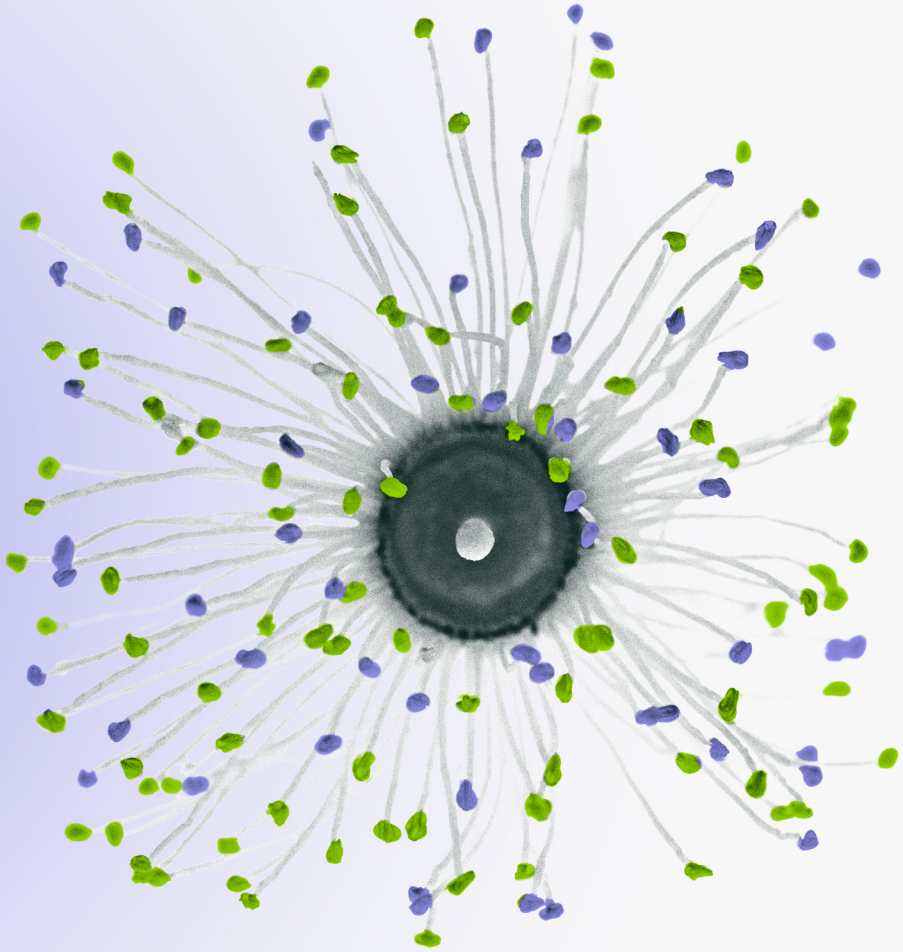


06

environment

6.1 climate change and greenhouse gas emissions

Climate change represents one of the greatest challenges humanity faces today and requires a response that involves all sectors of activity and the cooperation of all individuals. Combating climate change should be considered as a long-term purpose, with a multilateral approach including reducing greenhouse gas emissions, increasing energy efficiency, investing in renewable energy, reducing food waste and resources, and promoting biodiversity protection. These are just some of the measures that must be implemented in a consistent, integrated and global manner to ensure a safe and sustainable future for the coming generations.

Ensuring the future of people and the planet has been a constant concern to Altri, transversal to the entire organisation and essential in its model of performance and management. Altri has already been recognised for its efforts in this area.

Altri Group maintained The A- rating in the fight against climate change in 2022, one of the status of 'Leadership' in the CDP agency's ranking. This ranking is above the European regional average and is described as a reference for implementing best practices.

It should also be noted that in the framework of CDP classifications, Altri obtained the Management (B) classification in CDP Forests and CDP Water Security, a classification seen by Altri as a challenge to do more and better.

