WORKTITUDE FOR **LIFE**

# Carbon footprint

## Greenhouse Gas (GHG) emissions report of LAMP S.A 2023

**17 June 2024**


Project Manager:
Elisabeth García Portero
*Acció Accredited Advisor*

cecot | energia

Office for the Energy Transition


LAMP
Worktitude for light

***"What is not defined, cannot be measured. What is not measured, cannot be improved. What is not improved, will always degrade."***

William Thomson Kelvin (1824–1907)

# Contents

# 1. CONTEXT AND BACKGROUND

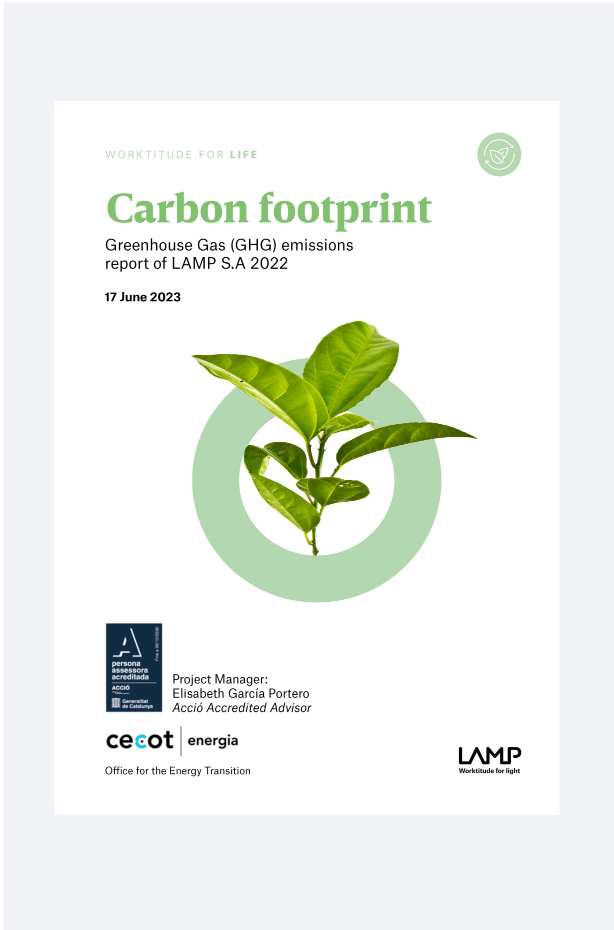
In this context where society is moving towards a low-carbon future, companies and organisations must be ready to lead the decarbonisation process and transition towards a sustainable economy aligned with the United Nations **Sustainable Development Goals (SDGs)**. For this reason, they must strive to fully understand the impact of their activities and identify areas where they can improve, particularly in terms of reducing emissions.

Moreover, considering the regulations stemming from the **European Green Deal**, the business sector must develop decarbonisation strategies to achieve a 55% reduction in emissions compared to 1990 levels, referred to as the "**fit for 55**", and strive for climate neutrality by 2050. Therefore, understanding the emissions generated by their activities and designing a progressive plan for emission reduction is the optimal approach for companies to adapt and build resilience to the evolving climate requirements and challenges.

Lamp calculated its carbon footprint for 2022, adhering to the Greenhouse Gas Calculation methodology ISO 14064-1:2018, establishing this year as the baseline for setting progressive decarbonisation goals for its operations.

This calculation marks the renewal for 2023, using the same methodology, as part of its strategy to monitor and assess its GHG emissions.

Moreover, in 2023, Lamp also published its sustainability report, outlining decarbonisation objectives for the short, medium and long term, along with goals related to other sustainability areas like social and governance issues.



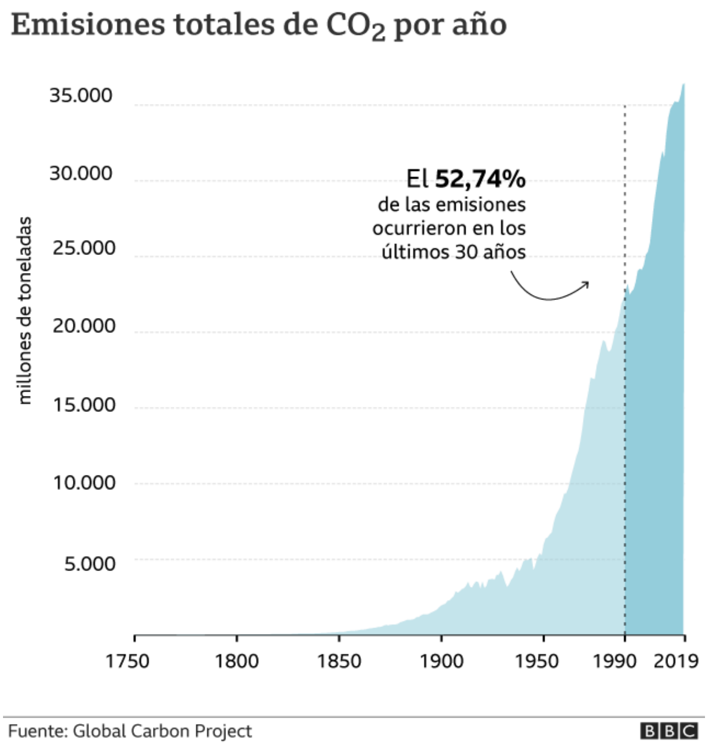
# 2. PRIOR CONCEPTS

Before proceeding with the calculation of the organisation's carbon footprint (CF), we'll offer a brief introduction to understand the current context, the concept and its unit of measurement, the **$CO_2$ equivalent ($CO_2$ e)**.

## 2.1. GREENHOUSE GASES AND THE CONCEPT OF CARBON EQUIVALENT

**Greenhouse Gases (GHGs)** are atmospheric gases; some occur naturally and are vital for life as they absorb infrared radiation, preventing some of the Sun's heat from reflecting back into space. This helps maintain Earth's suitable temperature for life.

