



# CARBON FOOTPRINT

REPORT 2023-24

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# 01 EXECUTIVE SUMMARY

TechnoAlpin Holding's first annual carbon footprint report outlines our carbon emissions for the fiscal year 2023-2024 and our key findings.

The data allows us to identify areas that may require targeted action to reduce emissions and sets the baseline for future calculation of progress. We are committed to calculating greenhouse gas (GHG) emissions as part of our sustainability initiatives. This report is also intended to keep our stakeholders informed about our efforts to increase environmental sustainability.

## The main findings of this report are as follows:

- › Our total carbon footprint for 2023-24 is 3,706 tons of CO<sub>2</sub>e.
- › Of these, 1,234 tons of CO<sub>2</sub>e belong to Scope 1, 791 to Scope 2 and 1,681 to Scope 3.
- › As far as scope 1 is concerned, the largest contributors to our emissions are stationary sources, which account for about 71% of the total against 29% for mobile sources.

- › Regarding scope 3, the largest contributors to our emissions are downstream transport, which accounts for about 67% of the total followed by waste disposal (17%), business travel (8%) and employee commuting (7%).

## In 2024-25 we are focusing on three main areas:

- › For next year's calculation, the aim is to improve the data quality for data categories with a medium or high uncertainty value.
- › In addition, we will consolidate the calculation on certain scope 3 categories across all companies in the TechnoAlpin Holding and integrate the data, with the corresponding estimates, for the categories of purchased and capital goods.
- › Data collection over the two-year period will also make it possible to set the necessary baseline for any emission reduction targets.



## 02 INTRODUCTION

### 02.01 BACKGROUND

The following introduction provides a brief overview of the companies within the TechnoAlpin Holding.

The company TechnoAlpin is the global leader in cutting-edge snowmaking technology, setting the standard for ski resorts worldwide. Renowned for its innovation and sustainability, the company designs and manufactures state-of-the-art snowmaking systems that ensure optimal snow quality while maximizing energy and water efficiency.

EmiControls develops advanced water mist solutions for fire suppression, dust control, and air quality improvement – pushing the boundaries of environmental protection. Engo, a global leader in ice rink technology, provides world-class ice resurfacing machines and dasher boards, ensuring top-tier performance for skating and hockey facilities worldwide.

With a strong international presence and a network of subsidiaries and partners in over 50 countries, the TechnoAlpin Holding is at the forefront of technological excellence and sustainability, redefining industry standards across snow, ice, and environmental solutions.

### 02.02 BOUNDARIES

This report covers TechnoAlpin, ENGO, and Emicontrols, including subsidiaries with at least one employee. In the first year of calculation, Xelom and Lanatec, also part of TechnoAlpin Holding, were excluded from the reporting boundary.

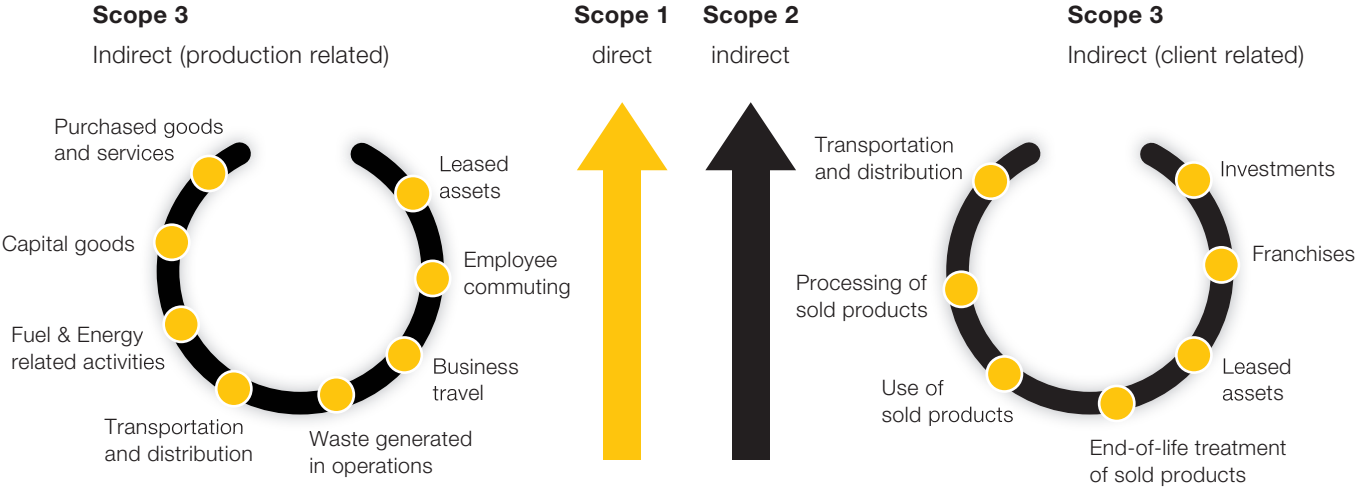
Following the guidelines of the Greenhouse Gas (GHG) Protocol, we calculated the emissions for Scope 1, 2 and some Scope 3 categories following a specific significance analysis. The Scope 3 categories included are those related to: waste generated during operations, business travel, employee commuting, transport and downstream distribution.