Altri's goals in combating climate change are described in the response to the recommendations of the **Task Force on Climate-Related Financial Disclosures (TCFD)**.

The increase in reporting quality, through alignment with TCFD recommendations, allows a better assessment of companies' exposure to climate risks in the short, medium and long term, leading to a more informed decision-making about where and when investors should allocate capital.

Reporting according to these TCFD recommendations, described throughout the report, relates to climate risks and opportunities in the following key areas:

For more information on this report, see the attached TCFD Table.

6.1 climate change and greenhouse gas emissions

GHG Emissions

Given the growing international demands to promote decarbonisation of the industry and achieve carbon neutrality, it is critical for industries to innovate and adopt technologically advanced low-carbon, high-energy-efficient equipment and processes.

In order to effectively achieve the objectives set out in its journey of reducing greenhouse gas (GHG) emissions, Altri's emissions are monitored, guiding the management and planning of the decarbonisation strategy. Altri Group proceeds its journey using this information on a scientific basis, and setting sustainability as a competitiveness factor.

Altri Group's carbon net balance

Emissions

Plant Production

Wood Production

Acquisition, transportation, and processing of wood and residual forest biomass

Production and commercialization of cellulosic fibers

Removals

Growth of live biomass

Soil carbon stock

Science Based Targets

After determining the GHG emissions of its activity, setting science-based targets was the path Altri Group has taken to reduce emissions, at the appropriate pace and scale to combat climate change, while maintaining the sustainability of its business model in the long term. In this sense, the Science Based Targets standout to provide a clear direction for the decarbonisation of the company.

The Altri Group undertakes to reduce specific GHG emissions ($kgCO_2/ADt$) by 2030:

- scope 1 and 2 by 51%, resulting in a 43% reduction in absolute emissions.
- scope 3 by 25%, resulting in a 13% reduction in absolute emissions.

In 2022, Science Based Targets validated the Altri Group's commitments to reduce greenhouse gas emissions according to the trajectory of -1.5°C. Both reductions are defined considering the base year of 2020.

1.5°C
Reduction of greenhouse gas emissions

6.1 climate change and greenhouse gas emissions

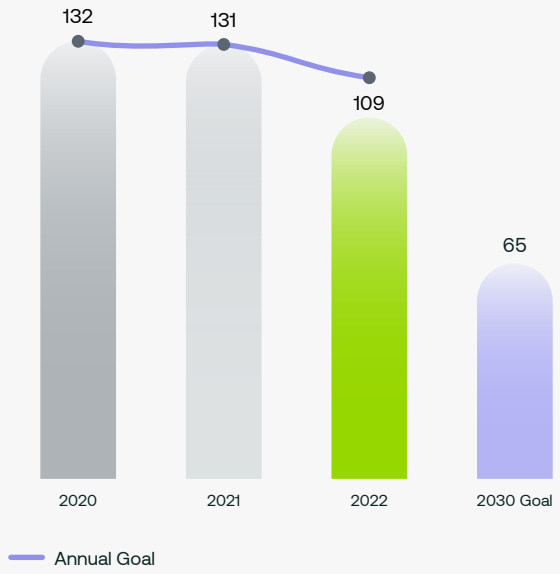
Scope and Methodology

The greenhouse gas (GHG) emissions accounting was carried out according to the GHG Protocol, an initiative of the World Resources Institute and the World Business Council for Sustainable Development.