Since the pre-industrial era, global GHG emissions have steadily and exponentially increased due to human activities such as deforestation and heavy fossil fuel consumption driven by economic and demographic growth. Consequently, the atmosphere's heat retention capacity has increased, leading to the Earth's average temperature rise and climate change.

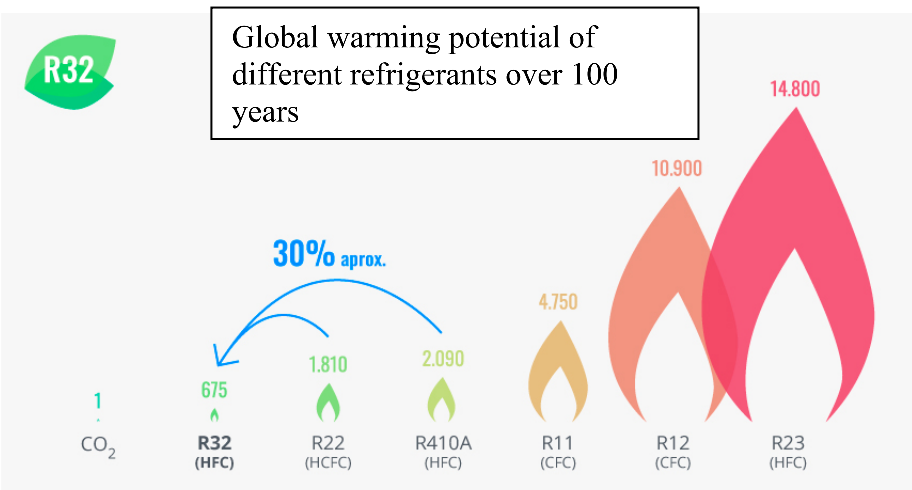



Total CO2 emissions per year
52.74% of emissions occurred in the last 30 years
Millions of tonnes
Source: Global Carbon Project

The six GHGs listed in Appendix I of the Kyoto Protocol include $CO_2$ as the most abundant.

| *GHGs* | *Global Warming Potential ($CO_2$ equivalent)* |
|---|---|
| *Carbon Dioxide - $CO_2$* | 1 |
| *Methane - $CH_4$* | 28 |
| *Nitrous Oxide - $N_2O$* | 265 |
| *Perfluorocarbons - PFCs* | 12,200 (for PFC-116) |
| *Hydrofluorocarbons - HFCs* | 14,800 (for HFC-23) |
| *Sulphur Hexafluoride - $SF_6$* | 23,500 |

Subsequently, an amendment made in Doha in 2012 modified Appendix I of the Protocol to include a seventh gas, **$NF_3$**, although in Catalonia, they are considered negligible due to the lack of data on the use of this substance.
To calculate the carbon footprint, we use the term **$CO_2$ equivalent ($CO_2$ e)**, a unit of measurement that can encompass different greenhouse gases through conversion factors. The mass of emitted gases is measured by their equivalence in $CO_2$ to generate the greenhouse effect. For example, this equivalence tells us that **1 tonne of $N_2O$** produces as much greenhouse effect in the atmosphere as 265 tonnes of $CO_2$, meaning it is **265 tonnes of $CO_2$ equivalent**.
The following graph illustrates the global warming potentials (GWPs) of different refrigerants using the $CO_2$ equivalent reference system.



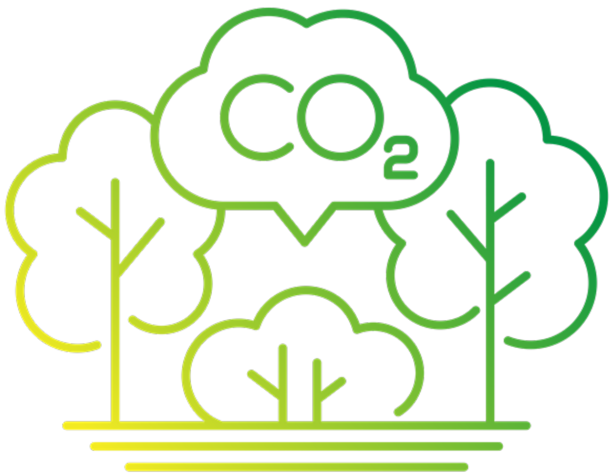

*Source: http://matmaxpro.com*

## 2.2. THE CONCEPT OF CARBON FOOTPRINT AND WHY IT'S CALCULATED

The **Carbon Footprint (CF)** is a term used to describe the amount of GHGs released into the atmosphere directly or indirectly as a result of a specific activity, whether it's manufacturing a product, providing a service or operating an organisation.

