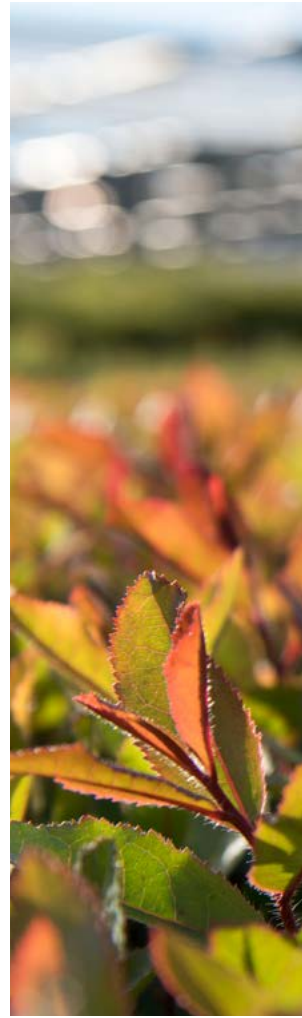




# 03

## + Environment

- 3.1 Forest Management
- 3.2 Biodiversity and Ecosystems
- 3.3 Climate Change and GHG Emissions
- 3.4 Renewable Energy and Energy Efficiency
- 3.5 Water Management
- 3.6 Waste Management and Circular Economy





In this section, it is explained how Altri understands its environmental responsibilities, its expectations, and some guidelines. The main environmental indicators, their progress over time, and the effectiveness of the implemented actions are followed herein.

Collective initiatives are also shared with partners, official entities, and other stakeholders, including industry collaborations and initiatives, projects for new products, and measures to mitigate the risks and impacts of operations and production.

## 3.1 Forest Management



**Miguel Silveira**  
Forest Director



It is possible to achieve high levels of productivity without compromising biodiversity, assuring that management is carried out responsibly and sustainably.

Coexistence with the production forests is crucial for the relationship between biodiversity and human activities. Although wood production and biodiversity conservation are often considered to be opposite objectives, the reality is that they can and must coexist. In areas managed for production, as part of the forests cared for by Altri, it is essential to adopt approaches that consider both economic needs and environmental imperatives. It is possible to achieve high levels of productivity without compromising biodiversity, assuring that management is carried out responsibly and sustainably.

Altri, recognizing this interdependence, integrates biodiversity conservation into its forest management practices. By implementing strategies such as Altri Diversity, the company not only seeks to optimize wood production but also to ensure the preservation of ecosystems and species that inhabit them. Altri has under its management

about 92.8 thousand hectares in Portugal, of which approximately 4,000 hectares are of cork oak and 3,000 hectares are of pine forest, and about 10.5 thousand hectares of conservation area - all these areas exist and contain biodiversity. Altri's biodiversity strategy includes several objectives, such as the increase in the conservation area, preferably with areas of high conservation value, and the installation of biodiversity stations and biospots that provide indicators and transmit guidance and knowledge that contribute to better management, among others.

In the production forests managed by Altri, (about 80% of the total) it is also possible to consider several environmental services, such as carbon sink, and fire protection, among other activities such as beekeeping and grazing. These forests are not only sources of raw materials but also important for maintaining all these ecosystem services on a local and regional scale.

### 3.1 Forest Management

Thus, coexistence with the production forest is not only possible but is an essential part of a holistic approach to forest management. By recognizing and promoting this coexistence, we can ensure that present needs are met without compromising the ability of future generations to enjoy the benefits that forests and biodiversity provide.



## 3.1. Forest Management

**15** LIFE ON LAND  
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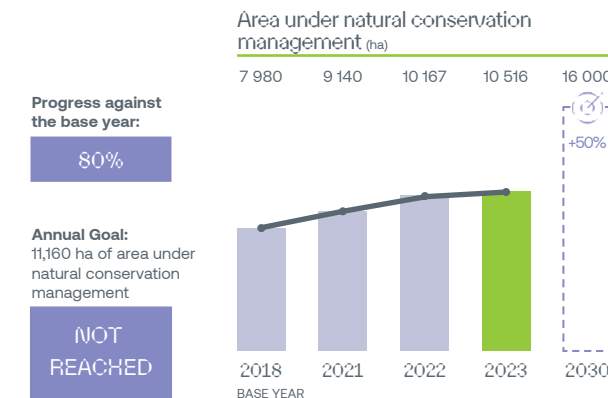
FSC certified wood and PEFC

Increase the percentage of wood consumption with forest management certification by 40%



altridiversity

Double the area under natural conservation management (ha)

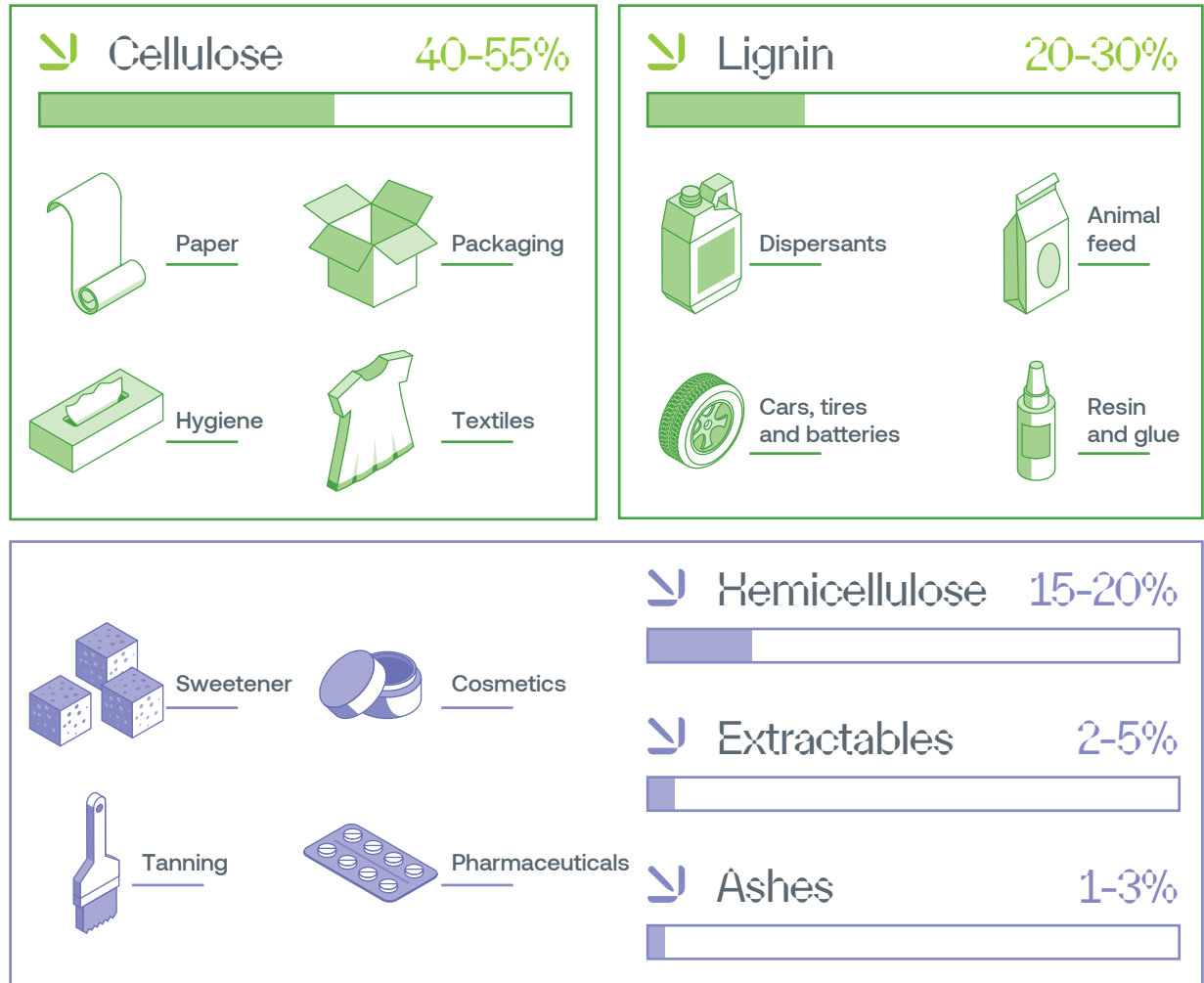


### 3.1 Forest Management

The forest, one of the most important assets for Altri's value chain, is fundamental for life on the planet and the sustainable development of future generations, which is why its management, protection, and recovery are considered strategic for the company.

On December 31, 2023, the Altri Group managed about 92.8 thousand hectares of certified forest in the Portuguese territory. This management is based on the optimization of productive capacity, through a long-term forestry model, which provides an adequate level of profitability, while ensuring the sustainability of this resource.

Of the resources provided by the forest, such as wood and biomass, there is a wide range of applications that the cellulosic fiber industry has been exploring for decades, namely:



## 3.1 Forest Management

The topic of forest management is material for Altri, not only because of the nature of its activity but also because of its possible impacts. As with any company in the industry, forest plantations can have an impact on soil, biological diversity, and surrounding ecosystems. On the other hand, good forest management such as Altri's is an added value in the prevention of forest fires, since there is an appreciation of forest products and investments, in addition to the maintenance of forests. It is in Altri's interest to prevent this since the occurrence of fires endangers the continuity of its business and the safety of local communities.

### Fire protection



For firefighting and fire prevention, Altri holds a stake in Afocelca, a forest protection company. This cooperative project creates solid bridges between the public and the private, between the forest and the civil protection, and between the tradition and the vanguard.



2023

## Indicators

4 171 Rural fire alerts

62% With the intervention of AFOCELCA means



38% Occurrences without danger



Of the occurrences with the intervention of Afocelca means, only 27 had records of damage, in a total of 2,193.7 ha of burned area. In 2023, Afocelca trained 327 operational people in 21 training actions, continuing a joint work for the future of the forest.