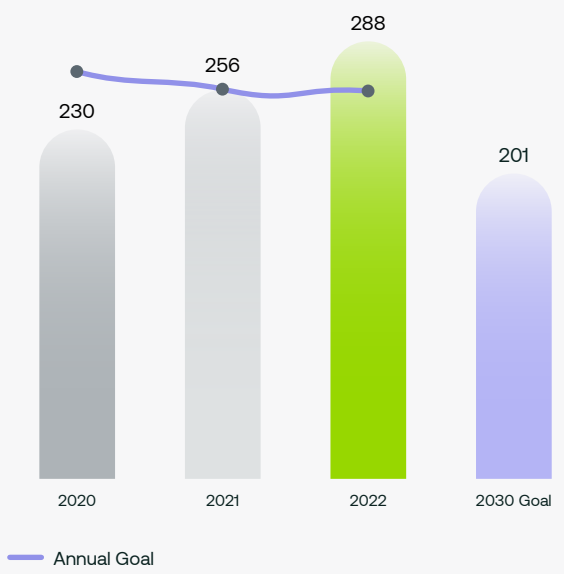
All the business areas that currently belong to the Altri Group were covered, namely forest production, wood supply and residual forest biomass, and cellulosic fibre production (paper pulp and dissolving pulp).

A financial control approach was adopted, consolidating 100% of the emissions of the companies controlled directly or indirectly by Altri SGPS, S.A. i.e. entities financially consolidated by the full consolidation method. Emissions from joint ventures and associates were accounted for under scope 3 (other indirect emissions) in proportion to the share capital held.

Scope 1 & 2 emissions
(kg CO_2/ADt)