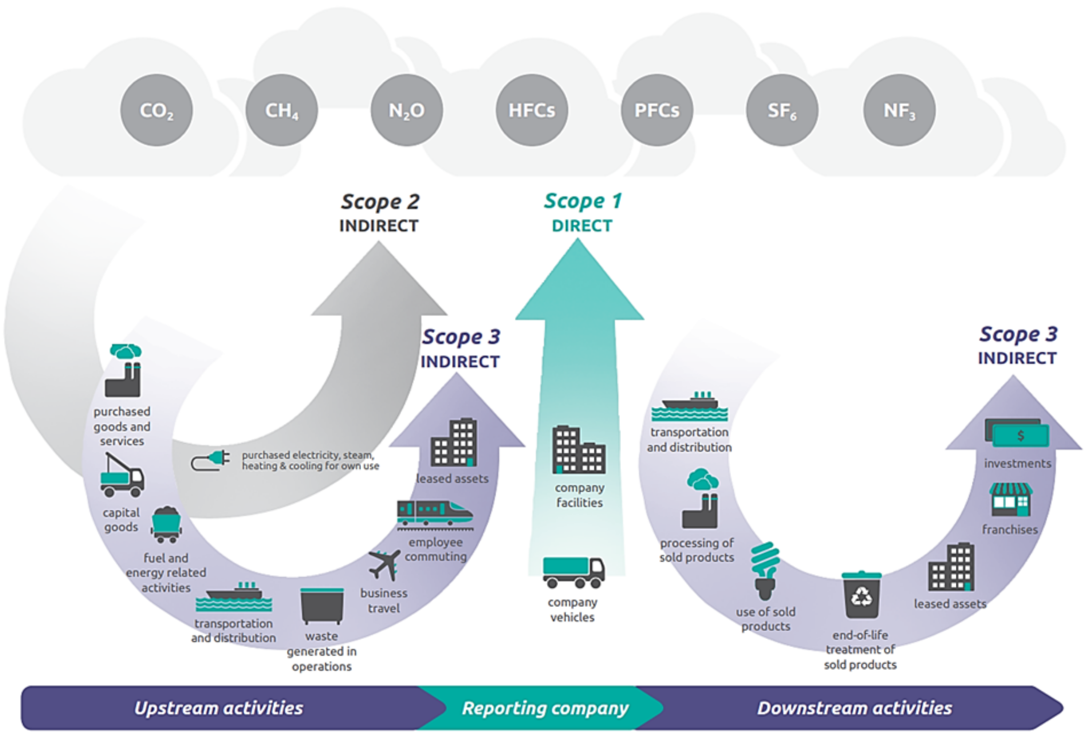
The concept of an organisation's carbon footprint aims to describe the total impact an organisation has on the climate in relation to GHG emissions in the atmosphere. The use of the carbon footprint has also evolved as an informational tool to communicate an entity's environmental performance to all stakeholders, as well as an indicator for making decisions to reduce emissions associated with an activity.

Increasingly, both government authorities and other organisations, as well as the general public, consider environmental aspects in their decision-making processes, and among various indicators, $CO_2$ emissions have gained the most significance in recent years.



## 2.3. CLASSIFICATION OF EMISSIONS ACCORDING TO GHG PROTOCOL AND ISO14064 -1

Emissions can be classified into three types based on the company's control capacity and where they occur. The following image and summary table display the nomenclature and their equivalence according to the calculation methodology used:




*Emissions categorised by scopes according to the GHG protocol.*
*Original source: https://ghgprotocol.org/*

| Location/control | GHG Protocol | ISO-14064-1 | Examples |
|---|---|---|---|
| Produced by the company and/or under the company's control (Reporting company) | Scope 1: Direct emissions | Category 1: Direct emissions | - Fixed installations consuming fossil fuels: furnaces, boilers<br>- Mobile installations consuming fossil fuels: company-owned vehicles<br>- Refrigerant leaks from climate control equipment<br>- Emissions from production processes |
| Produced at the site of energy generation (electricity, steam, cold, heat) and the consuming company has no control over them (Upstream activities) | Scope 2: Indirect emissions from the purchase of electricity | Category 2: Indirect emissions from the purchase of electricity, heat, cold or steam | - Electricity |
| These stem from the organisation's operations but arise from sources not owned or controlled by it. (Upstream and downstream activities) | Scope 3: Other indirect emissions | Category 3: Indirect emissions from third-party-owned transportation<br>Category 5: Indirect emissions from the use and end-of-life of products | - Subcontracted distribution transportation<br>- Corporate travel<br>- Employee commuting |
| | | Category 4: Indirect emissions from the procurement of materials, products and goods, waste management | - Water consumption<br>- Purchase of raw materials for production<br>- Purchase of machinery, IT equipment<br>- Office supply purchases<br>- Waste treatment |
| | | Category 5: Indirect emissions from the use and end-of-life of products | - Use of products sold<br>- End-of-life treatment of products sold |

# 3. OBJECTIVES AND DESCRIPTION OF THE REPORT

The primary goal of this carbon footprint report is to calculate the environmental sustainability indicator, LAMP's organisational carbon footprint, representing the total greenhouse gas emissions caused directly or indirectly by the organisation.

The second objective is to equip the company with the necessary information and tools to develop an efficient emissions reduction plan or strategy, as well as to assess the measures already initiated or implemented. The third objective is to produce an internal and external communication document on the company's climate change performance, along with the corporate social responsibility gained through the calculation and communication of its carbon footprint.

This report comprises the inventory of GHG emissions from activities conducted by LAMP during the 2023 period, alongside a section detailing the 2022–2023 evolution and a review of the proposed GHG management improvement actions from the previous diagnosis and update.

For this study, we've followed the **UNE-ISO 14064-1:2018** methodology for quantifying and reporting greenhouse gas emissions for organisations.

Expanding on this framework, we've developed and structured this technical report, adding extra sections of information we find relevant to the organisation and helpful for clearly communicating the carbon footprint.

# 4. ORGANISATION DESCRIPTION

## 4.1. GENERAL DATA

Lamp S.A. is headquartered in Terrassa, Spain, where it oversees luminaire production and handles administrative functions for Lamp and its subsidiaries in France, Mexico, Colombia and Chile.


Lamp SA guides, designs, produces, markets and implements technical lighting projects. Lamp defines its hallmark as:

*"A commitment we've maintained for over 50 years: solving our customers' lighting challenges with a reliable and tailored approach to architectural projects worldwide. At Lamp, we embody dedication and attitude; we are Worktitude for Light.*

***Worktitude for Wellbeing***
*We see lighting as an essential element to improve people's wellbeing, analysing both the visual and non-visual effects of light.*

***Worktitude for Innovation***
*We promote and take on innovation projects focused on constant transversal improvement, with the understanding that innovation is a systemic and systematic process.*

***Worktitude for Life***
*We promote projects that have a positive impact on the environment and work to achieve a more sustainable lighting industry"*

| | |
|---|---|
| Company name | Lamp S.A |
| Tax ID No (CIF) | A08478042 |
| Address | Córdoba, 16- 08226 Terrassa |
| Contact person | Quico Escudé |
| Position/roles | Purchasing and sustainability manager |
| Email address | quico_escude@lamp.es |
| Phone number | 937 36 68 00 |
| Total area of facilities included in calculation | 5,800 $m^2$ |
| Number of employees | 80 |
| Website | https://www.lamp.es/es |

The LAMP facilities in Terrassa cover a total area of 5,800 $m^2$, divided into three production-warehouse areas on the ground floor and two office areas, one on the ground floor and another on the first floor.