The quantification of sources of GHG emissions and removal refers to the 1-year period (1 May 2023- 30 April 2024). The year 2023 is also the base year as for many companies in the group there are no data and records available that can be used for calculation purposes before this date. For TechnoAlpin Italy, GHG emissions have been quantified not only for the reference year (fiscal year 2023) but also for the previous fiscal year (1 May 2022 – 30 April 2023).

All collected and analysed data and calculation methods in this report follow “The Greenhouse Gas Protocol A Corporate Accounting and Reporting Standard” and “The Corporate Value Chain (Scope 3) Accounting and Reporting Standard“. More details on the carbon accounting methodology can be found in Annex A.

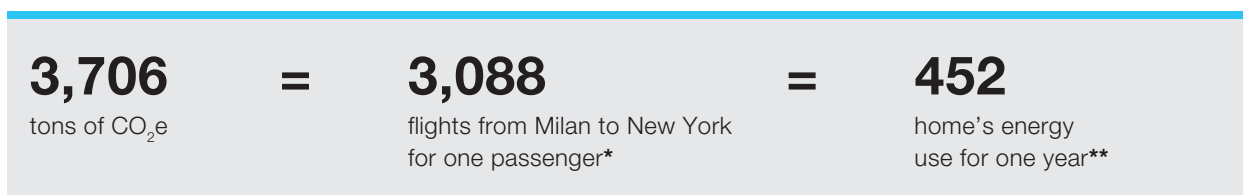


# THE BASELINE COVERS EMISSIONS ACROSS 3 SCOPES IN LINE WITH THE GHG PROTOCOL

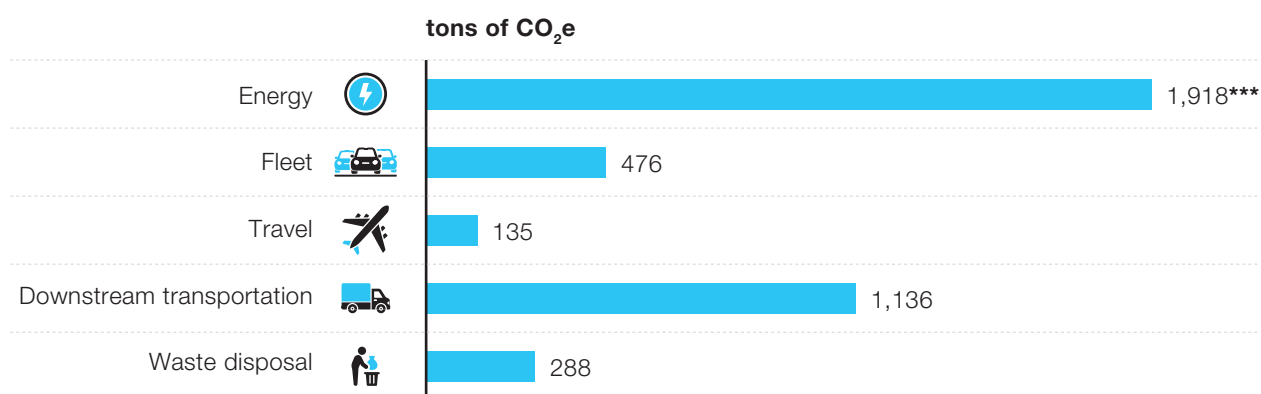


# 03 RESULTS

## 03.01 KEY FINDINGS



## EMISSIONS BY ACTIVITY



**Scope 1:**  
emissions from owned or leased facilities and vehicles:

**1,234**

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**33%**

**Scope 2:**  
emissions from purchased grid electricity

**791**

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**21%**

**Scope 3:**  
emissions that occur during the conception or use of products and services purchased

**1,681**

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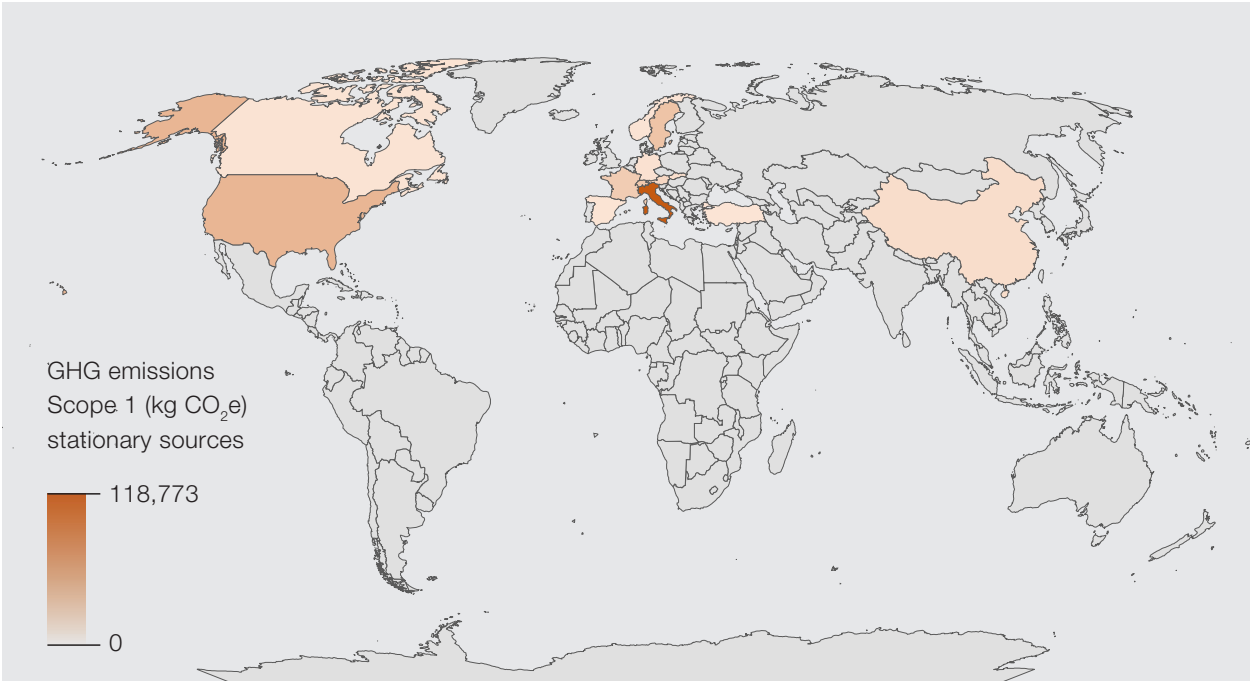
**46%**