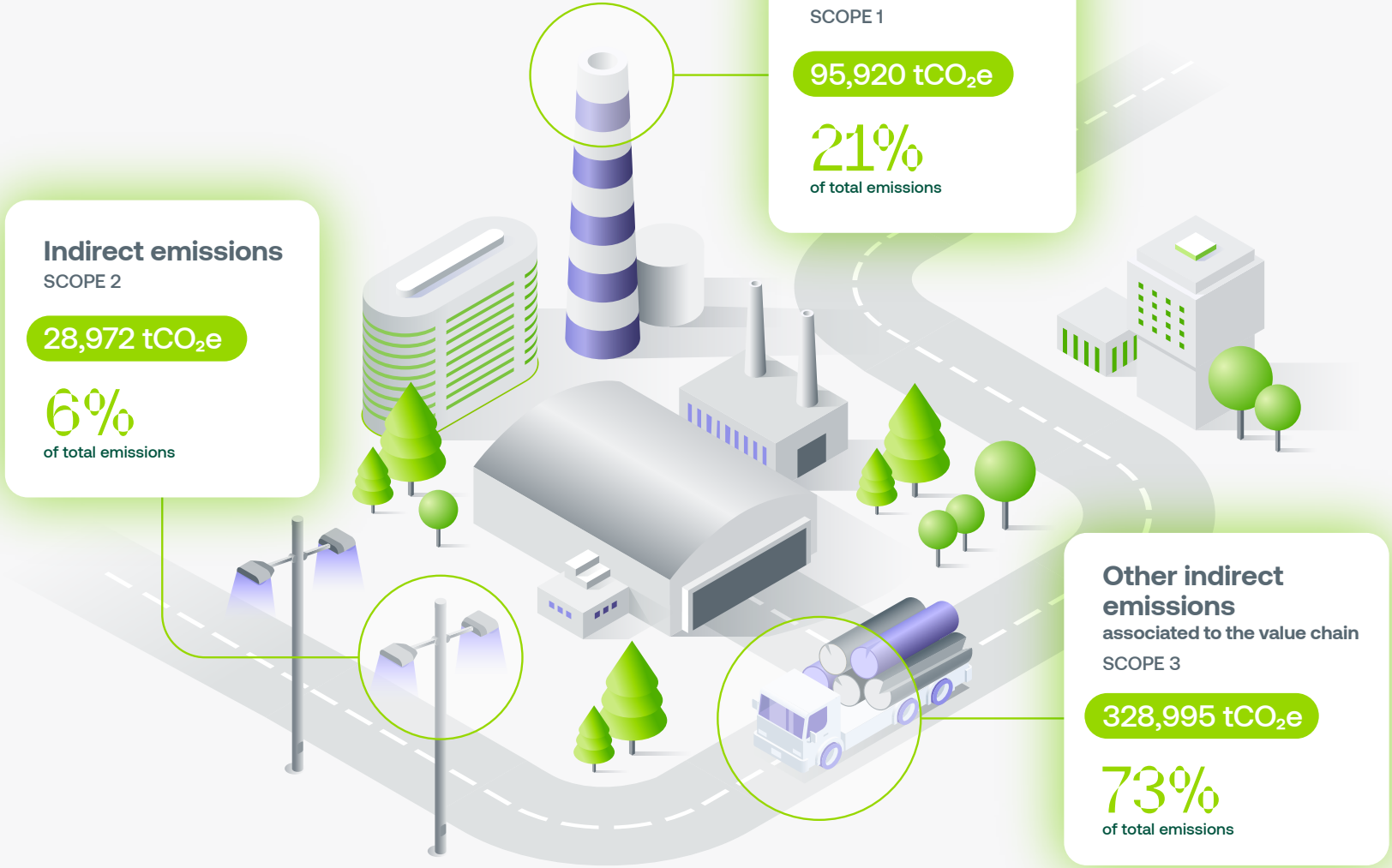


Scope 3 emissions
(kg CO_2/ADt)



climate change and greenhouse gas emissions

Greenhouse gas emissions



Direct emissions
SCOPE 1

95,920 tCO_2e

21%
of total emissions

Indirect emissions
SCOPE 2

28,972 tCO_2e

6%
of total emissions

Other indirect emissions
associated to the value chain

SCOPE 3

328,995 tCO_2e

73%
of total emissions

6.1 climate change and greenhouse gas emissions

			tCO₂e
	2020	2021*	2022
Scope 1 GHG emissions – Direct emissions			
Direct emissions from operations	158 236	124 061	95 920
Scope 2 GHG emissions – Indirect emissions			
Indirect emissions – emissions associated with the acquisition of electricity (market-based)	21 670	23 392	28 972
Indirect emissions – emissions associated with the acquisition of electricity (location-based)	23 923	22 402	15 113
Scope 3 GHG emissions – Other emissions			
C1. Purchases of goods and services	119 668	115 181	137 489
C3. Activities related to fuels and energy not included in Scope 1 and 2	16 130	23 831	22 673
C4. Upstream transportation (wood and chemicals)	54 917	80 875	61 615
C5. Treatment of waste generated from operations, including transport	2 014	2 172	846
C9. Downstream transportation and distribution (product)	45 266	43 650	46 815
C10. Processing of sold products	57 438	58 679	59 557
Total – GHG emissions from Scope 3	**295 433**	**324 388**	**328 995**
Total – GHG emissions from Scope 1, 2 (market-based) and 3	**475 339**	**471 841**	**453 887**
Other – avoided emissions associated with the sale of electricity (market-based)	(154 961)	(15 353)	(27 100)
Other – Carbon reservoir in the forest	(8 044 739)	(8 176 442)	(8 275 658)
Other- Biogenic emissions from combustion of non-fossil fuels (tCO_2 biogenic) *	2 750 172	1 381 374	1 425 049

*The calculation of GHG emissions was updated during the financial year 2022, due to the following events:

- the distribution of dividends in kind of Greenvolt shares, date from which Altri Group lost control over Greenvolt Group;
- approval of Altri's Science Based Target, with base year of 2020, which led to some reformulations in the initial objectives and inclusion of new scope 3 categories for GHG emissions, not having been materially affected the previously established goals.

6.1 climate change and greenhouse gas emissions

2030 COMMITMENT

Combating Climate Change

Altri aims to minimise its climate impact and contribute to climate change solutions by:

- replacement of materials of fossil origin
- sustainable forest management
- implementation of renewable solutions.

Altri Group's own activity generates a positive impact on climate, with carbon sequestration due to the absorption of CO_2 through the approximately 90.4 thousand hectares of forest managed. Thus, the climate benefit and economic valorization of planting forests are obtained while biodiversity is maintained and promoted in these locations.