*Aerial image of Lamp's rooftop with photovoltaic installation*

They feature a warehouse for receiving and handling raw materials, along with a small painting area currently equipped with a diesel-fired furnace.

The second warehouse serves as an assembly area for luminaires, with offices for technical staff. It also includes a waste management area for various materials to facilitate their valorisation.  The third warehouse/area is partially automated.

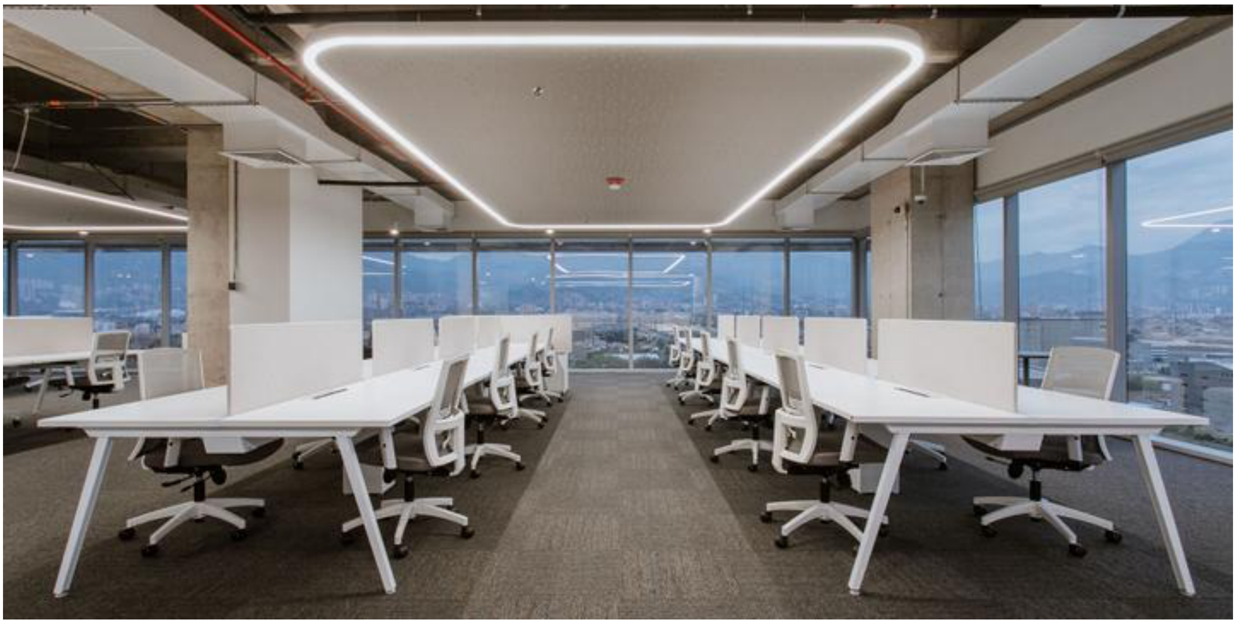


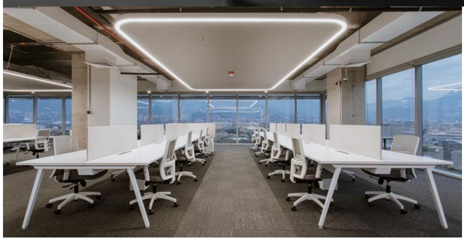
On the first floor above the assembly area are the office spaces, administration offices, showroom and meeting rooms.

## 4.2. DESCRIPTION OF ACTIVITY

At Lamp, a range of processes related to luminaires is undertaken, from consultation and design to production and marketing.

Lamp's primary goal is to develop tailored lighting solutions for each application. Additionally, the company offers co-creation services, which involve adapting existing products from its catalogues and creating new products with unique features.





# 5. STUDY SCOPE

## 5.1. ORGANISATION BOUNDARIES AND GHG CONSOLIDATION METHOD

The most suitable method for consolidating GHG emissions for LAMP is the operational control approach. This entails accounting for 100% of the GHG emissions associated with activities that the organisation directly controls or for which it can obtain the necessary information for calculating emissions, regardless of whether they are upstream, downstream or out of stream.

To delineate organisational boundaries, we set the year 2023 as the time limits and consider all facilities at the LAMP headquarters outlined in section 4 as the spatial limits.

| | | |
|---|---|---|
| Organisational boundaries | Time boundary | Year 2023 |
| | Spacial boundary | Lamp's production facilities and offices in Terrassa |

## 5.2. OPERATIONAL BOUNDARIES

To establish operational boundaries, we identify the emitting sources for inclusion in the calculation and categorise them by scopes and emission categories. In the sections below, we have categorised the emitting sources relevant to the activity included in the organisation's carbon footprint calculation.

### Category 1: Direct GHG emissions (Scope 1)

| Category 1: Direct GHG emissions and removals | | | |
|---|---|---|---|
| Emissions | | Identified emission source | Where are they generated? |
| 1.1 | Direct emissions from stationary combustion | - Heating diesel consumption<br>- Finishing furnace diesel consumption | Lamp's facilities (Reporting company) |
| 1.2 | Direct emissions from mobile combustion | Consumption of rental vehicle fleet | Company-owned vehicles |
| 1.3 | Direct emissions and removals from industrial processes | Not produced | |
| 1.4 | Direct fugitive emissions resulting from GHG release in anthropogenic systems | Fugitive emissions (analysed and no refrigerant gas or extinguishing equipment leaks occurred in 2023) | |
| 1.5 | Direct emissions and removals from land use, land-use change and forestry | Not produced | |