In addition to the work developed in firefighting, Altri also restores areas affected by fires, with the recovery of eucalyptus and conservation areas after events, diminishing their abandonment and promoting their production, whilst monetizing the farms of forest owners.

### Certified wood

The use of certified wood ensures compliance with strict criteria that assess environmental preservation, respect

for labor laws, human rights, and ethical behavior in the respective supply chain. This is one of the best sustainable procurement practices recommended by Altri. In 2023, *Altri Abastecimento de Madeiras* supplied the Group's three industrial units with 70.4% of FSC and PEFC certified wood. More than 21% of this certified wood originated in the areas managed by the Altri Group. This is the result of continuous work in encouraging good forest management of raw material suppliers and in the valuation of wood, achieved through price differentiation in certified wood.

Altri Florestal is also part of the two national associations representing FSC and PEFC in Portugal, actively participating in the construction of forest management regulations.

## 3.1 Forest Management

### Evaluation of the Quality of Forest Operations

For the Altri Group, the success of forestry operations depends on the forestry models used, the timing of interventions, the yield of operations, and the technical quality of their implementation. Forestry work is carried out almost entirely by external companies, to whom the technical criteria of each operation are transmitted. To ensure the quality of forest operations, routines are established for monitoring those operations. Below we present the main indicators of the routines carried out with the forest services suppliers (FSS).



The year 2023 was marked by the implementation of a new tool to evaluate the quality of forest operations, allowing a more objective validation and verification of the services provided. A specific mobile application was developed in partnership with INFLOR, which allows the automatic integration of information into the Group's forest management system and can be accessed via mobile phone or tablet. This application ensures the integration of quantitative and qualitative elements of the work with physical (photography), geographical (coordinates in the sampling plot), and administrative (purchase order) information, allowing the identification of weaknesses in the execution of operations or highlighting areas with the greatest potential for technical improvement.

With this data, it will be possible to identify the most sensitive areas and projects (with a need for intervention) and identify service providers according to their overall results. Despite all the adversities found and overcome in the development and implementation of this tool, with all the support of technicians and managers of the region, it was possible to verify 90% of the service orders.

### Agenda transForm

TransForm is a forestry project for the digital transition, energy resilience, and carbon neutrality. Led by Altri Florestal and under the technical-scientific coordination of CoLAB ForestWISE®, Transform integrates a consortium of 56 partners in an unprecedented effort of sectorial cooperation. This agenda was created under the Component 5 (C5) of the Recovery and Resilience Plan (RRP), which aims at Capitalization and Business Innovation, in the context of incentive systems.

### General objectives:

- Innovate in circularity and resilience practices in forest value chains
- Drive the digital transformation of forest-based value chains
- Reinforce the role of forests for the goal of carbon neutrality

## 3.1 Forest Management

The implementation of the transForm Agenda takes place until December 2025, mobilizing public and private funds in a total planned investment of about 129.3M€, between productive investment, R&D and innovation, qualification and internationalization, and dissemination and training.

This Agenda aims to trigger a structural transformation of the Portuguese forestry sector, intervening in a concerted manner throughout the value chain. It is materialized in twenty-eight collaborative projects, which are organized into five work packages (WP):

- WP1: Management of resilient forests
- WP2: Operations & Green Logistics
- WP3: Circular Economy
- WP4: Markets & Consumers of forestry products
- WP5: Training

In 2023, we highlight four projects to which Altri contributed not only with its knowledge and experience in forest management but also in the area of research and development.

### WP 1.1 Genetic improvement and forest reproductive material

This project aims to develop high-productivity plants resilient to climate change, pests, and diseases, as well as to ensure the preservation of natural forest ecosystems, with high biodiversity value.

Main actions under development:

- Development of hybrid eucalyptus through new crosses
- Rooting hybrids
- Hybrids rescued from tests and hybrids installed in tests
- *Eucalyptus globulus* more resilient and new crosses
- Expedited characterization of wood properties in hybrids with 7 years
- Micropropagation of strawberry tree and eucalyptus species
- Conservation of genetic resources of other species of high conservation value



### WP 2.5 Enhance electric motorization in the forestry industry in Portugal

This project aims to promote and adopt electric vehicles and machines, powered by hybrid or hydrogen engines for forestry and transport operations, thus reducing the carbon footprint of these operations.

Main actions under development:

- Holding meetings with representatives of the main brands of operating machines existing in Portugal
- Sessions with all stakeholders in the project to exchange ideas and analyze the machines available for study



## 3.1 Forest Management

### Hybrid machines in the forest

Altri and forest machinery manufacturers are committed to developing equipment with lower emissions of harmful gases. This effort includes not only the construction of more efficient engines but also the transition to hybrid and electric equipment.

The introduction of hybrid equipment has been made through partnerships with service providers, which guarantee an annual workload in exchange for the investment made. The equipment under development is provided with hydraulic technology, coupled and complementary to the diesel engine. The basic idea that supports most of this equipment is that it is the hydraulic system that provides the necessary driving force for the execution of a certain task, thus keeping the diesel engine at constant speed. As a result, smaller engines can be used, optimizing power and torque without changing their working regimes and revolutions.

This change process is underway, and the first results demonstrate a significant reduction in fossil fuel consumption. In addition to the development of hybrid machines, Altri is attentive to market innovations, including the planned launch of fully electric, hydrogen-powered forestry machines in the coming years.

### WP 3.6 Soil biome program: Improve the soil-plant ratio

The main objective of this project is to test biostimulants in eucalyptus to reduce the use of mineral fertilizers and chemical treatments.

Main actions under development:

- Test installed on the Calha do Grou property with *Tricodermas*, mycorrhizae, and bacteria;
- Exploratory test of drone use for biostimulant application.

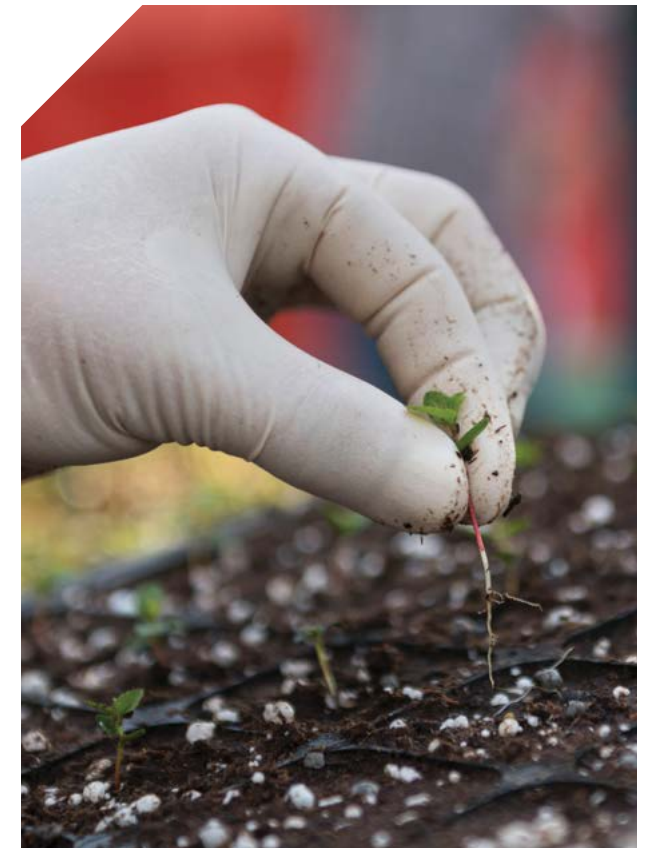
### WP 5.1. Forest Knowledge Academy

The main objective of this project is to develop and implement training modules and actions to promote the training and recognition of skills of operators and managers of forest operations, applying concepts of Forest 4.0 in forest exploitation (wood and biomass) and forestry (land preparation, planting, and management).

Main actions under development:

- Sending a questionnaire – Training needs and priorities in the Forest Industry to 36 entities;
- Meeting with Focus Group for (co)design of training actions;
- 1st Training Action “Mobile Applications for Forest Inventory”, on October 11 and 12, 2023.

The 11 new products, processes, and services resulting from this cooperation will contribute to more sustainable forest management, improving the efficiency of industrial processes and competitiveness of the forestry sector.



### 3.1 Forest Management

#### Coordination, Dissemination and Exploitation

Resilient forest material  
Forestry adapted to climate change  
Digital technologies for forest management



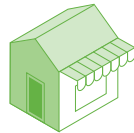
#### Training

Forest Knowledge Academy



#### Markets & Customers of Forest Products

Strengthening of forest markets, including non-woody products  
New forest-based products & ecodesign



Forest Value Chains

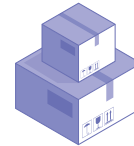
#### Management of Resilient Forests

Resilient forest material  
Forestry adapted to climate change  
Digital technologies for forest management



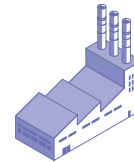
#### Operations and Logistics Sustainable

Electrical scanning and monitoring  
Adapted forestry machinery and roads



#### Circular & Resilient Industry

Efficient use of resources  
Reuse of industrial by-products  
Biomass logistics



Key processes in forestry value chains and priority needs/opportunities

## 3.1 Forest Management

### Residual biomass parks

With the **Altri Bonds 50** initiative, Altri Florestal created a system for collecting residual and agricultural forest biomass, through collaboration protocols with the municipalities of Penacova, Pombal, and Cantanhede. Through the recovery of residual forest biomass, this innovative program aims to reduce the risk of fires, being a reflection of mutual help and connection between the industry, the forest sector, and the communities of these areas.

Residual biomass originated in so-called “urban green” is characterized mainly by the leftovers from the pruning of trees in urban spaces, gardens, and other garden spaces, whether they belong to private or public owners. These wastes represent a complex logistics and high burden for certain municipalities and do not have any kind of recovery.