Climate issues and associated risks have been considered and incorporated into business processes and decisions, resulting in several solutions that will allow to substantially reduce the environmental impact of Altri's activity, enhancing the decarbonisation of the Group's activity. In each industrial unit, the following actions are highlighted, as crucial to reduce the environmental impact of Altri's activity and, consequently, reduce the associated emissions:

biotek

- Various optimisations in the operation of the lime kiln

caima

- "Caima Go Green" Project, construction of a forest biomass cogeneration plant, allowing the decarbonisation of Caima (start of production in 2023)

celbi

- Various optimisations in the operation of the lime kiln
- Routine implementation of daily monitoring of fossil CO_2 emissions
- Burning in the lime kiln of 100% methanol produced in the wood pulping process with reduced natural gas consumption

Reduction of natural gas consumption

Using the Kaizen methodology, Kobetsu – Reduction of Specific Greenhouse Gas Emissions was developed. The main action implemented was the reduction of natural gas consumption in the various equipment of the industrial units. With all the implemented actions and with process optimisations, there was a reduction of about 12% of specific natural gas consumption.

"Caima Go Green" Project

Caima, a biorefinery of the Altri Group, has invested 40 million euros for the construction of a new biomass boiler, which will allow the abandonment of fossil fuels in its production process, in order to guarantee full energy autonomy from exclusively renewable sources. This facility will also be a key piece for a future production of bioproducts (e.g. acetic acid).

It thus becomes the first Iberian company in its industry to reach this historic milestone. This new plant will work by replacing the existing biomass boiler.

PRR Plano de Recuperação e Resiliência · REPÚBLICA PORTUGUESA · Financiado pela União Europeia NextGenerationEU

6.2 energy efficiency

Altri has been working to improve the energy efficiency of its production processes, through a continuous reduction of energy consumption and consequent associated costs.

The implementation of energy efficiency measures reduces not only energy consumption, but also the greenhouse gas emissions necessary for the generation of this energy.

Thus, maximizing energy efficiency contributes to climate change mitigation, as well as allowing a financial economy and improving people's quality of life.

The development of measures and improvements is supported by the processes deployed in the industrial units, all of which are certified by ISO 50001 – Energy Management System, which represents the guarantee of continuous improvement associated with the promotion of energy efficiency.

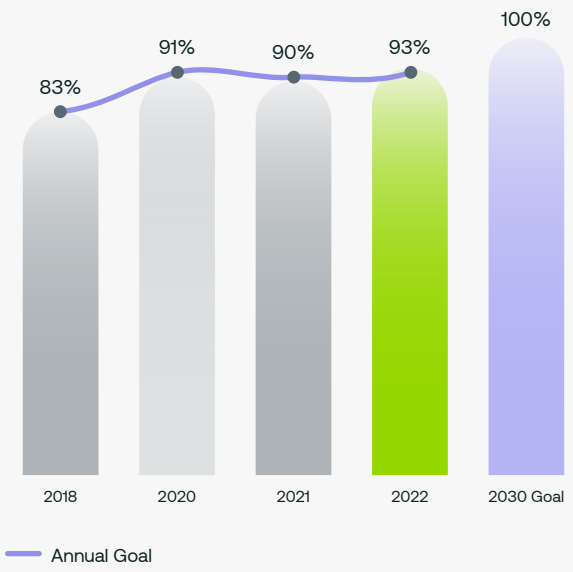
6.2 energy efficiency

2030 COMMITMENT

Improvement of Energy Efficiency

Given the link between the increasing energy efficiency and the GHG emissions reduction, it is not surprising that the actions already mentioned above are highlighted again in this material topic. In fact, Altri's current search on alternative fuels to replace natural gas, as well as the development of projects and investments aimed at reducing GHG emissions also aim to reduce energy consumption.