## Category 2: Indirect emissions from energy procurement (Scope 2)

| Category 2: Indirect GHG emissions resulting from imported energy | | | |
|---|---|---|---|
| Emissions | | Identified emission source | Location of generation |
| 2.1 | Indirect emissions from imported electricity | Electricity consumption (including vehicle charging at Lamp's facilities) | Upstream (power plants) |
| 2.2 | Indirect emissions from imported energy (steam, cold, heat) | Not produced | |

## Categories 3, 4 and 5: Other indirect emissions (Scope 3)

| Category 3: GHG emissions resulting from transportation | | | |
|---|---|---|---|
| Emissions | | Identified emission source | Location of generation |
| 3.1 | Upstream emissions from transportation and distribution of goods | Raw material procurement transportation subcontracted to the companies LOGISBER, TVS and DSV | Upstream third-party transport |
| 3.2 | Downstream emissions from the transportation and distribution of goods | Product distribution transportation subcontracted to the companies FedEx, FullExpres, DHL and DSV | Downstream third-party transport |
| 3.3 | Emissions from employees' daily commuting | Commute travel. | Out-of-stream third-party transport |
| 3.4 | Customer and visitor transportation emissions | N/A | |
| 3.5 | Business travel emissions | - Air transport<br>- Rail transport | Downstream third-party transport |

| Category 4: Indirect GHG emissions resulting from products used by the organisation | | | |
|---|---|---|---|
| Emissions | | Identified emission source | Location of generation |
| 4.1 | Emissions from procured goods | - Primary materials/components procured for production<br>- Purchases of office supplies | Upstream emissions associated with goods production |
| 4.2 | Emissions from purchased and depreciated capital goods by the organisation | Procurement of office equipment | Upstream emissions associated with goods production |
| 4.3 | Emissions resulting from the organisation's service usage | Water consumption | Upstream and downstream extraction centres, water treatment plants (WTPs) and wastewater treatment plants (WWTPs) |
| | | Indirect emissions from purchased energy | Upstream emissions connected to the construction and maintenance of electricity-generating plants |
| 4.4 | Emissions from the disposal of solid and liquid waste | Industrial waste | Downstream treatment facilities |
| 4.5 | Emissions from leased assets | Not produced | |

| Category 5: Indirect GHG emissions associated with the use of the organisation’s products | | | |
|---|---|---|---|
| Emissions | | Identified emission source | Location of generation |
| 5.1 | Emissions during the product use phase | This category has been excluded as there is currently no PCR that standardises the parameters for calculating emissions from products manufactured by LAMP | |
| 5.2 | Downstream emissions from leased assets | Not produced | |
| 5.3 | Emissions during the end-of-life product phase | This category has been excluded as there is currently no PCR that standardises the parameters for calculating emissions from products manufactured by LAMP | |
| 5.4 | Investment emissions | Not produced | |

### Exclusions

This subsection describes the emitting sources that have been analysed and excluded from the calculation.

- Other indirect emissions from subcontracted services: Emissions from subcontracted services such as consulting or cleaning have not been considered due to their insignificance within the overall scope of the footprint considered in this calculation.
- Emissions from the use stage and end-of-life treatment of sold products: This category has been excluded as there is currently no PCR that standardises the parameters for calculating emissions from products manufactured by LAMP.

# 6. QUANTIFICATION OF GHG EMISSIONS YEAR 2023

## 6.1. QUANTIFICATION METHODOLOGY

To carry out this study, different calculation procedures have been adapted based on the available data for each of the analysed vectors. However, the general methodological basis for calculating emissions resulting from activity is always the same, consisting of the application of the following formula:

**Carbon footprint (t $CO_2$ e) = Activity data x Emission factor**

Where:

- *Activity data: the parameter defining the activity referenced in the emission factor (e.g., $m^3$ of natural gas)*

- *Emission factor: the amount of $CO_2$ e emitted per unit of the "activity data" parameter (e.g., 2.16 kg $CO_2/m^3$)*

- *The unit used to present the results (t $CO_2$ e) represents the tonne of $CO_2$ equivalent, a universal unit of measurement indicating the global warming potential (GWP) of each of the GHGs.*

Through the EFs, activity data is converted into emissions. Most emission sources, such as electricity, have a direct calculation based on actual consumption data. Others, however, such as commuting travel, are obtained through indirect calculation, as will be seen later.

The methodology used follows the **ISO 14064-1:2018** standard for quantifying greenhouse gas emissions for organisations, and the **calculation tool** used is the **official one from the Catalan Office for Climate Change (OCCC)**, which is based on this methodology. https://canviclimatic.gencat.cat/ca/actua/calculadora_demissions/

Data inventorying has been done through invoices, delivery notes, certificates, surveys and official administrative documents.

The emission factors (EFs) used mainly come from official sources such as the Catalan Office for Climate Change, the Spanish Office for Climate Change (OECC) and recognised sources such as the Intergovernmental Panel on Climate Change (IPCC), DEFRA and Ecoinvent. Emissions from suppliers for their products and services have also been requested. For each emitting source, the emission factor used and its source will be indicated.

To minimise calculation uncertainties, local or proximate emission factors have been used whenever possible, and supplier emission factors have been used whenever available.

To minimise activity data (AD) uncertainty, direct consumption and volume data provided directly by the information management team within the company have been prioritised, verifying this information with corresponding invoices whenever possible.

## Calculation baseline year and recalculation scenario

The year 2022, the first year for calculating Lamp's organisation-wide carbon footprint (Scope 1+2+3), serves as the baseline year for evaluating the organisation's carbon footprint evolution. In subsequent calculation years, including the current one, potential changes in methodology, emission factors, production processes, technology, structural changes within the company and outsourcing of process components will be scrutinised to facilitate recalibration or accurate interpretation of the results.

Upon occurrence of these changes, an evaluation of their significance within the affected emission sources will be conducted to proceed with the recalculation for the baseline year 2022, with organisational and operational boundaries being revised if necessary.

A recalculation threshold of 5% is established, indicating that modifications could yield a variation of up to 5% of the total emissions calculated in the baseline year.

