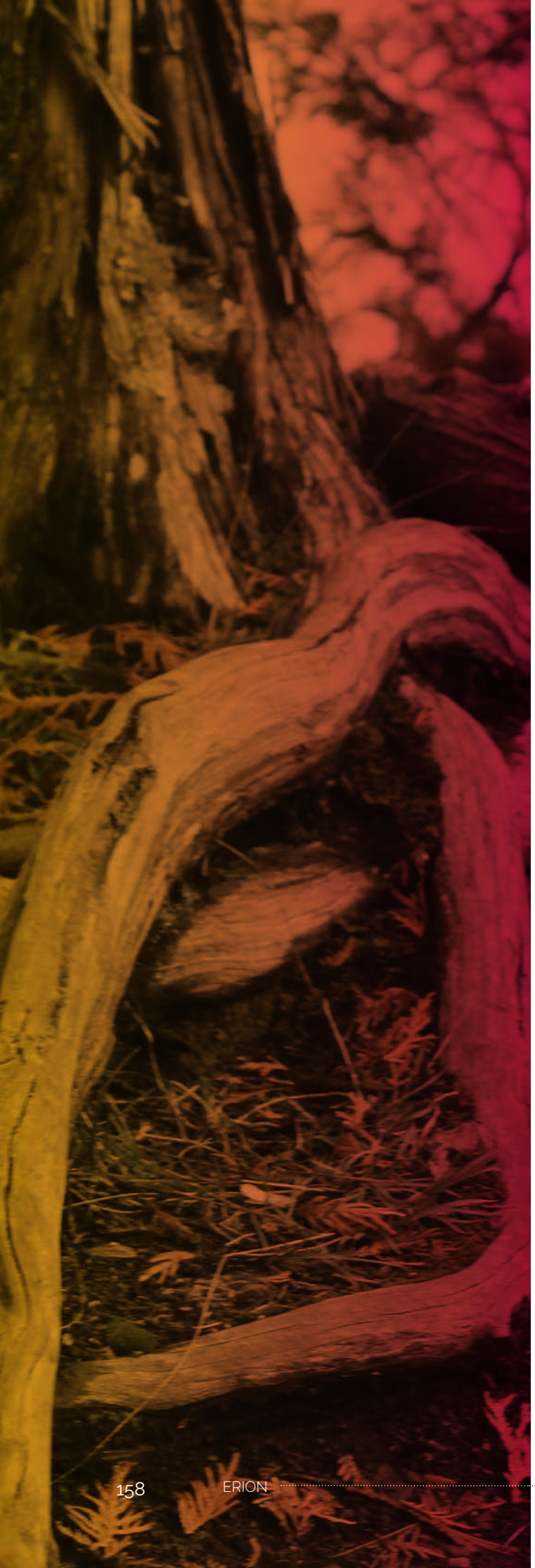
Table C.3

Electricity consumption per tonne of R1	155	kWh/t
Electricity consumption per tonne of R2	80	kWh/t
Electricity consumption per tonne of R3	80	kWh/t
Electricity consumption per tonne of R4	80	kWh/t
Electricity consumption per tonne of R5	130	kWh/t

Percentage breakdown of energy consumption by Group

Table C.4

Group	Diesel	Electricity from the grid (non-renewable)	Photovoltaic	Electricity from the grid (renewable)
R1	6.8%	53.0%	6.0%	34.2%
R2	6.9%	64.5%	8.0%	20.6%
R3	8.0%	52.3%	0.1%	39.6%
R4	5.9%	54.0%	9.8%	30.3%
R5	0.0%	100.0%	0.0%	0.0%