Renewable energy
(%)



altri

Kobetsu "Reduction of Specific Electricity Consumption" totals 34 kWh/adt (about 2100€/day), due to the following initiatives:

- Pump optimisation/stoppage – 11 kWh/adt;
- Optimisation of operational logic – 7 kWh/adt;
- Evaporation stoppage – 16 kWh/adt

biotek

Execution of the project for collection and burning of odorous gases, which allows the energy recovery of the plant's diffuse emissions.

caima

Caima Go Green project, construction of a plant with forest biomass, allowing the decarbonisation of Caima (start of production in 2023)

celbi

Burning methanol (by-product of cellulosic fibre production) in lime kiln, replacing natural gas

6.3 water management

Climate change, water pollution and degradation of natural resources are some of the factors that contribute to the scarcity of water reserves, and this is an environmental problem that particularly affects Portugal. Considering the high use of water by industries, companies such as Altri Group have an increased responsibility to manage this resource responsibly. The history of good practice of the Group's water management has been present for more than 50 years.

For the Group, the importance of water comes from its use in the production process. The responsible management of this resource is reflected not only in practices that aim to reduce its consumption, but also in managing its discharge, carried out to ensure the environmental quality of the effluent and minimise possible impacts on the environment.

Thus, it is natural that the measures implemented by Altri for monitoring, improving efficiency and reducing organic load of effluents covers its three industrial units.

2030 COMMITMENT

Monitoring, improvement of efficiency and reduction of organic load of effluents

Several projects are under way to reduce water use and optimise process (KOBETSU and PDCA) that aim to identify gaps in the measurement and monitoring instrumentation to control water use and effluent quality.

altri operating system

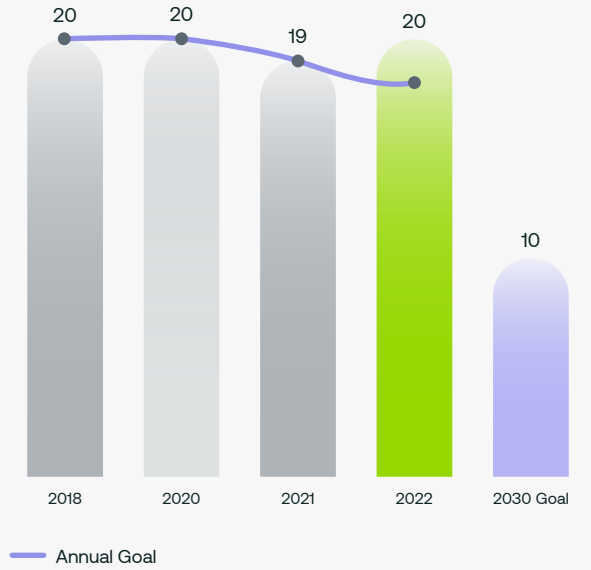
The measures focus on the optimisation of the process, through the **Altri Operating System:**

- Water recirculation in the production process, reducing the use of water
- Treatment of evaporated particles resulting from filtration
- Successful process replication, such as the modernization of WWTP at Celbi, after the success of the installed technology at WWTP at Biotek.

Despite the measures implemented and internal awareness efforts for the responsible use of this resource, there was a slight increase in the value of specific water use compared to the results of the previous year. However, it should be noted that some of the measures implemented, in particular the installation of new equipments at WWTP, will only take effect next year.

It should also be noted that the Group is currently a global benchmark in the specific use of water, with a value of 20 m³/ADT, and the reference interval recommended in the BREF of the sector is between 25 and 50 m³/ADT.

Specific use of water
(m³/ADt)



6.3 water management

Biotek collects water in the Tagus River for use in the pulp manufacturing process and also supplies treated water to other industrial facilities in the surrounding community.