Thus, the Group proposes to mitigate these fire risks by

removing the disordered biomass from the land, reducing the number of fires, and channelling this biomass to the production of electricity. In these parks, citizens can deposit free of charge their forest waste or agricultural waste, and these materials are then collected and forwarded to the Altri Group energy production plants. The success of the project is thus dependent on the ability to raise awareness and sensitivity in the population of the importance of implementing best practices in biomass management.



## 3.1 Forest Management

### Biological control

Maintaining healthy forests is an important focus of the Group. Through integrated protection, efforts are concentrated on the management of biotic threats such as pests, diseases, and weeds and combine the best means available to keep eucalyptus stands healthy, resilient, and productive.

*Eucalyptus gonipterus platensis* is a defoliating insect that feeds on the leaves of any species of the Eucalyptus genus. Its action can result in great productivity losses, and even in more serious cases, the destruction of the settlement can occur. To reduce the chemical struggle applied to Altri Florestal eucalyptus forests, the Group decided to resort to the release of a new natural enemy, *Anagonia lasiophthalma*, an insect in the family of flies that parasitizes and kills the larvae of the eucalyptus weevil.

Studies with this biological control agent began in 2017 and, in the following years, the effectiveness of the control of the pest and the possible risks of its introduction into nature were analysed. At the end of 2022, authorization was obtained from the regulatory authorities for the release of the fly *Anagonia lasiophthalma*. The year 2023 marked the beginning of the release of more than 5 of these natural enemies in the field, with the expectation of reducing the damage caused by this insect in a natural and environmentally safe way.

In addition to this species, in the Forest Health bio-factory, more than 100 thousand natural enemies specific to pests are produced annually, which, once released in the field,

assist in the natural control of target pests, making biological control one of Altri's main strategies to fight forest pests.



## 3.1 Forest Management

### Gel Application in the field

Prolonged and sharp droughts are factors that limit the growth and development of forests and restrict the window of opportunity for the execution of planting operations. Given this scenario, the Group has been testing several hydroabsorbent compounds that, when applied to the plantation, allow to retain, and make water available to plants. The measures implemented under this project include tests of survival in nursery, product application, restoration of equipment and validation of the use of other equipment. It is now intended to operationalize its application in the field, to prolong the spring planting and anticipate that of autumn.



OPTIMIZATION  
OF FOREST  
MANAGEMENT  
PLANNING

DIGITAL TRANSFORMATION



The development of the tool, in conjunction with the Altri Florestal team, included three main aspects:

- Simulation of different cutting strategies to balance needs with sustainable growth
- Comparative analysis of impacts and return of different scenarios
- Optimization of yield through Mathematical Modelling and Linear Programming

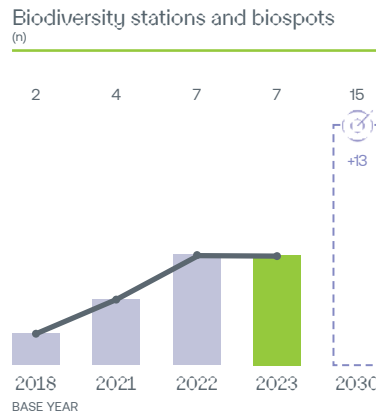
## 3.2 Biodiversity and Ecosystems

# 3.2 Biodiversity and Ecosystems

15 LIFE ON LAND  
COMMITMENT  
**2030**  
Material topic 3-3 304

- Biodiversity Stations
- Altri Sustainability Day

Develop 13 biodiversity stations and biospots



Biodiversity conservation and promotion is one of the priority themes for Altri, especially in areas of high ecological value. Ecosystem services are an opportunity provided by forests and increase the value of Altri's products. These ecosystems act as a shelter for biodiversity, provide natural resources, boost carbon sequestration, and contribute to mitigating the effects of climate change, besides other benefits. Recognizing critical links between humans and nature is the key to effective conservation.

The degradation of ecosystems is a risk to the organization due to Altri's dependence on its services, particularly in the obtention of raw materials. For this reason, Altri intends to prevent, mitigate, and remedy the possible adverse impacts of its activity on the biodiversity of the forest, as well as in manufacturing facilities.

Altri's biodiversity strategy includes the creation and management of biodiversity stations, promoting the increase in conservation areas, the implementation of good forest management practices, and the optimization of the forest, ensuring the sustainable use of resources.

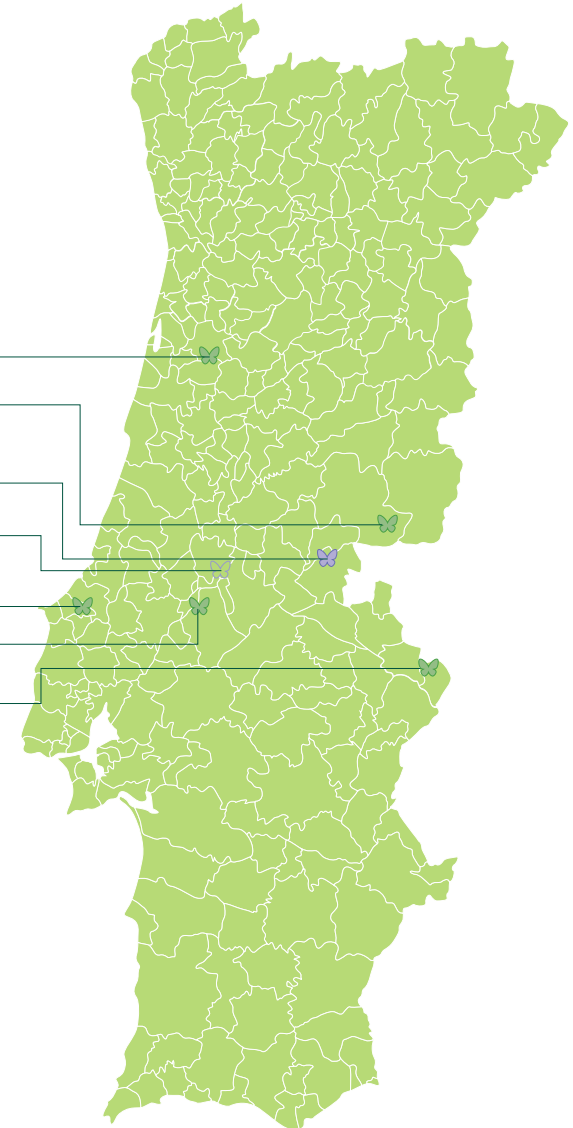


In order to implement the Group's biodiversity strategy, the Altri Diversity Program was created, whose long-term planning allows the conservation and promotion of biological diversity and landscape, protecting and recovering the natural spaces present in forest areas under Altri Group management. Under this comprehensive Program, all biodiversity-related projects are developed.

## Biodiversity Stations

Biodiversity Stations (EBIO) are an example of the implementation of this program. These are classified habitat areas with high conservation value, actual or potential. Altri's work, within Altri Diversity, is based on the promotion of natural values in the different geographies where it has areas under management so that it can rehabilitate and promote them. It is in the Group's interest to associate species with their habitats, to foster the preservation and improvement of habitats and, consequently, the number and diversity of species.

### 3.2 Biodiversity and Ecosystems



- EBIO Cabeço Santo
- Center of interpretation Galisteu Tagus International Natural Park
- Biospot Biotek
- Biospot Living Science Center of Constância
- EBIO Quinta do Furadouro
- EBIO Ribeira da Foz
- EBIO Palmeiro

### Altri group

- Biodiversity Stations
- BIOSPOTS

## 3.2 Biodiversity and Ecosystems



### EBIO Cabeço Santo

As a result of the partnership between the Associação Cabeço Santo and ALTRI Florestal, the Biodiversity Station of Cabeço Santo aims to achieve the following objectives:

- Consolidate the conservation efforts of habitats and species in one of the sites of Ribeiro de Belazaima, with the greatest challenges of re-naturalization;
- Provide the community with a space for visitation and discovery of the unique natural nooks of Ribeiro de Belazaima and lesser-known species;
- Foster the development of partnerships with the scientific community for the use of the Biodiversity Station as a place for biodiversity monitoring and evaluation of ecosystem services.



### BIOSPOT Living Science Center of Constância

Since 2004, the Centre for Living Science of Constância has been dedicated to scientific dissemination in the field of astronomy and is located near one of the forests under Altri Florestal's management.

This good vicinity gave rise to a partnership between the two entities for the joint realization of events that combine forest spaces with astronomical observation.

It was decided to extend this partnership to the dissemination of biodiversity through the implementation of an interpretative path that passes through the forest of Altri Florestal.



### EBIO Quinta do Furadouro

The Biodiversity Station (EBIO) of Quinta do Furadouro is an almost circular pedestrian path of 1 km, with 8 panels scattered along the way, where you can consult scientific information on biological diversity. Panels are a kind of field guide, where you can find images and comments about common plants and animals.

The first part of the path passes through an area of Mediterranean brushwoods, corresponding to an area of natural regeneration of the vegetation after the restoration of the native vegetation. Next is a detour along the Ribeira dos Rouxinóis, covered by native trees and shrubs, where oaks, chestnut trees, and hazelnuts dominate the landscape. On the way back, there is a more open area, in which it is possible to observe the typical diversity of meadows.



## 3.2 Biodiversity and Ecosystems



### EBIO Ribeira da Foz

The Ribeira da Foz is not only extraordinary for its landscape richness but also for the history and legacy of its use by the local populations of Moinhos and Lagar. Next to the brook, there were six mills and a water-driven olive oil mill.

The operation of a water-driven olive oil mill is the same as the basis of Azenha's work: a spinning wheel, by the water that comes through the water channel (levada) and passes through the outer wheel (bucket) or an inner wheel and a metal plate with a stone mills to crush the olives.