## Definition of materiality threshold

To establish a criterion for justifiably excluding emitting sources from the calculation, both in the current and future contexts, LAMP sets a materiality threshold of 3% of the total carbon footprint. According to this criterion, emitting sources can be excluded from the calculation if a qualitative assessment of potential emissions results in a value lower than this 3% threshold.

Additionally, it is established that the sum of exclusions should not exceed 5% of the total carbon footprint.

As mentioned previously, a recalculation threshold of 5% is set, meaning that if changes result in a variation of 5% of the total emissions calculated in the baseline year, a recalculation would be necessary.

## Validation and verification

This report follows the methodological standard ISO 14064-1, utilising verifiable documents and information. For the calculation, a validated and official calculation tool, namely the OCCC version of May 2023, has been used.

The calculation and preparation of the report have been carried out by an independent company from Lamp, following a methodology based on verifying the data provided by the company and a two-step validation process for the data used:

- Verification of the activity data provided and emission factors used for the calculation through documentation and literature.

- Review and validation of the entered data by a second person.

The following tables summarise the methodology used for each identified emitting source based on its category and scope.

## Category 1: Direct GHG emissions (Scope 1)

| Category 1: Direct GHG emissions and removals | | | | | |
|---|---|---|---|---|---|
| Emissions | | Identified emission source | Origin of data | Methodology for obtaining activity data | Methodology for obtaining emission factor |
| 1.1 | Direct emissions from stationary combustion | Heating diesel consumption | Supplier invoices | Direct retrieval of litres consumed data | Official emission factor from OCCC. 2023 |
| | | Furnace diesel consumption | Supplier invoices | Direct retrieval of litres consumed data | Official emission factor from OCCC. 2023 |
| 1.2 | Direct emissions from mobile combustion | Vehicle fleet consumption (owned or rented) | Fuel supplier invoices | Direct retrieval of litres consumed data per fuel type | Official emission factor from OCCC.2023 |
| 1.3 | Direct emissions and removals from industrial processes | Not produced | | | |
| 1.4 | Direct fugitive emissions resulting from GHG release in anthropogenic systems | Refrigerant fugitive emissions | Fugitive emissions: analysed and no refrigerant gas or extinguishing equipment leaks occurred in 2023. Maintenance certificates from climate and extinguishing companies are provided in Appendix 4. | | |
| | | Extinguishing equipment emissions | | | |

| | | |
|---|---|---|
| 1.5 | Direct emissions and removals from land use, land-use change and forestry | Not produced |

## Category 2: Indirect emissions from energy procurement (Scope 2)

| Category 2: Indirect GHG emissions resulting from imported energy | | | | | |
|---|---|---|---|---|---|
| Emissions | | Identified emission source | Origin of data | Methodology for obtaining activity data | Methodology for obtaining emission factor |
| 2.1 | Indirect emissions from imported electricity | Electricity consumptio n | Supplier invoices Guarantee of Origin (GoO) certificate from the supplier | Direct retrieval of consumed kWh data | Official emission factor from OECC-CNMV-Consulting firm consulted in 2024. GoO certificate from the supplier is also provided. |
| 2.2 | Indirect emissions from imported energy | N/A | | | |

## Categories 3, 4 and 5: Other indirect emissions (Scope 3)

| Category 3: GHG emissions resulting from transportation | | | | | |
|---|---|---|---|---|---|
| Emissions | | Identified emission source | Origin of data | Methodology for obtaining activity data | Methodology for obtaining emission factor |
| 3.1 | Upstream emissions from transportation and distribution of goods | Acquisition transport | Company: LOGISBER | Directly provides emissions from the service offered to Lamp in 2023 | |
| | | | Company: TVS | Provides record of deliveries made in 2023, routes, kg, transportation data. | DEFRA 2024 |
| | | | Company: DSV | Provides record of deliveries made in 2023, routes, kg, transportation data. | DEFRA 2024 |
| 3.2 | Downstream emissions from the transportation and distribution of goods | Distribution transport | Company: DSV | Provides record of deliveries made in 2023, routes, kg, transportation data. | DEFRA 2024 |
| | | | Company: FullExpres | Provides record of deliveries made in 2023, routes, kg, transportation data. | DEFRA 2024 |
| | | | Company: FedEx | Directly provides emissions from the service offered to Lamp in 2023 | |
| | | | Company: DHL | Directly provides emissions from the service offered to Lamp in 2023 | |

| | | | | | |
|---|---|---|---|---|---|
| 3.3 | Emissions from employees' daily commuting | Commute travel | Employee surveys | Calculation of fuel consumption based on data provided through employee surveys, regarding distance travelled, mode of transportation used and vehicle consumption. | Official emission factor from OCCC. 2023 |
| 3.4 | Customer and visitor transportation emissions | N/A | | | |
| 3.5 | Business travel emissions | Travel by: train and plane | Travel records provided by Lamp SA | - ICAO tool for air travel.<br>- OCCC calculation tool for rail travel. | Official emission factor from OCCC. March 2024/ ICAO 2024 |

| Category 4: Indirect GHG emissions resulting from products used by the organisation | | | | | |
|---|---|---|---|---|---|
| Emissions | | Identified emission source | Origin of data | Methodology for obtaining activity data | Methodology for obtaining emission factor |
| 4.1 | Emissions from procured goods | Primary materials and components procured for production | Inventoried by Lamp SA based on purchase invoices | Data on units or kg procured provided by Lamp SA | Emission factors provided by suppliers, except for injection aluminium obtained from IPCC and TRIDONIC batteries obtained from Ecoinvent 3.9. |
| | | Purchases of office supplies | Inventoried by Lamp SA based on purchase invoices | Data on units or kg procured provided by Lamp SA | Official emission factor from OCCC. 2023 |
| 4.2 | Emissions from purchased and depreciated capital goods by the organisation | Office equipment | Inventoried by Lamp SA | Data on units purchased provided by Lamp SA | Official emission factor from OCCC. 2023 |
| 4.3 | Emissions resulting from the organisation's service usage | Water consumption | Supplier invoices | Direct retrieval of consumed $m^3$ data | Official emission factor from OCCC. 2023 |
| | | Energy (emissions from plant construction, maintenance, etc.) | Electricity bills | Direct retrieval of consumed kWh data | Official emission factor from OCCC. 2023 |
| 4.4 | Emissions from the disposal of solid and liquid waste | Industrial waste | Annual Industrial Waste Declaration (DARI) | Data on tonnes produced extracted from DARI | Official emission factor from OCCC.2023 |

## 6.2. EMISSION FACTORS AND GLOBAL WARMING POTENTIALS

Emission factors represent the amount of $CO_2$ emitted per unit of the activity parameter under consideration. As such, they vary for each category (natural gas, diesel, electricity, water), and they may fluctuate over time, particularly for electricity due to changes in the energy source mix (gas, coal, nuclear, renewables, etc.).