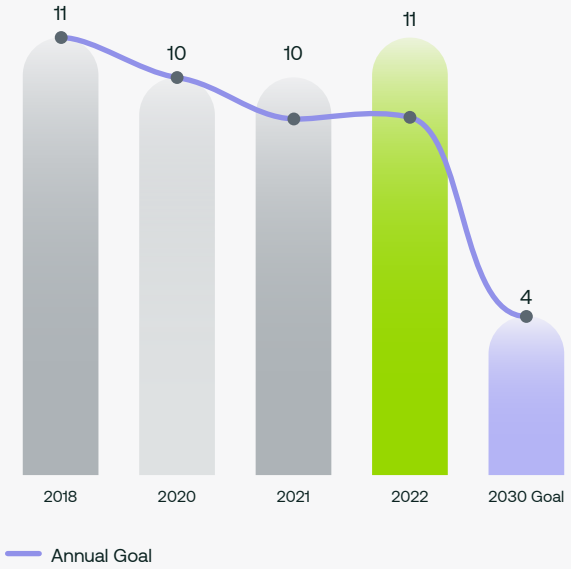
Caima is responsible for the treatment of effluents from Constância Municipality, promoting the relationship with local communities.

In the pulp production process, several actions were implemented, namely closing circuits and improvements in the diffuse liquid emissions circuits that allowed, with the latest technology in Biotek WWTP, to achieve a high quality of the treated effluent.

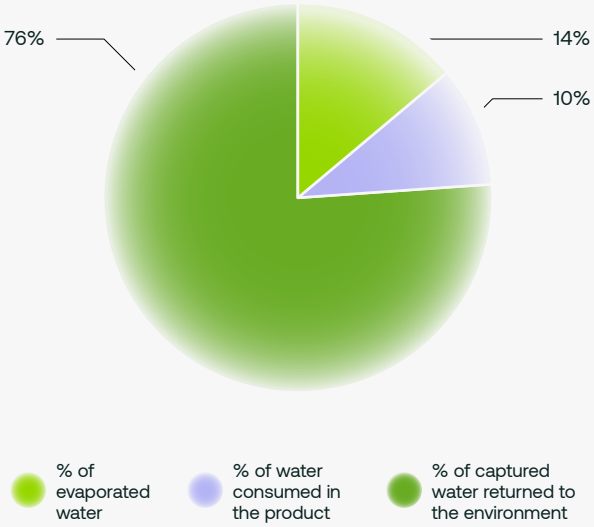
This measure allowed Biotek, in 2022, to recycle 12% of the treated effluent to the water treatment plant, and thus capture less water and discharge less effluent to the Tagus River.

Organic load in effluents – COD

(kg O2/ADt)



Water use



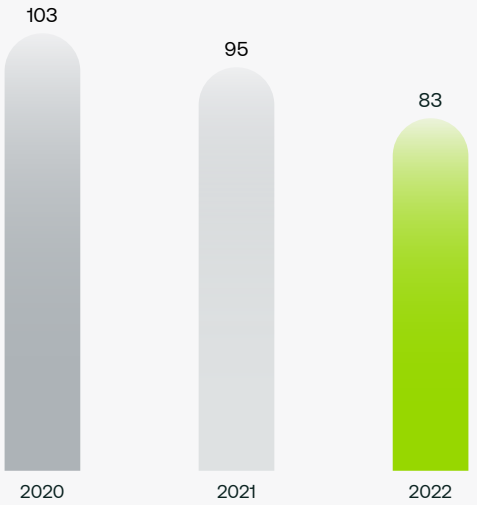
6.4 waste management

The final destination of waste and its proper management are fundamental to avoiding the prejudicial effects in the environment. Waste management should also be seen as a good opportunity to have a positive impact on biodiversity, natural resources and human life, through its valorisation in the incorporation of products as secondary materials.

The first step toward proper waste management is to increase the efficiency of the production process, in order to generate less and less waste, thus reducing the need for treatment operations. This is the great bet of the Altri Group and its performance in this area is notorious, with a reduction of about 12,7% of the waste generated per ton of pulp produced, compared to 2021.