\* [https://co2.myclimate.org/it/flight\\_calculators/new](https://co2.myclimate.org/it/flight_calculators/new)

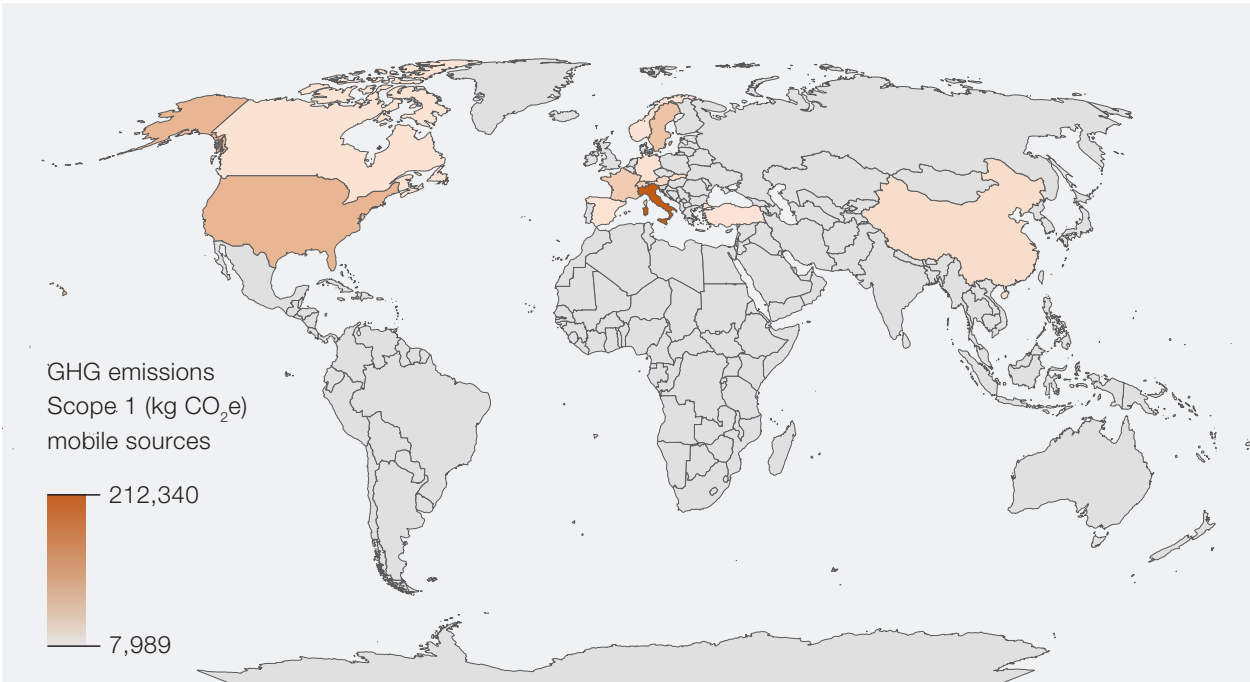
\*\* <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results>

\*\*\* The share includes 1,038 tons of CO<sub>2</sub>e of purchased energy calculated with the market-based method. In the case of a location-based calculation the scope 2 share is reduced to 789 tons for a total energy footprint of 1,669 tons of CO<sub>2</sub>e