The word Azenha (from the Arabic Assaniya) is the designation usually attributed to water mills equipped with an outer wheel.

Now the old Levada leads visitors through the riparian forest, having assumed another noble function – the knowledge of biodiversity.



To better document what is done to protect, promote, and restore biodiversity, the Altri Group has been responding to the commitments of the *Act4nature* initiative since 2021. This initiative, developed by BCSD Portugal within the framework of *Act4nature* International, comprises 10 transversal commitments to all signatories and individual commitments. For more information on this initiative see Annex **H. Following Act4Nature**.

## 3.2 Biodiversity and Ecosystems



### Center of interpretation Galisteu Tagus International Natural Park

The Monte do Galisteu is a forest area inserted in the Natural Park of Tagus International. The natural richness of this area, especially the endangered bird species, implies a management focused on the preservation of biodiversity and a specific planning of forest interventions.

Here you can find several species of fauna and flora, where the birds stand out. Many of the 50 species of birds in the area are at risk of extinction, as is the case of many birds of prey. This group is particularly vulnerable being affected by several factors linked to human activities such as habitat loss and fragmentation, hunting, poisoning from pesticide use, and electrocution caused by power lines.

The conservation of bird species depends on the joint effort of the whole community and necessarily involves the implementation of active measures to preserve their habitats.



### BIOSPOT Biotek

At north of Biotek's manufacturing perimeter appears the opportunity of creating an interpretative trail from the requalification of the vegetation of Ribeira de Vale das Vinhas from the diversity of species and habitats.

The first studies on the monitoring of the fauna and flora present on the route confirmed the diversity of species with a special emphasis on the observation of a new species of bee in Portugal - Two-Spotted White-Faced Bee - *Hylaeus bifasciatus*.

This species is distinguished by the larger size and by the two white chicks on the chest. This bee collects only pollen from garlic flowers.



### EBIO Palmeiro

The Biodiversity Station of Palmeiro is a walking path of 1.5 km, with 8 panels scattered along the way for consultation of scientific information about biological diversity.

Integrated into the Natural Park of Serra de São Mamede, the Biodiversity Station of Palmeiro crosses brushwoods and agricultural fields, as well as the riparian gallery that goes along the brook Ribeira de Soverete.

This privileged location and great diversity of habitats make it a particularly rich route in native fauna and flora.

### 3.2 Biodiversity and Ecosystems

#### Altri Sustainability Day

To mark the creation of the “National Sustainability Day”, Altri created an initiative around this celebration, in line with the Group’s commitment to promoting environmental awareness and sustainability, especially in younger generations.

On September 25, 2023, at Monte do Galisteu - owned by the Group -, more than 30 children and young people representing the future participated actively in activities designed to explore and understand the biodiversity of forest areas, highlighting the importance of their preserva-

tion. The participants were grouped to visit the three stations created with different themes and group dynamics to stamp a passport developed by the organization.



## 3.2 Biodiversity and Ecosystems

1. **“Flying over the Tagus”**  
Observation of emblematic bird species of the protected area.



2. **“Treasures of the Altri Forest”**  
Presentation of raw materials and products related to the industry.



3. **“Kids, I shrunk the house!”**  
Construction of an insect hotel.



## 3.2 Biodiversity and Ecosystems

The Altri Sustainability Day initiative is a form of sustainability communication, through an educational approach and providing practical knowledge about forest biodiversity and sustainable management of forest areas, practiced by the Altri Group. The communication strategy was implemented through the incorporation of classroom teaching activities and sought to promote awareness and stimulate the transition to sustainable behaviors, aligned

with the Sustainable Development Goals (SDGs) near the future generation. The event culminated in a [video](#) demonstrating the activities, as well as the perception of some participants about the day and the impact of the theme and the activity of Altri Group. Also, we publicized the purpose of the initiative and its role in the Group's integrated strategy for the area of sustainability.

At a transversal level, Altri bets on transparency and quality of information to demystify public perception of this industry.



### 3.3 Climate Change and GHG Emissions

## 3.3 Climate Change and GHG Emissions

**13 CLIMATE ACTION**

**COMPROMISSO 2030**

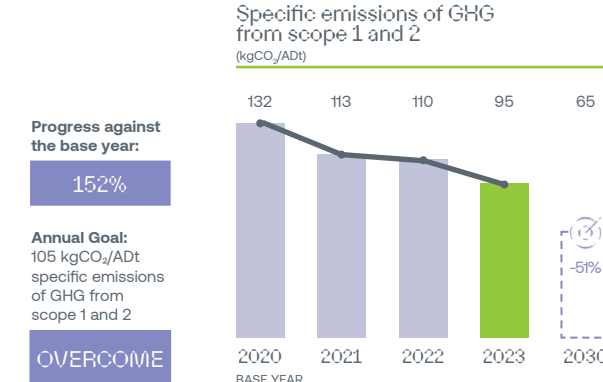
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TCFD

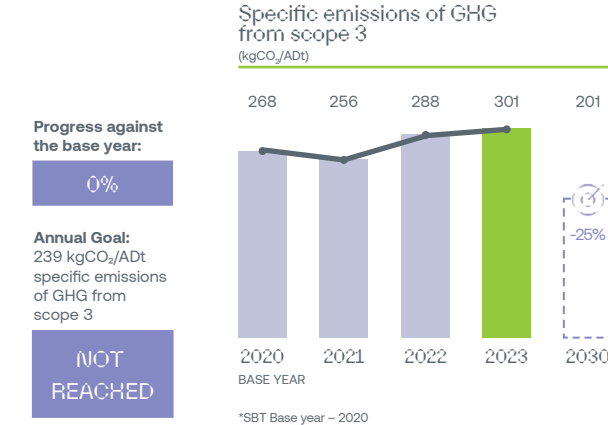
GHG Emissions

LCA study / Life Cycle Assessment

Reduce specific emissions of GHG from scope 1 and 2 by 51%\* (kgCO<sub>2</sub>/ADt)



Reduce scope 3 emissions by 25%\* (kgCO<sub>2</sub>/ADt)



### 3.3 Climate Change and GHG Emissions

Climate change is one of the biggest threats the world faces today. Combating climate change, in the long-term, implies a multi-sector strategy including the reduction of greenhouse gas emissions, increasing energy efficiency, supporting renewable energy, reducing food waste and resources, and promoting biodiversity conservation. 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.

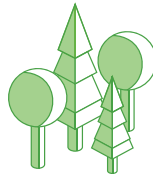
For Altri, climate change is a material theme, being considered in its global risk assessment and more in detail, through reporting alignment under the Task Force on Climate-Related Financial Disclosures (TCFD). The identified risks include operational disturbances resulting from prolonged periods of rain and/or drought, or other extreme weather events that may also impact the forest. At the same time, through the application of new technologies, research, and development of new forest materials, more resilient to climate change, Altri can promote the mitigation of this problem.

The GHG emissions and removals resulting from the company's activity constitute the impacts of Altri on the climate transition:



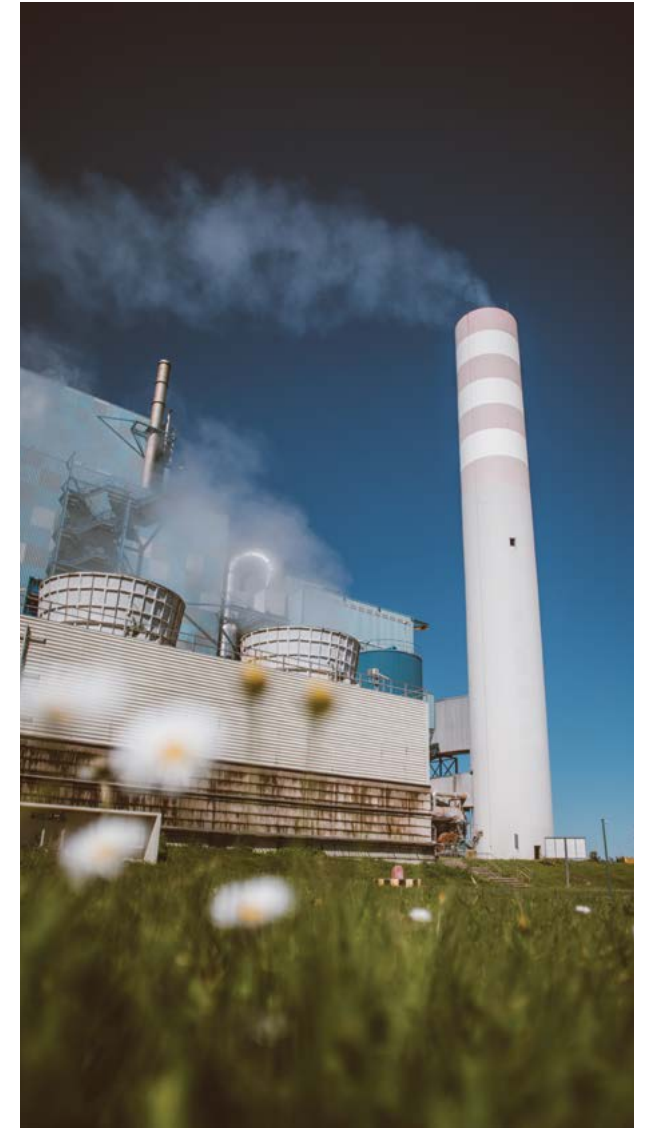
#### Emissions:

- 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



### 3.3 Climate Change and GHG Emissions

Altri presents a strategic approach, transversal to the entire organization, in the management of its impacts, risks, and opportunities. Seeking to manage the impacts of cli-

mate change, the Altri Group aims to implement actions with an impact on reducing greenhouse gas emissions:



- Replacement of the Altri fleet by vehicles with lower GHG emissions
- Replacement of forestry machinery
- Search for alternative fuels for use in the lime kiln, Biotek, and Celbi
- Elevator Pitch with proposals for reducing GHG;
- The Group currently operates 94% of its renewable energy-based activities.