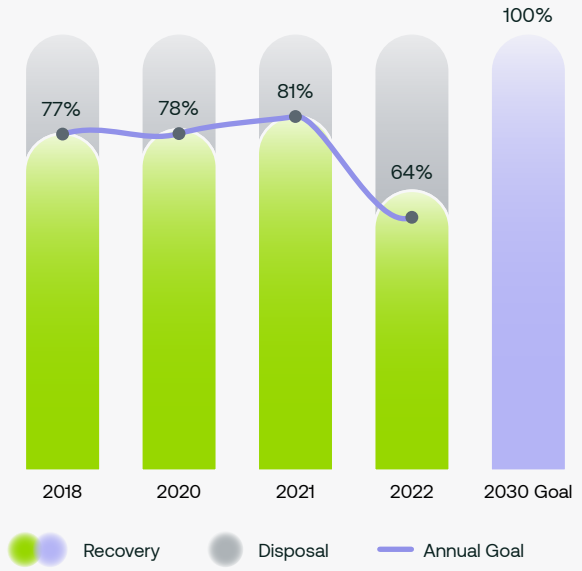
In addition to reducing waste production, Altri manages the waste resulting from its activity. Almost 100% of the waste produced as a result of Altri's activity is non-hazardous waste, which represents a virtually non-existent risk to the environment. However, even though it represents a small part, Altri takes all the necessary measures to ensure the proper routing and treatment of hazard waste, thus eliminating any risks of potential negative impacts of its activity.

Waste produced
(kg/ADt)



This indicator was changed in 2021 due to the exit of Greenvolt from Altri Group. Altri has also invested in finding solutions for the recovery of the waste produced, having reached in 2022 the target of 64% of recovered waste. This recovery is done by reintegrating the waste in the production process, through its recovery in other industries,

Waste destination
(%)



by replacing virgin raw materials and by forwarding it for recycling. This reuse and reintegration of waste by Altri as well as the sending of waste for replacement of virgin raw materials promote the creation of a closed cycle, representative of a circular economy.

2030 COMMITMENT

Circular Economy

The Circular Economy Model argues that waste must be transformed into by-products or other materials that allow its reuse, recovery and recycling, to reduce the exploitation of natural resources (by reuse and recovery of waste/scrap, which become secondary raw materials).

6.4 waste management

In the three manufacturing units there are several projects that materialise the Circular Economy model:

Partnership with a paper manufacturer
to develop a new recycled paper incorporating unbleached pulp produced from rejects from the bleached eucalyptus pulp industry. It is expected that this fibrous waste will be used in the production of cardboard or cartonboard products.

Development of a recovery project for acetic and furfural acid,
both present in evaporation condensate, resulting in two renewable base products that will be consumed as raw material of various chemical industries, such as solvent production, paints and coatings, agrochemicals, textiles, pharmaceuticals, cosmetics.

Innovative system on a global scale
that allows the reuse of fibrous material of fine particle size wasted in the production process, and the recovery of uncooked nodes that previously would have to be referred as waste, and that this process re-incorporates into the pulp production process. Innovation lies in the simplicity of the concept and associated technology, the combination of which gave rise to a worldwide unique digester prototype.

Lime sludge and kiln ashes

Biomass boiler sand

Altri forests

Biomass boiler ashes

Organic compost

Forwarding of biological sludge from IWWTP to processing to be transformed into compost. They are reused as fertilisers, enriching soils with organic matter. Within this measure, a collaborative project is progressing with Agristarbio for the production of organomineral fertiliser, produced from the sludge, which will replace chemical synthesis fertilisersused in forests managed by Altri Florestal.

lime sludge

- Cement industry
- Mortar
- Ceramic coating
- Ceramic coating paste
- Agricultural alkalinizer

Recovery of carbonate sludge through its reincorporation in the lime kilns of the pulp industry, as a substitute for raw material in the cement manufacturing process, as well as in the production of ceramic coating paste, and in clay batches for the production of ceramic coating.

The creation of partnerships and stimulation of technological innovation are the basis for Altri's work to achieve a true circular economy, with the recovery of its waste and the development of new ways of using by-products, replacing virgin raw materials.