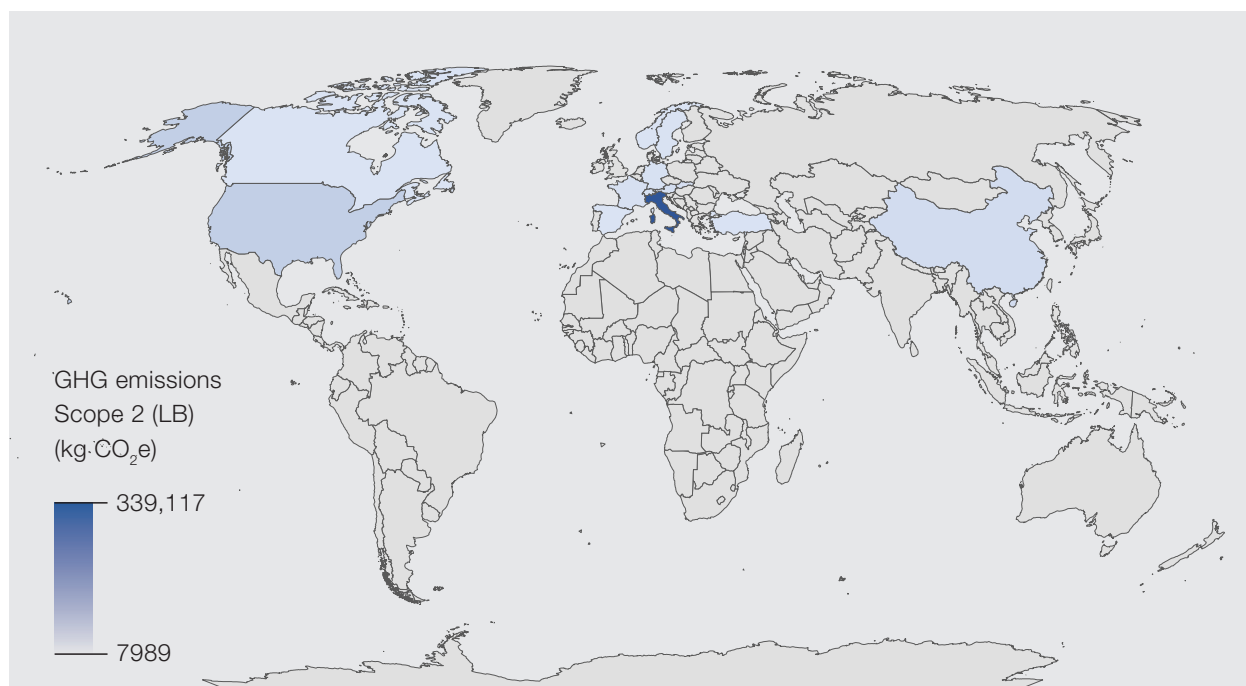
# GEOGRAPHICAL DISTRIBUTION OF SCOPE 1 EMISSIONS: STATIONARY SOURCES



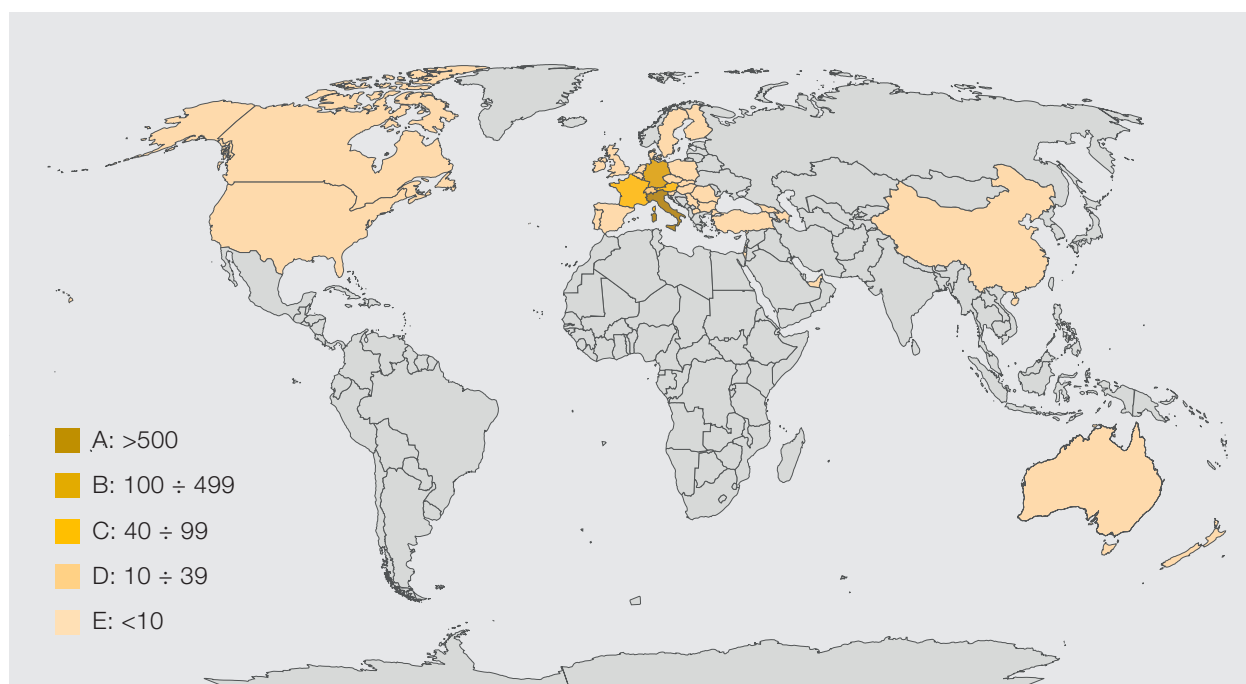
# GEOGRAPHICAL DISTRIBUTION OF SCOPE 1 EMISSIONS: MOBILE SOURCES



## GEOGRAPHICAL DISTRIBUTION OF SCOPE 2 EMISSIONS (LB)



TechnoAlpin also works with universities, research institutions, and expert companies to find ever-more advanced and innovative solutions for snowmaking. Snow guns as well as other system components, such as pumping stations and software, benefit from this continuous research. **The majority of the suppliers (around 70%) are located in Italy, followed by neighboring European countries.**



# 04 CLIMATE ACTION

## 04.01 A GROUP-WIDE COMMITMENT TO SUSTAINABILITY

At TechnoAlpin Holding, sustainability is not just an initiative: it is a responsibility we take seriously. Across all our companies, from snowmaking and ice resurfacing to fire protection and environmental solutions, we are redefining industry standards to minimize environmental impact, improve energy efficiency, and promote circular economy principles.