In industrial units:



#### caima

- Caima Go Green Project, construction of a forest biomass cogeneration plant, allowing the decarbonization of Caima.

#### biotek

- Various optimizations in the operation of the lime kiln
- Repairs made at the annual shutdown for system improvements (burners, lime kiln, filters).
- Definition of the actions for the use of process methanol, replacing natural gas.

#### celbi

- Implementation of daily monitoring of CO<sub>2</sub> emissions routine, with the emission source flows for each of the plants.
- Preventive Maintenance Plan for regular interventions, to reduce the consumption of natural gas.
- Burning in the lime kiln of 100% methanol produced in the wood baking process with reduced natural gas consumption;
- Optimization of Process Performance
- Gigaliners - Transport of the fibers between Celbi and the Maritime Port of Figueira da Foz.



### 3.3 Climate Change and GHG Emissions

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 the

exposure to climate risks in the short, medium, and long term, leading to more informed decision-making about where and when investors should allocate capital.

For more information on this report, see the TCFD table in **Annex G. Task Force on Climate-Related Financial Disclosures (TCFD)**.



### 3.3 Climate Change and GHG Emissions

## GHG Emissions

Considering the progressive international requirements to decarbonize the industry and achieve carbon neutrality, innovation and the adoption of technologically advanced equipment are becoming critical, as well as processes that require the emission of low or no amounts of carbon and have high energy efficiency.

As referred before, to achieve its GHG emission reduction objectives, in the management and planning of its decarbonization strategy, the Altri Group monitors its emissions, implementing several initiatives and projects with an impact on its reduction.

All the business areas that currently belong to the Altri Group were considered for the calculation of GHG emission, namely forest production, wood, and residual forest biomass supply, the three cellulosic fiber production units and the value chain.

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

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

## Science-Based Targets



The Altri Group undertakes to reduce GHG emissions by 2030:

- Scopes 1 and 2 by 51% (tCO<sub>2</sub>/ADt), resulting in a 43% reduction in absolute emissions;
- Scope 3 by 25% (tCO<sub>2</sub>/ADt), resulting in a 13% reduction in absolute emissions.

# -1,5°C

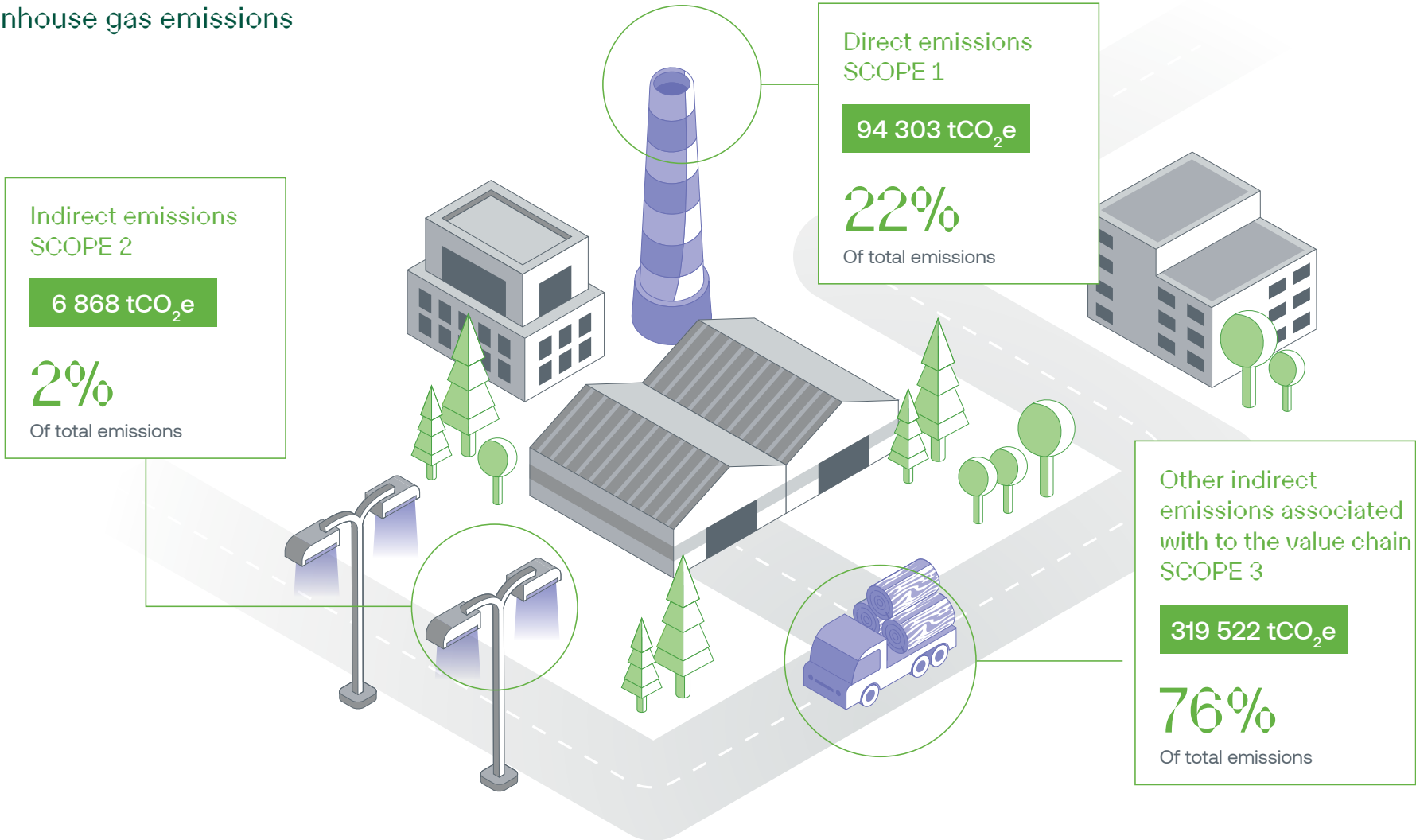


Climate change  
and greenhouse  
gas emissions

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 compared to the base year of 2020.

### 3.3 Climate Change and GHG Emissions

## Greenhouse gas emissions



### 3.3 Climate Change and GHG Emissions

	tCO <sub>2</sub> e		
	2021	2022	2023
<b>Scope 1 GHG emissions – Direct emissions</b>			
Direct emissions from operations	103,250	96,629	94,303
<b>Scope 2 GHG emissions – Indirect emissions</b>			
Indirect emissions – emissions associated with the acquisition of electricity (market-based)	23,392	28,972	6,868
Indirect emissions – emissions associated with the acquisition of electricity (location-based)	22,402	15,113	5,591
<b>GHG emissions from Scope 3 – Other emissions</b>			
C1. Purchases of goods and services	115,181	137,489	125,370
C3. Activities related to fuels and energy not included in Scope 1 and 2	23,831	22,673	17,809
C4. Upstream transportation (wood and chemicals)	80,875	61,615	72,888
C5. Treatment of waste generated from operations, including transport	2,172	846	853
C9. Downstream transportation and distribution (product)	43,650	46,815	47,291
C10. Processing of sold products	58,679	59,557	55,311
<b>Total – GHG emissions from Scope 3</b>	<b>324,388</b>	<b>328,995</b>	<b>319,522</b>
<b>Total – GHG emissions from Scope 1, 2 (market-based) and 3</b>	<b>451,030</b>	<b>454,596</b>	<b>420,693</b>
Other - avoided emissions associated with the sale of electricity (market-based)	(15,353)	(27,100)	(25,339)
Other - Carbon reservoir in the forest	(8,176,442)	(8,275,658)	(8,071,927)
Other- Biogenic emissions from combustion of non-fossil fuels (tCO <sub>2</sub> biogenic)*	1,381,374	1,425,049	1,543,721

### “Caima Go Green” Project

In 2023, Caima, one of the industrial units of the Altri Group, completed the construction of a new waste biomass boiler, which allowed it to abandon the use of fossil fuels in its production process. With Caima’s new boiler, Altri reinforces its commitment to the Group’s sustainability goals and targets, aligned with the United Nations SDGs, and with the expectations of its stakeholders. The environmental objectives that this project proposes are explained in greater detail in subchapter **3.4 Renewable energy and Energy efficiency**.

### Project for collecting NCGs and SOGs

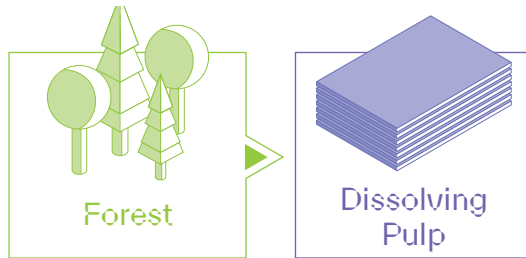
Through the use of new technologies for the control of odorous gases from industrial plants, it is possible to recover these gases for energy production, namely non-condensable gas (NCG) and Stripper Off Gas (SOG). This type of system is currently present in the industrial units of Celbi and Biotek. In addition to the energy use of these gases and the reduction of emissions, there is also the benefit of reducing the odors emitted, typical of the sector industry.

### LCA Study - Forest and Cellulosic Fibers of Caima

The Life Cycle Assessment (LCA) study aims to quantify the environmental impacts of new products developed throughout the different phases of their life cycle, considering the resources used (materials, energy, water) and the emissions generated.

### 3.3 Climate Change and GHG Emissions

This study is based on NP EN ISO 14040:2008, and NP EN ISO 14044:2006 standards and uses Sphera solutions GaBi software as support. A cradle-to-gate approach was used, including all stages from forest activities to dissolving pulp production:



The “Forest” block includes the forest activities: Operations necessary for the production of eucalyptus wood that feeds the production process of the “Dissolving Pulp” block. The “Dissolving Pulp” block includes the industrial process of producing dissolving pulp.