CALCULATION OF CFC EMISSIONS

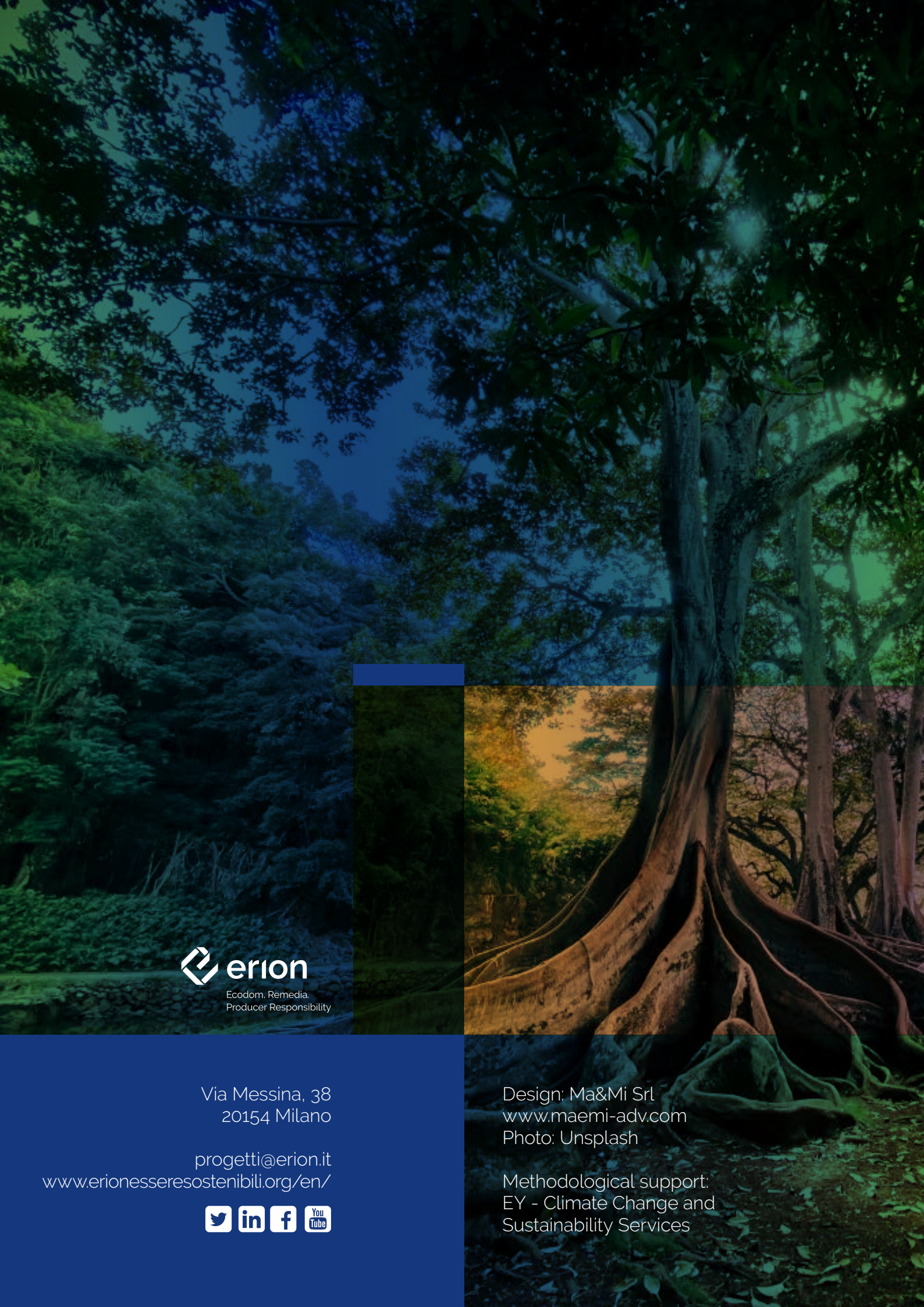
The critical components for the treatment of end-of-life refrigerators and freezers are two: the expanding gas contained in the polyurethane foam and the refrigerant gas contained in cooling circuits. The insulating layer of the refrigerators' casing is made out of polyurethane foam. The type of expanding gas used is not unique, but primarily CFCs and cyclopentane are used. The main gases used for the filling of cooling circuits are CFC R12, HCFC and isobutane. Consequently, not all refrigerators managed and sent to treatment contain CFCs. More and more next-generation refrigerators use pentane, while some of those that contain CFCs reach the treatment plants without compressor or damaged, making it impossible to recover the CFC from the cooling circuit. Based on these considerations and on the samplings of R1s entering the plants it has been possible to estimate the amount of CFCs actually recoverable: in the last sampling carried out (2015) the suppliers examined 3% of all incoming loads. This is a very high percentage if we consider that, out of more than 34,000 tons of WEEE category R1 collected in 2015, the sampling refers to 1,000 tons, equal to about 20,000 pieces (assuming that the average weight of an appliance is 50 kg).

The sampling carried out showed that:

- 0.30% of WEEE arrives damaged at the plant;
- 19.9% of WEEE arrives without compressor.

As regards the composition of the refrigerant and expanding gases, it was found that:

- 60.1% of WEEE contains CFCs in both foams and circuits;
- 38.8% of WEEE are pentane appliances;
- 1.1% of WEEE is of other types (CFC free).



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