### › Energy efficiency and integration of renewables

The Group is investing in heat recovery systems and energy-efficient buildings to reduce its footprint. Where possible, it supports the use of renewable sources to cover the energy needs of buildings and the transition to green energy. There are also initiatives to optimize logistics to reduce transport-related emissions and promote e-mobility.

### › Product innovation for a Low-Carbon Future

TechnoAlpin is at the forefront of energy-efficient snowmaking, reducing the water and energy required for each snowmaking cycle through intelligent and innovative optimizations both when using the product and in terms of preventive maintenance. ENGO is pioneering electrification in the ice-making industry, ensuring low-emission operations in ice arenas around the world. EmiControls applies advanced water mist technology for fire suppression and dust control, reducing water consumption and improving safety and air quality.

### › Circular economy and sustainable supply chains

TechnoAlpin and ENGO have taken the principles of sustainability into account right from the design

phase: the choice of materials and design are intended to extend the life span, reduce waste and promote the reuse of products or parts. The use of recyclable materials in production is also supported and care is taken to minimise packaging waste by means of systems for the reuse of incoming materials. Supplier sustainability criteria are also being implemented, ensuring responsible sourcing and ethical working practices throughout the supply chain.

### › Water conservation and responsible management

TechnoAlpin's intelligent snowmaking systems use precise meteorological data to minimize water and electricity consumption, ensuring the best snow quality with the least possible impact. The reservoirs are also designed with a view to multimodal use. ENGO's advanced ice-making technology allows ice rinks to use less water, thanks to intelligent systems that adjust water flow based on real-time conditions.

### › Empowering Change Through Education & Collaboration

The TechnoAlpin Academy trains industry professionals in sustainable snow production, helping ski resorts optimize their environmental performance. ENGO supports stakeholder education on ice rink sustainability, raising awareness about energy savings, water conservation, and eco-friendly arena management. Across the group, we are investing in employee sustainability training, ensuring that our teams are empowered to drive change.



## 05 THE ROAD AHEAD

At TechnoAlpin Holding, we are not just adapting to climate change – we are actively shaping the future of winter sports, environmental safety, and sustainable infrastructure. Our commitment extends beyond reducing emissions; we are creating innovative, long-term solutions that redefine efficiency, conservation and responsible business practices.

**Looking ahead, we are taking two key steps to deepen our commitment to sustainability:**

› **Developing a Unified Group-Wide Sustainability**

**Strategy** – Moving from individual company initiatives to a comprehensive sustainability vision that integrates all companies under the TechnoAlpin Holding.

› **Advancing Product Life Cycle Assessment (LCA)** –

Enhancing the calculation of our products' carbon footprint by adopting a Life Cycle Assessment (LCA) approach, ensuring a science-based and data-driven strategy for emissions reduction and resource optimization.

**TECHNOALPIN®**

 **EmiControls**

**engo**





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**ANNEX**

# ANNEX.

The TechnoAlpin Holding is committed to publicly sharing its footprint and promoting transparency on environmental issues. The calculation and documentation of the footprint were carried out in collaboration with the consultant Anteo Srl.

We are working to make measurements increasingly precise and plan more targeted action. This annex illustrates the methodology for calculating carbon emissions for each of the categories in this report and a glossary of the main terms used.

## This annex includes details of:

- › Sources of internal data and limitations of that data.
- › Assumptions made where data was unavailable or incomplete.
- › Source of carbon emissions conversion factors used.
- › Calculation method used.

## REFERENCE STANDARDS

To comply with the requirements of this document and to ensure that the information on greenhouse gases is reliable, this document has been developed in accordance with the principles of relevance, completeness, consistency, accuracy and transparency. The TechnoAlpin Holding's GHG inventory was developed in accordance with:

- › GHG Protocol 'A Corporate Accounting and Reporting Standard (Revised Edition)', published by the World Business Council for Sustainable Development and the World Resource Institute, the protocol classifies a company's GHG emissions into three Scopes.
- › GHG Protocol 'Corporate Value Chain (Scope 3) Accounting and Reporting Standard - Supplement to the GHG Protocol Corporate Accounting and Reporting Standard.
- › ISO 14064-1:2018 Specification with Guidance at the Organisational Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals:
  - **Category 1:** direct greenhouse gas emissions (hereinafter referred to as Scope1).

- **Category 2:** indirect greenhouse gas emissions from imported energy (hereinafter referred to as Scope2).
- **Category 3:** Indirect GHG emissions from transport (hereinafter referred to as Scope3)
- › The emissions calculated in this GHG report, unless otherwise stated, refer to the following gases:
  - Carbon dioxide CO<sub>2</sub>
  - CH<sub>4</sub> methane
  - Nitrous Oxide N<sub>2</sub>O
  - Hydro Fluorine Carbides (HFCs)
  - Fluorine Carbides (PFC) and
  - Sulphur Hexafluoride (SF<sub>6</sub>)

## TERMS AND DEFINITIONS

**Greenhouse gas (GHG):** a gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths in the infrared radiation spectrum, emitted from the earth's surface, atmosphere and clouds. The main greenhouse gases include, among others, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O).