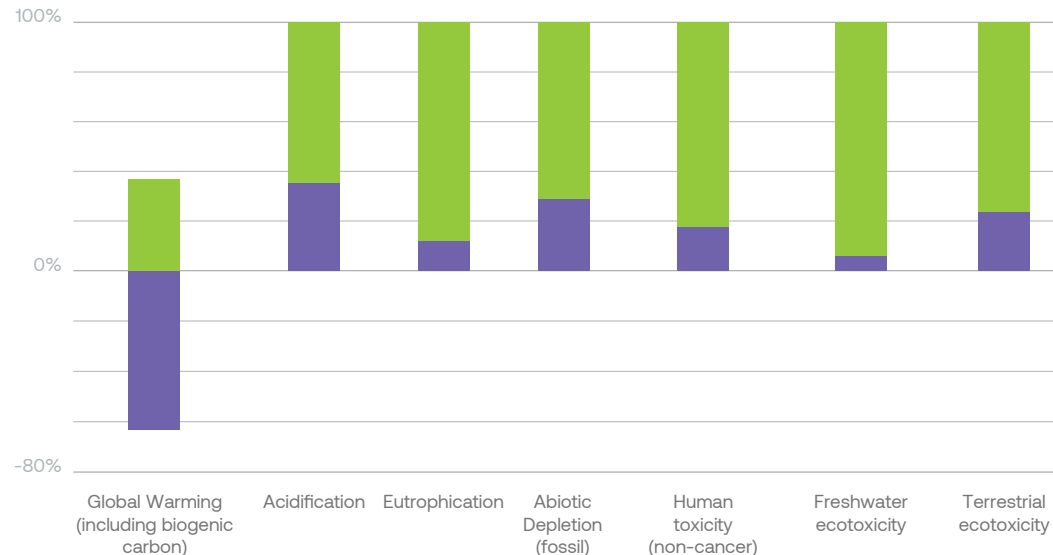
In this type of study, the data representing the main consumption and emissions of a productive system

are converted into categories of environmental impact. The categories evaluated as most significant are:

- climate change
- acidification
- eutrophication
- fossil depletion
- water shortage

For each block of the process, its contribution by environmental impact category is presented:

Categories of environmental impact  
Distribution by block



### 3.4 Renewable Energy and Energy Efficiency

## 3.4 Renewable Energy and Energy Efficiency

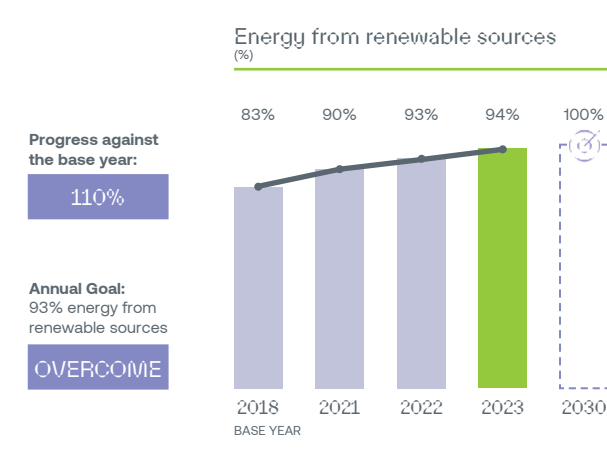
**7 AFFORDABLE AND CLEAN ENERGY**

COMMITMENT **2030**

Material topic 3-3 302

100% of the primary energy consumed in the industrial units of Altri is of renewable origin.

- ↘ Caima Go Green Project
- ↘ Self-Consumption Production Unit (UPAC) Biotek
- ↘ Measures to improve energy efficiency
- ↘ Digital Twins



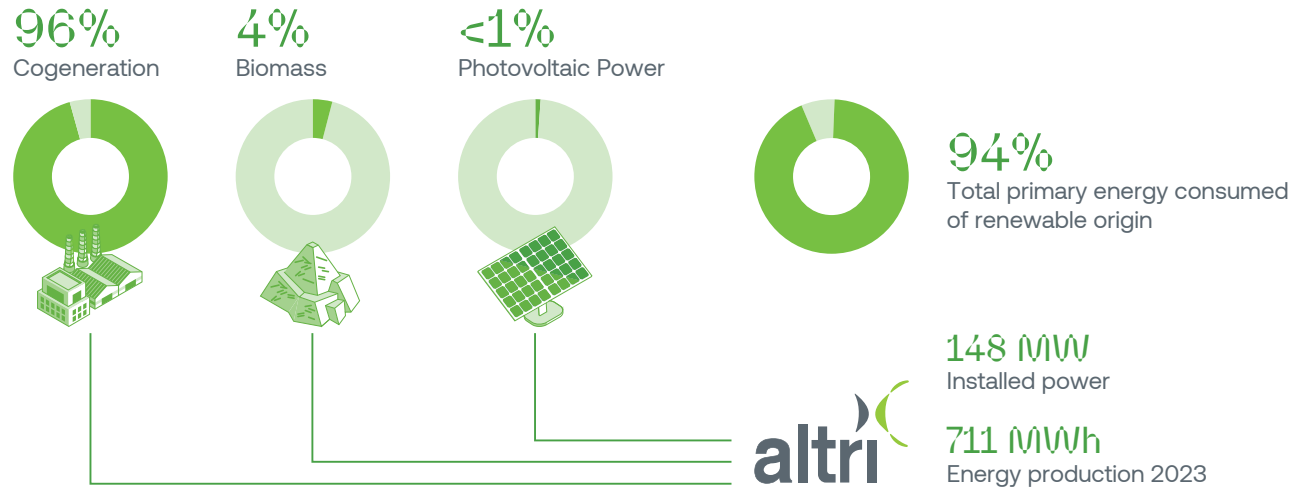
To reduce greenhouse gas emissions, Altri has been working to improve the energy efficiency of its production processes through a continuous reduction in energy consumption. The use of renewable energy throughout all of Altri’s activities is one of its objectives, as well as the production of as much renewable energy as possible. These

actions contribute to climate change mitigation, as well as enabling financial optimization.

All industrial units are certified by ISO 50001 – Energy Management System.



### 3.4 Renewable Energy and Energy Efficiency



Through the production of renewable energy, Altri manages to guarantee 94% of non-fossil primary energy in its industrial units.

#### Caima Go Green Project

In 2023, Altri issued Green Bonds with a total value of 50 million euros (explained in more detail in subchapter **2.6 Responsible Investment (Green Bonds)**) for the installation of a new boiler and a new turbo generator in Caima, that operates with the residual forest biomass.

Caima, a biorefinery of the Altri Group, has invested in the construction of a new residual biomass boiler, which will allow the abandonment of fossil fuels in its production process, to guarantee full energy autonomy from exclusively renewable sources. This facility will also be essential for the future recovery of acetic and furfural acids of renewable origin.

It thus becomes the first Iberian company in its industry to reach this historic milestone. This new plant will replace the previous residual forest biomass boiler.



### 3.4 Renewable Energy and Energy Efficiency

#### Self-Consumption Production Unit (UPAC)

The installation of several UPACs in the Group's industrial units is underway, which correspond to installations for the production of electricity from solar energy, intended for self-consumption. This UPAC integrates photovoltaic panels, to reduce the scope 2 emissions associated with its activity.



The implementation of energy efficiency measures reduces energy consumption and associated greenhouse gas emissions.

#### Improvement of Energy Efficiency

COMMITMENT  
**2030**



Considering the correlation between increasing energy efficiency and reducing GHG emissions, the Group has several projects aimed at achieving energy efficiency in Altri's processes, related to the consumption of electricity in all plants, and monitors them to analyze causes and subsequent measures to be implemented.



## 3.4 Renewable Energy and Energy Efficiency

In this area, in 2023, the following measures were developed and implemented to increase energy efficiency:



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

- Development of various actions to reduce consumption of IWWTP
- Optimization of the operation of several facilities to reduce energy and steam consumption



- Execution of the project for collection and burning of odorous gases, which allows the energy recovery of the plant's diffuse emissions.
- Monitoring of electricity consumption by areas and prioritization of the implementation of reduction measures in areas of higher consumption
- Optimization of the operation of several facilities to reduce energy and steam consumption



- Burning methanol (by-product of pulp production) in lime kiln, replacing natural gas
- Monitoring of electricity consumption by areas and prioritization of the implementation of reduction measures in areas of higher consumption of energy and steam
- Development of actions to incorporate the extra consumption of the new IWWTP



DIGITAL  
TWINs

DIGITAL TRANSFORMATION



Development of a Digital Twin of Celbi TG4 Turbine, with an external entity, that allows the simulation of the operation of the turbine, creating possible scenarios of operating conditions and evolution of its performance. It is expected that this tool will allow:

- Early identification of performance deviations;
- Support for decision-making in operational or maintenance planning context

In the long term, it is expected to replicate the project in other manufacturing facilities.