We prioritise the use of emission factors officially published by the OCCC, along with those directly provided by suppliers. Should there be a justified need, we will resort to alternative official sources (OECC, IPCC, DEFRA) or internationally recognised sources of information (Ecoinvent v3.9), which will be specified alongside the emission factor.

Details such as data sources, publication years, units and disaggregated values of the emission factors used in the subsequent emission calculation section can be found in Appendix 1 and in the breakdown tables of materials and waste.

## 6.3. INVENTORY AND EMISSIONS CALCULATION

To obtain annual data from various emission sources, LAMP provided us with consumption, generation, invoices and certificates data for the year 2023 for the different items considered, as explained in section 5. To present the data in a simplified and clear manner, the breakdowns of each calculated category have been transferred to the tables in Appendix 1 and Appendix 3, while maintaining the categories and subcategories recommended by ISO 14064-1 in this section.

### Category 1: Direct GHG emissions (Scope 1)

| Category 1: Direct GHG emissions and removals | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Emissions | | Identified emission source | Activity data | Activity data units | Emission factor | Emission factor units | Emissions kg $CO_2$ e | Emissions t $CO_2$ e |
| 1.1 | Direct emissions from stationary combustion | Heating consumption: Diesel C | 9,704 | l/year | $CO_2$: 2.87 | kg $CO_2$ /l | **27,827** | **27.83** |
| | | | | | $CH_4$: 0.00325 | kg $CO_2$ e/l | **31.5** | **0.0315** |
| | | | | | $N_2O$: 0.0061 | kg $CO_2$ e/l | **59.7** | **0.0597** |
| | | Furnace consumption: Diesel C | 3,895 | l/year | $CO_2$: 2.87 | kg $CO_2$ /kWh | **11,169** | **11.17** |
| | | | | | $CH_4$: 0.00325 | kg $CO_2$ e/ kWh | **12.6** | **0.013** |
| | | | | | $N_2O$: 0.0061 | kg $CO_2$ e/ kWh | **23.9** | **0.024** |
| 1.2 | Direct emissions from mobile combustion | Effitec 95 and 98 | 5,510.12 | l/year | $CO_2$: 2.23 | kg $CO_2$ /l | **12,288** | **12.288** |
| | | | | | $CH_4$: 0.0069 | kg $CO_2$ e/l | **37.8** | **0.038** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | $N_2O$ 0.0069: | kg $CO_2$ e/l | **37.8** | **0.038** |
| | | Diesel E+ NEO | 9,030.83 | l/year | $CO_2$: 2.471 | kg $CO_2$ /l | **22,312** | **22.31** |
| | | | | | $CH_4$: 0.0002 | kg $CO_2$ e/l | **1.6** | **0.0016** |
| | | | | | $N_2O$: 0.0315 | kg $CO_2$ e/l | **284.1** | **0.284** |
| 1.3 | Process emissions: Not applicable | | | | | | | |
| 1.4 | Direct fugitive emissions resulting from GHG release in anthropogenic systems: Not occurred | | | | | | | |
| 1.5 | Direct emissions and removals from land use, land-use change and forestry: Not produced | | | | | | | |
| **TOTAL EMISSIONS BY GHG TYPE** | | | | | | $CO_2$: | **73,597** | **73.597** |
| | | | | | | $CH_4$: | **83.7** | **0.0837** |
| | | | | | | $N_2O$: | **405.6** | **0.406** |
| **TOTAL Category 1 (Scope 1)** | | | | | | | **74,087** | **74.087** |

## Category 2: Indirect emissions from energy procurement (Scope 2)

| Category 2: Indirect GHG emissions resulting from imported energy | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Emissions | | Identified emission source | Activity data | Activity data units | Emission factor | Emission factor units | Emissions kg $CO_2$ e | Emissions t $CO_2$ e |
| 2.1 | Indirect emissions from imported electricity | Electricity consumption from Energy Nufri S.L.U with 100% renewable GoO | 136,788 | kWh/year | 0 | kg $CO_2$ e/kWh | **0** | **0** |
| 2.2 | Indirect emissions from imported energy: Not produced | | | | | | | |
| TOTAL Scope 2 / Category 2 | | | | | | | 0 | 0 |

## Categories 3, 4 and 5: Other indirect emissions (Scope 3)

| Category 3: GHG emissions resulting from transportation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Emissions | | Identified emission source | Activity data | Activity data units | Emission factor | Emission factor units | Emissions kg $CO_2$ e | Emissions t $CO_2$ e |
| 3.1 | Upstream emissions from transportation and distribution of goods | Acquisition transport: Logisber | Refer to Table 8 in Appendix 3 | | | | **1,371.07** | **1.371** |
| | | Acquisition transport: TVS | Refer to Table 8 in Appendix 3 | | | | **41,395.02** | **41.395** |
| | | Acquisition transport: DSV | Refer to Table 8 in Appendix 3 | | | | **1,022.83** | **1.023** |
| 3.2 | Downstream emissions from the transportation and distribution of goods | Distribution transport: FedEx | Refer to Table 8 in Appendix 3 | | | | **299.76** | **0.2998** |
| | | Distribution transport: DSV | Refer to Table 8 in Appendix 3 | | | | **1,483.89** | **1.484** |
| | | Distribution transport: DHL | Refer to Table 8 in Appendix 3 | | | | **7,052.18** | **7.052** |
| | | Distribution transport: FullExpress | Refer to Table 8 in Appendix 3 | | | | **2,488.95** | **2.489** |
| 3.3 | Emissions from employees' daily commuting | Commute travel | Refer to Table 1 in Appendix 3 | | | | **19,165.90** | **19.166** |