**Carbon dioxide equivalent (CO<sub>2</sub>e):** a unit of measurement that allows the radiative forcing of a greenhouse gas to be compared with that of carbon dioxide.

**Global Warming Potential (GWP):** a factor that describes the impact as radiative forcing of a mass unit of a given greenhouse gas relative to an equivalent unit of CO<sub>2</sub> over a given period of time.

**Base year:** reference against which the emission data of the reporting year can be compared. Should the calculation methodology change, the base year is recalculated accordingly.

**Scope 1:** this category includes all direct emissions of the company, i.e. those occurring physically within its boundaries from owned or controlled sources.



**Scope 2:** this category considers emissions from the purchase of electricity used in company operations. Indirect energy emissions are calculated using two different approaches, described below.

**Scope 3:** a category that considers GHG emissions that are a consequence of the company's activities, but which arise from sources not owned or controlled by the company.

**Reporting Boundary (Operational Boundary):** boundary that includes all GHG emissions and removals associated with the organisation's activities and their subdivision into direct emissions, indirect emissions from electricity and other indirect emissions. The definition of the operational boundary includes the choice of which subcategories of other indirect emissions will be quantified and reported. Any changes to the operational boundary must be adequately justified.

**Organisational boundary:** legal entities, and their assets, considered within the GHG emissions quantification process.

**Control approach:** the organisation reports all GHG emissions and/or removal processes quantified by companies over which it has financial or operational control.

**Emission factor (EF):** factor that correlates activity data with GHG emissions. The sources of the emission factors used for each category are detailed in the GHG Report prepared for each fiscal year (FY).

**Significance of indirect emissions:** evaluation of the significance of each emission category in relation to the type of activity of the organisation and the availability of primary data.

**Uncertainty assessment:** qualitative definition of the uncertainty of each primary data and emission factor according to the calculation methodology and/or

source, in order to determine the uncertainty at the level of the GHG Inventory.

**GHG Inventory:** list of GHG removal sources and processes and their quantified GHG emissions and removals.

**GHG removal activity:** process to remove GHG from the atmosphere.

**GHG source:** Process that releases a GHG into the atmosphere. Greenhouse gas removal: removal of greenhouse gases from the atmosphere by greenhouse gas removal activities.

**Intergovernmental Panel on Climate Change (IPCC):** United Nations body responsible for the scientific assessment of climate change. The IPCC was created to provide policy makers with regular scientific assessments of climate change, its implications and potential future risks, and to propose adaptation and mitigation options.

## REPORTING BOUNDARY

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In order to define organisational boundaries, the operational control approach was chosen as it best represents the organisation's activities and because it allows for a greater potential to reduce emissions. Direct and indirect greenhouse gas emissions are reported for the TechnoAlpin Holding companies listed below, where there is at least 1 employee:

- TechnoAlpin SpA
- EmiControls Srl
- ENGO SRL
- TechnoAlpin Austria GmbH
- TechnoAlpin Canada inc
- TechnoAlpin Schweiz AG
- TechnoAlpin Deutschland GmbH
- TechnoAlpin East Europe SRO
- TechnoAlpin France SAS

- TechnoAlpin Ice & Snow Making Equipment (Zhangjiakou) Co.
- TechnoAlpin Nordic AB
- TechnoAlpin Nieve para España. Sociedad limitada
- TechnoAlpin İnşaat Taahhüt TİC.LTD.ŞTİ. (Turkey)
- TechnoAlpin USA inc

## OPERATIONAL REPORTING BOUNDARIES

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For the fiscal year 2023 TechnoAlpin has quantified not only the emissions associated with scopes 1 or 2, or category 1 and 2 as described in the relevant ISO standard, but has decided to extend this by attempting to quantify certain emission categories falling under scope 3 as well:

### Direct GHG removals – Scope 1

For the quantification of direct emissions and removals, the following emission sources were assessed:

- › Generation of electricity, heat or steam. These emissions result from the combustion of fuels in stationary sources, e.g. boilers, furnaces, turbines.
- › Transport of materials, products, waste and employees. These emissions arise from the combustion of fuels in company-owned/controlled mobile combustion sources (e.g. trucks, trains, ships, planes, buses and cars).
- › Fluorinated greenhouse gases. Direct emissions associated with the release of fluorinated greenhouse gases from air conditioning systems and heat pumps.

### Indirect GHG emissions from imported electricity - Scope 2

Emissions associated with the consumption of purchased electricity, heat or steam in buildings and facilities.

### Indirect GHG emissions from other sources - Scope 3

All other indirect emissions that arise from the company's activities but occur in sources not owned or controlled by the company. Emissions associated with the following activities are assessed:

1. Purchased goods and services
2. Capital goods
3. Fuel and energy related activities
4. Upstream transport and distribution
5. Waste generated during activities
6. Business trips
7. Home-work commute of employees
8. Leased goods upstream
9. Transportation and downstream distribution
10. Processing of products sold
11. Use of products sold
12. End of life treatment of products sold
13. Leased goods downstream
14. Franchising
15. Investments

## REFERENCE PERIOD AND YEAR

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The quantification of sources of GHG emissions and removal refers to the 1-year period (1 May 2023- 30 April 2024). The year 2023 is also the base year as for many companies in the group there are no data and records available that can be used for calculation purposes before this date. For TechnoAlpin Italy, quantifications of GHG emissions will be reported not only for the base year (fiscal year 2023), but also for the previous fiscal year, 2022 (1 May 2022- 30 April 2023).