## 3.5 Water Management



COMMITMENT  
**2030**

Tópico material 3-3 303

-50%

Reduce the specific use of water (m<sup>3</sup>/ADT) in Altri's industrial units by 50%

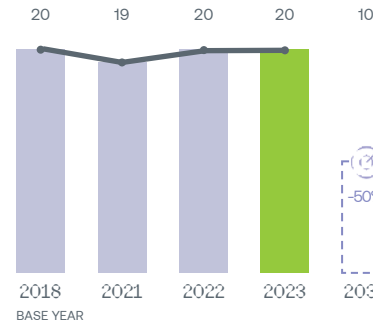
- ↳ Tools to support decision-making
- ↳ Use of water
- ↳ Water and steam balance

Specific water use (m<sup>3</sup>/ADT)

Progress against the base year:  
0%

Annual Goal:  
17 m<sup>3</sup>/ADT of specific water use

NOT REACHED



-60%

Reduce the organic load (COD, kg O<sub>2</sub>/ADT) in Altri's industrial effluents by 60%

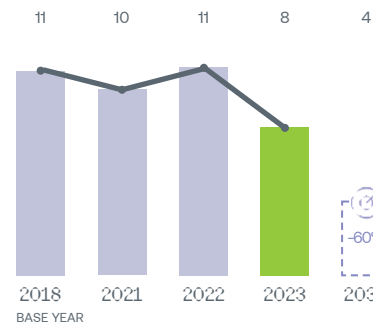
- ↳ Celbi's IWWTP

Organic load in industrial effluents (kg O<sub>2</sub>/ADT)

Progress against the base year:  
150%

Annual Goal:  
9 kg O<sub>2</sub>/ADT in industrial effluents

OVERCOME



# 3.5 Water Management

Climate change, water pollution, and degradation of natural resources are factors that contribute to the scarcity of water reserves. Given its industrial nature, the Group uses water in the production of cellulosic fibers and is able, through its activity, to impact this natural resource.

For this reason, and to continue its business, Altri considers that it has an increased responsibility to manage this resource responsibly. This management is not only limited to higher efficiency and recycling practices to reduce its use but also involves the control of its discharge, carried out to ensure the environmental quality of the produced effluent and to minimize any impacts on the environment.

In turn, the implementation of new technologies that promote efficiency and loss reduction associated with water use presents itself as an opportunity that the Altri Group is already exploring.

## 3.5 Water Management



### Water for the Society

- Critical for promoting the health and well-being of communities, considered a human right
- Vital for natural ecosystems
- It is a finite resource, the availability of which is threatened
- Fundamental to various human activities and to ensure sustainable development



### Water for Altri

- Critical to business success, presenting financial and operational risks
- Its use is increasingly a concern for its stakeholders, including investors, who follow the Group's water management practices and water-related risks

It is urgent to mitigate the impact of these challenges through resilient systems since the supply of goods and services from water systems is interconnected, influencing the forest and industry and is fundamental to the sector. Altri implements practical actions and strategies for water management, measuring and monitoring the progress made in achieving the defined objectives for reducing water use and increasing the quality of discharged effluents. The key to the prosperity of the Group, ecosystems, and water-based activities is to contribute to collective solutions that aim to strengthen the capacity of water resources to resist and adapt to global changes.

For more information on water risks and Altri's response, see Annex **G. Task Force on Climate-Related Financial Disclosures (TCFD)** of this report and the response to **CDP Water Security**.

### Tools to support decision-making

Altri began using the Water Resilience Assessment Framework (WRAF), a United Nations tool, to support resilient decision-making and strategy-setting, to prevent water-related shocks and tensions from turning into crises. Thus, the Group's long-term resilience increases, given the dynamic changes in water systems and extreme events caused by climate change.

For a water-related risk assessment, it is necessary to define the boundaries of the system on which Altri relies and analyze the watersheds of its direct operations, namely the basins where the industrial units of the Altri Group are located. In addition to the availability of water in quantity and quality, other direct impacts will have to be taken into account, such as the availability of water for the navigation of certain waterways, which are used in the transport of the product to the customer, for example, and the availability of water for the forest.

To make a complete risk analysis, several time horizons should be analyzed:

- **short-term disruptions** (no change in current conditions, relative to the past)
- **gradual long-term disruptions** (gradual changes in average conditions, such as changing annual rainfall or increasing average sea water level)
- **sudden long-term disruptions** (radical changes that can lead to system adjustment - e.g. fires)

Assessing the water systems on which the Group depends allows the selection of an appropriate, persistent resilience strategy, adapted to system changes and transformative to overcome sudden disruptions. This analysis takes into account the socioeconomic components (e.g. access to water), biophysics (e.g. soil cover, discharges), and institutional (corruption, regulation, compliance), in various time horizons.

## 3.5 Water Management

Thus, it is natural that the measures implemented by Altri for monitoring, improving efficiency, and reducing the organic load of effluents focus on its three mills. All water use and quality are continuously monitored in each of the industrial units.

- **Biotek** collects water from the Tagus River for use in the pulp manufacturing process and also supplies treated water to other industrial mills in the surrounding community.
- **Caima** collects water from the Tagus River and is responsible for the treatment of effluents from the Municipality of Constância, promoting the interaction with the surrounding community.
- **Celbi** captures water on the Mondego River and in underground water holes for use in the process, along which there are several loop closures to reduce the maximum amount of fresh water collected.

Several practical projects were developed to increase Altri's resilience during 2023. The strategic actions implemented to increase water resilience aim to:

### Avoid waste of water for effluent

- Survey of the needs for water recovery
- Increased sealing of circuits
- Use of water from other locations in the process

### Decrease hydraulic loads and flows

- Checking the flow rates of all water circuits and checking possible downstream users of certain circuits
- Water reuse
- Reduction of flow

### Increase the quality of the discharged effluent

- Modernization of the IWWTP at Celbi
- Closure and improvement of diffused liquid emission circuits, combined with the use of cutting-edge technology at Biotek IWWTP

## Celbi's IWWTP

To respond to the environmental control restrictions and capacity adequacy of CELBI's IWWTP depending on the current sustainable production capacity of the plant, the remodeling of the secondary treatment facility was a project that began in late 2021 and was concluded in 2023. This environmental project represented a global investment of 16.5M€.



### 3.5 Water Management

To respond to the environmental control restrictions and capacity adequacy of CELBI's IWWTP depending on the current sustainable production capacity of the plant, the remodelling of the secondary treatment facility was a project that began in late 2021 and was concluded in 2023. This environmental project represented a global investment of 16.5M€.

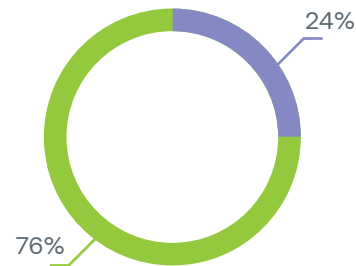


It should be noted that Altri is currently a global benchmark in the specific use of water, with a value of 20 m<sup>3</sup>/ADT, the reference interval recommended in the BREF of the sector being between 25 and 50 m<sup>3</sup>/ADT.



On the other hand, the measures for improvement of the quality of the discharged effluent allowed Biotek, in 2023, to recycle 6% of the treated effluent to the water treatment plant, and thus capture less water and discharge less effluent to the Tagus River.

#### Water use



- % of captured water returned to the environment
- % of captured water consumed in the product or evaporated



WATER AND  
STEAM BALANCE

DIGITAL TRANSFORMATION



Development of an operational monitoring dashboard of the various water and steam balances of the plant, with the creation of KPIs that allow

- Early identification of deviations, with visibility of critical points and defined goals;
- Streamline of decision-making.

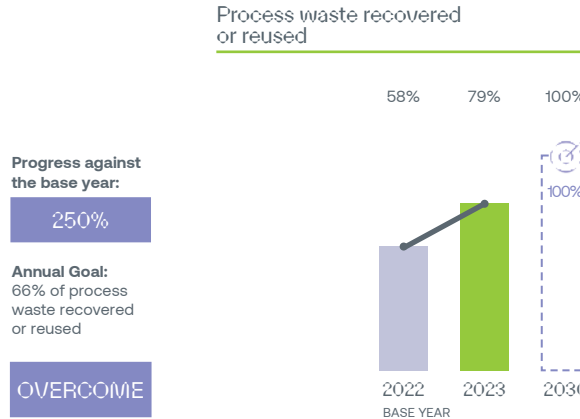
### 3.6 Waste Management and Circular Economy

## 3.6 Waste Management and Circular Economy

12 RESPONSIBLE CONSUMPTION AND PRODUCTION  
COMMITMENT 2030  
Material topic 3-3 306

100% 100% of process waste recovered or reused.

- Waste reduction actions
- Circular Economy



\*Base year 2022, after revaluation without GreenVolt accounting



As a producer of cellulosic fibers, a precursor of renewable materials that are increasingly crucial such as paper and manmade cellulosic fibers, as lyocell, and viscose in the textile industry, to the transition from fossil-based products the Altri Group considers itself strategically positioned for leadership in a circular future.

Thus, Altri considers that innovation and product development that incorporate the concepts of circular economy are highly significant. In this sense, Altri has invested in the

exploration of new raw materials, based on its waste, in products with circular economy potential, and the reuse of by-products, allowing the company to make more efficient processes at reduced costs.

In addition, the Group focuses on the substantial reduction of waste generation associated with the manufacture of its products, complying with the principle of cascading use. To this end, several actions have been carried out as the production of renewable energy from residual

biomass, or the use of residual organic sludge from the production process, as a source of organic matter in their plantations.

Pollution and contamination of air, water, and soil are possible impacts of the Group's production process. To avoid and mitigate these possible impacts, targets were set to reduce the contaminants deposited in these media.

## 3.6 Waste Management and Circular Economy

To achieve the goals that Altri proposed, several actions were implemented with an impact on the reduction and/or recovery of inorganic waste from the pulp, namely:



- Reduce the specific amount of carbonate sludge
- Reduce the specific amount of dregs
- Reduce the specific amount of ashes



- Energy recovery of primary and secondary sludge resulting from effluent treatment, as well as screening tailings
- Investment in a digester that allows the recovery of the screening and sawdust tailings in the production of cellulosic fibers



- Redirection of sludge for use in Celbi's lime kiln
- Reduction of the production regime with consequent reduction in the amount of lime sludge produced
- Deliveries of samples of various wastes for evaluation of possible incorporation in bituminous mixtures
- CE marking - end of waste sorting process



- Repair of filtration equipment
- Recovery of lime sludge from landfill to lime kiln
- Analysis of the possibility of using dregs as fertilizer
- Calibration of equipment
- Recovery of lime kiln ashes

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 public health or the environment. However, even though it represents a small significant part, Altri takes all the necessary measures to ensure the proper routing and treatment of waste, thus eliminating any risks of potential negative impacts of its activity.