## SIGNIFICANCE ANALYSIS

The emission inventory always includes the calculation of emissions for scopes 1 and 2; for scope 3 emission sources, only those that emerge on the basis of the results of a specific significance analysis, in line with the approach to quantification proposed by ISO 14064, are included in the GHG inventory. The criteria used to assess the significance of emission sources are:

- › **Level of influence:** identified with a value from 1 to 3; the higher the value, the greater the influence that can be exerted by TechnoAlpin on the specific emission source.
- › **Risk/Opportunity:** by defining with a scale from 1 to 3 the risk-opportunity ratio attributable to each emission source.
- › **Accuracy:** by identifying with a 1 to 3 rating scale the possibility of obtaining data and information; the higher the rating, the higher the level of accuracy and the lower the value of uncertainty.

The scores assigned to the criteria identified for the different emission sources were multiplied by each other and those sources with a score of 4 or more were considered significant, in addition to category 1 and 2 emissions. In detail, GHG emissions related to:

- › Purchased goods and services
- › Capital goods

- › Waste generated during activities
- › Business trips
- › Home-work commute of employees
- › Downstream transport and distribution

## UNCERTAINTY ASSESSMENT

A qualitative assessment was also conducted to determine the degree of uncertainty at the GHG Inventory category level. Uncertainty is defined by the joint analysis of the source of the data, whether from direct measurement or estimated, and the relative emission factor, with the objective of determining the reliability of the values relative to the reported emissions. The following categories of uncertainty have been defined:

- › Low uncertainty, associated with measured data and/or emission factors with high reliability, disclosed by national or international organizations or measured according to recognized standards.
- › Medium uncertainty, associated with partially estimated data and/or emission factors reported in scientific databases.
- › High uncertainty, associated with data that are difficult to access and/or unreliable sources of emission factors.

Emission category	Degree of uncertainty
Emissions scope 1 - thermal energy Bolzano production sites	LOW
Emissions scope 1 - thermal energy other production sites	MEDIUM
Emissions scope 1 - car fleet	LOW
Emissions scope 2 - purchased electricity Bolzano production sites	LOW
Emissions scope 2 - electricity purchased from other locations	MEDIUM
Capital goods	HIGH
Transport and downstream distribution	LOW
Business trips	MEDIUM
Home-work commute of employees (TechnoAlpin Italy)	LOW
Waste generated during activities (TechnoAlpin Italy)	LOW
Purchased goods and services	MEDIUM

## CALCULATION METHOD

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The following formula was applied to calculate the emissions of each Scope:

*GHG emission* = Primary data x emission factor

### Direct Emissions -

#### Scope 1

The quantification methodology used to calculate direct emissions is based on activity data. The consumption associated with each source was multiplied by the corresponding emission factor.

It should be pointed out that the Bolzano production sites, with the sole exception of the Via Braille site, are served by district heating, thanks to the Bolzano waste-to-energy plant, which is why the emissions resulting from the thermal energy consumption of these plants have been counted in Scope 2. With regard to the other sites, however, it is specified that the thermal energy consumption has been deduced according to the type of activities that are carried out at the site. The emissions of the locations where the following activities are carried out: sales office, site organization and management, customer service and research and development, were quantified by parameterizing consumption on the basis of the surface area of the location or the number of employees. For those locations with a warehouse, consumption was estimated as before but then increased by 50%. Finally, for those sites where, in addition to the warehouse, there are also production activities, emissions were quantified by multiplying the number of employees by the relative values of thermal intensity (kWh/employee) recorded in the last year at the Bolzano sites.

The thermal energy supply is considered to be methane gas and conversion coefficients provided by DEFRA were used for the conversion from kWh to Sm<sup>3</sup>.

Depending on the organizational boundaries chosen by the group to quantify emissions, the emissions of the company car fleet also fall within Scope 1, which includes both owned vehicles and those purchased with the operating leasing formula and/or in use thanks to a

long-term rental contract. In total, the vehicle fleet at the disposal of group companies travelled 5,294,889 km in the last fiscal year. For the quantification of these emissions, the following were taken into account: type of vehicle, type of fuel and kilometres travelled during the last year. The appropriate conversion factors were taken from DEFRA - UK Government GHG Conversion Factors for Company year 2023.

### Indirect Emissions -

#### Scope 2

The CO<sub>2</sub> eq emissions associated with the heat purchased to heat the production sites in Bolzano with the exception of Via Braille and the consumption of electricity in the production plants and other sites belonging to the Group companies are calculated. Electricity consumption was obtained through punctual measurements only for the production plants in Bolzano. For the other locations, the same procedure was used as described above for the quantification of emissions scope 1. For the quantification of emissions, the average national emission factors were taken into consideration according to the country where the location is located. For Italy, the emission factor elaborated by the ISPRA database for the reference year (Emission factors for electricity production and consumption in Italy year 2024) was used.

### Other sources of indirect emissions -

#### Scope 3

This category includes the following types of emission sources

1. Purchased goods and/or services
2. Capital goods
3. Waste generated during activities
4. Business trips
5. Home-work commutes of employees
6. Transport and downstream distribution



## **Purchased goods and services**

Given the complexity of the information to be extracted, the precise evaluation and quantification of the emissions associated with this category will be carried out in the report for the next fiscal year.

## **Capital goods**

Due to the complexity of the information to be extracted, the precise evaluation and quantification of emissions associated with this category will be carried out in the report for the next fiscal year.

## **Waste generated during operations**

When analyzing the company's Scope 3 emissions relating to waste generation (Category 5), two primary waste streams were considered:

- › Waste for recycling (98%): this waste category represents most of the waste produced by TechnoAlpin. The emissions associated with this type of waste are from transport to the recycling plants as any processing emissions in the recycling plants are counted as emissions incorporated in the recycled product in scope 1 for the recycling plants themselves and in scope 3 for the party purchasing the secondary raw material from recycling.
- › Waste for disposal (2%): this category of waste is mainly waste oil and is rather small but requires specialised treatment and disposal methods. The emissions associated with this type of waste were calculated based on transport to treatment plants and emissions from treatment processes.

For both streams, data was collected on waste quantities and appropriate emission factors were used for the transport and treatment processes. Greenhouse gas emission factors from the Ecoinvent 3.9 database were used, selecting the appropriate factor for each waste and transport category.

## **Business travels**

In the context of the business-related carbon footprint, business travel often plays a crucial role. Such emissions fall under Scope 3 emissions (Category 6). Business travel, in this context, refers to any business trips made by employees using means of transport not owned by the company. This typically includes flights and rental cars but excludes travel in company vehicles. Air travel accounts for the largest portion of emissions in this category. Car travel, on the other hand, relates to rental cars being handled as part of the business trip planning. The collection of data for these calculations comes from the travel agencies that support TechnoAlpin in its business trip planning activities for the period 1 May 2023 30 April 2024. The basic calculation multiplies the distance travelled by an appropriate emission factor. Specifically, the calculation of emissions associated with flights is carried out taking flight distances into account, with longer flights generally producing more emissions per mile. To calculate emissions associated with rental cars, on the other hand, kilometres travelled were considered. When considering the uncertainty associated with this category, it is important to note that for air travel, the class of service is relevant - business class occupies more space, resulting in higher emissions per person, for car travel, the specific type of vehicle has a significant impact on emissions. Emissions from hotel stays have not been counted for journeys requiring an overnight stay.

### Employee home-work commute

This section details the Scope 3 greenhouse gas (GHG) emissions associated with employee commuting for TechnoAlpin for the fiscal year 2023-24. TechnoAlpin demonstrates its commitment to reducing its overall carbon footprint and promoting sustainable practices among its workforce by directly engaging people working at the organisation, fostering awareness that even individual behaviour can contribute to the decarbonisation journey. Employee commuting falls under Scope 3 emissions category 7 as defined by the GHG Protocol Corporate Value Chain standard.

To assess emissions due to commuting by TechnoAlpin employees, two surveys were conducted, one by the Province of Bolzano as part of a project for mapping mobility in the area, the other on an internal initiative to involve employees reporting to the Trento office.

Considering the two surveys, the request for information was sent to 387 people. Specifically, the internal survey collected data on:

- › Distance travelled (km)
- › Mode of transport
- › Frequency of home-work journeys (with smart working days counted)

The survey had a response rate of 53% of engaged employees. Emissions were calculated using the following formula:  $\text{Total emissions} = \sum (\text{total distance} \times \text{emission factor} \times \text{frequency})$

### Where?

- › **Total distance:** represents the sum of the respondents' daily round-trip distances.
- › **Emission factor:** mode-specific CO<sub>2</sub>e emissions per km.
- › **Frequency:** Number of commuting days per year (taking smart working into account).

Potential seasonal variations in commuting patterns and the variability of the means of transport used by the individual employee were considered when assessing the uncertainty of category 7. The emission factors used are taken from DEFRA - GHG Conversion Factors for Company Reporting 2024.

### Transport and downstream distribution

The emissions associated with this category required the adoption of a distance-based method using customer locations and standardised distance calculations to estimate the emissions associated with the transport of products sold to customers. Data was collected on the weight of goods sold to each customer. Where possible, using geocoding technology, distances in kilometres travelled to the customer's location were extracted; where this information could not be retrieved, distances were calculated from our headquarters to the capital of the customer's state/region. For US customers only, the distance from TechnoAlpin's headquarters in Denver, Colorado was calculated as the standard reference point. If the transport recipient is located overseas, emissions are counted by assuming that 90% of the total distance is covered by sea transport via containers and the remaining 10% by road transport. The appropriate emission factors were selected according to the predominant mode of transport used (e.g. lorry, rail, ship) and for each customer's shipment, the weight of the goods was multiplied by the calculated distance and the relevant emission factor. To extrapolate the distances, the sales database was used, which provides information on the weight of the goods sold to each customer, while the CRM provides information on the customer's address and using a geographic information system (GIS) to calculate the distances between our headquarters and customer locations. The emission factors used come from the Ecoinvent data set.



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