Altri has also invested in the recovery of waste, having recovered 78% in 2023. This recovery can be done either through the reintegration of waste into the production process, or through its recovery in other industries, including the replacement of virgin raw materials by waste or by forwarding to recycling. This reuse and reintegration of waste by Altri promotes the creation of a closed cycle, representative of a circular economy.

### 3.6 Waste Management and Circular Economy

## Circular Economy

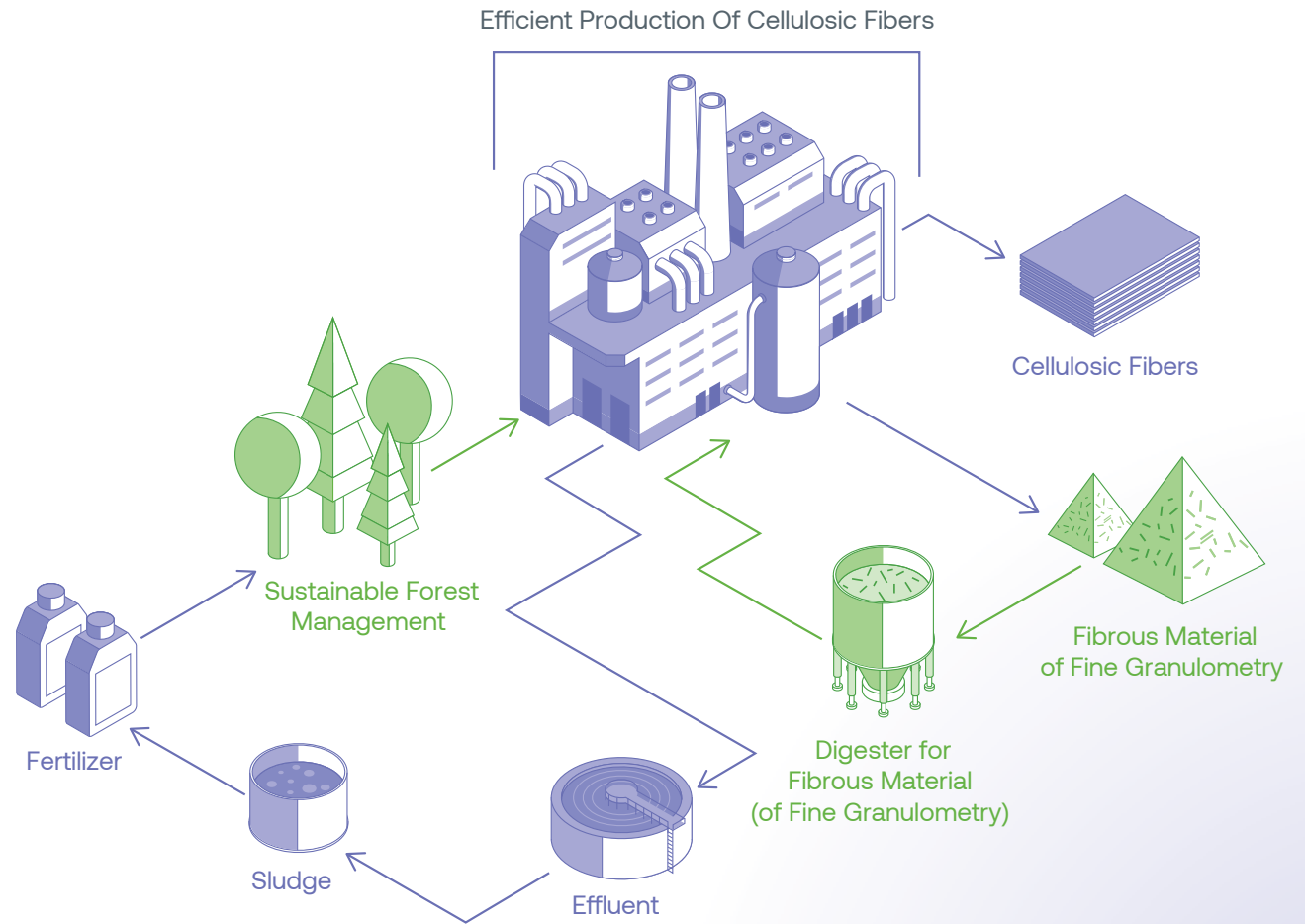
COMMITMENT

# 2030

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

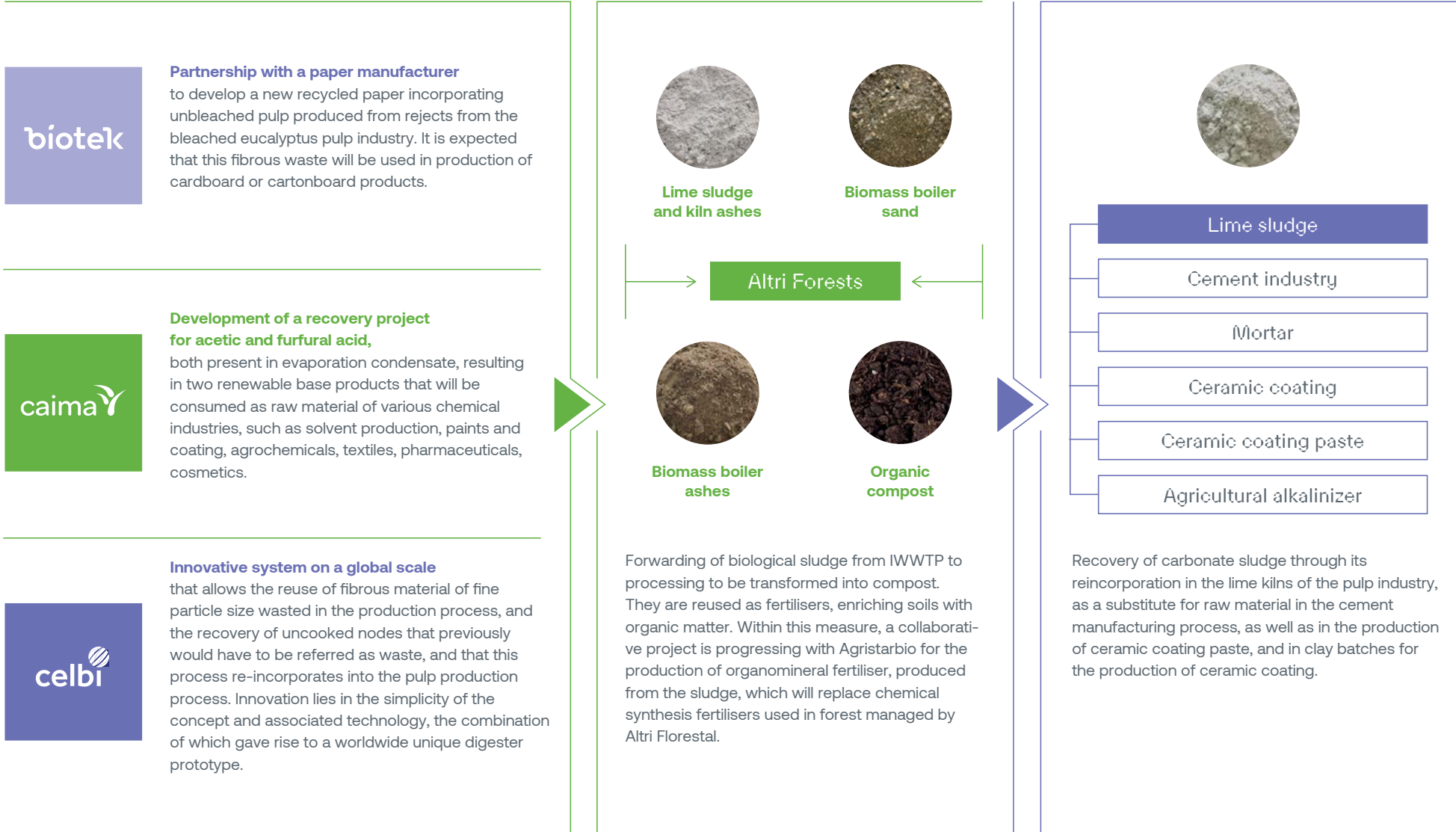
The Circular Economy Model argues that waste must be transformed into by-products or other materials that allow its reuse, recovery, and recycling, to reduce the exploitation of natural resources and use of primary raw materials. To achieve a true circular economy, Altri focuses on innovation and partnership creation, to enhance its waste and develop new ways of using by-products. To determine the amount of waste converted into secondary raw materials, the Group aims to calculate the circularity index in the coming years.

In the three plants that make up the Altri Group, several initiatives take place that put into practice the model of circularity.





### 3.6 Waste Management and Circular Economy



### 3.6 Waste Management and Circular Economy

Waste recovery through the use of by-products is only possible with the implementation of innovations and strategic research partnerships, such as:

- Research partnership to develop paper with the incorporation of pulp broke;
- Collaborative project for the composting of biological sludge, by-products of pulp production and coming from IWWTP of Biotek, in organomineral fertilizer;
- Recovery of lime sludge through its reincorporation in the lime kilns of the pulp industry, that may be used as a substitute for raw material in the cement manufacturing process, as well as in the production of ceramic coating paste, and clay batches for the production of ceramic coating.

More details are presented on these projects in sub-chapter **6.1 Innovation**.



Altri received an honorable mention in the category Circular Economy - Large Companies, from the Portuguese Sustainability Award, with the Celbi fine granulometry fibrous material digester project. The Portuguese Sustainability Award is an initiative of the Jornal de Negócios.