| | | | | | |
|---|---|---|---|---|---|
| 3.4 | Customer and visitor transportation emissions | Not produced | | | |
| 3.5 | Business travel emissions | Travel by: train and plane | Refer to Table 2 in Appendix 3 | **20,785** | **20.785** |
| **TOTAL Category 3** | | | | **95,064.77** | **95.06** |

| Category 4: Indirect GHG emissions resulting from products used by the organisation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Emissions | | Identified emission source | Activity data | Activity data units | Emission factor | Emission factor units | Emissions kg $CO_2$ e | Emissions t $CO_2$ e |
| 4.1 | Emissions from procured goods | Primary materials and components procured for production: **Hydro bars** - Refer to Appendix 1 | | | | | **419,930** | **419.93** |
| | | Primary materials and components procured for production: **Injection aluminium** - Refer to Appendix 1 | | | | | **71,656** | **71.66** |
| | | Primary materials and components procured for production: **Polycarbonate** - Refer to Appendix 1 | | | | | **52,040** | **52.04** |
| | | Primary materials and components procured for production: **Tridonic electronic elements** - Refer to Appendix 1 | | | | | **355,171** | **355.17** |
| | | Primary materials and components procured for production: **Electronic elements from other suppliers** - Refer to Appendix 1 | | | | | **218,331** | **218.33** |
| | | Primary materials and components procured for production: **Recycled cardboard boxes** - Refer to Appendix 1 | | | | | **15.0547** | **15.05** |
| | | Purchases of office supplies: Recycled A3 paper | 19.92 | kg | 0.0018 | t $CO_2$ / kg | **35.86** | **0.0359** |
| | | Purchases of office supplies: Recycled A4 paper | 747 | | | | **1,344.60** | **1.345** |
| 4.2 | Emissions from purchased and depreciated capital goods | Purchases of office supplies: Mobile phones | 4 | Unit | 0.06 | t $CO_2$ / unit | **240** | **0.24** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | by the organisation | Purchases of office supplies: Laptops | 12 | | 0.374 | | **4,488** | **4.48** |
| 4.3 | Emissions resulting from the organisation's service usage | Water consumption | 615 | $m^3$/year | 0.385 | kg $CO_2$ e/$m^3$ | **236.8** | **0.237** |
| | | Purchased energy | 136,788 | kWh/year | 0.026 | kg $CO_2$ e/kWh | **3,557** | **3.56** |
| 4.4 | Emissions from the disposal of solid and liquid waste | Industrial waste | Refer to Table 4 in Appendix 3 | | | | **15,476** | **15.48** |
| 4.5 | Emissions from leased assets: Not produced | | | | | | | |
| **TOTAL Category 4** | | | | | | | **1,157,557.9** | **1,157.56** |

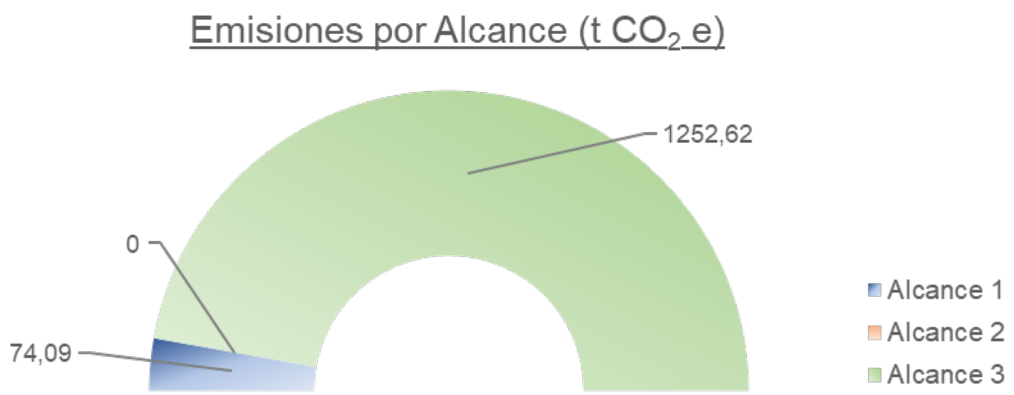
| **Category 5: Indirect GHG emissions associated with the use of the organisation's products** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Emissions** | **Identified emission source** | **Activity data** | **Activity data units** | **Emission factor** | **Emission factor units** | **Emissions kg $CO_2$ e** | **Emissions t $CO_2$ e** |
| Category excluded | | | | | | | |

| **Emissions** | **Identified emission source** | **Activity data** | **Activity data units** | **Emission factor** | **Emission factor units** | **Emissions kg $CO_2$ e** | **Emissions t $CO_2$ e** |
|---|---|---|---|---|---|---|---|
| **TOTAL Category 3+4 (Scope 3)** | | | | | | **1,252,622.67** | **1,252.62** |

## 6.4. EMISSIONS CALCULATION RESULT

| Category 1/Scope 1: Direct emissions | Category 2/Scope 2: Indirect emissions from the purchase of energy | Category 3+4/Scope 3: Other indirect emissions | | | TOTAL ($t\ CO_2\ e$) |
|---|---|---|---|---|---|
| Category 1 | Category 2 | Category 3 | Category 4 | Category 5 | |
| **74.09** | **0** | **95.06** | **1,157.56** | **-** | **1,326.71** |
| | | **1,252.62** | | | |

The carbon footprint of LAMP is distributed across Scope, Category or Emission Source, as depicted in the following graphs:

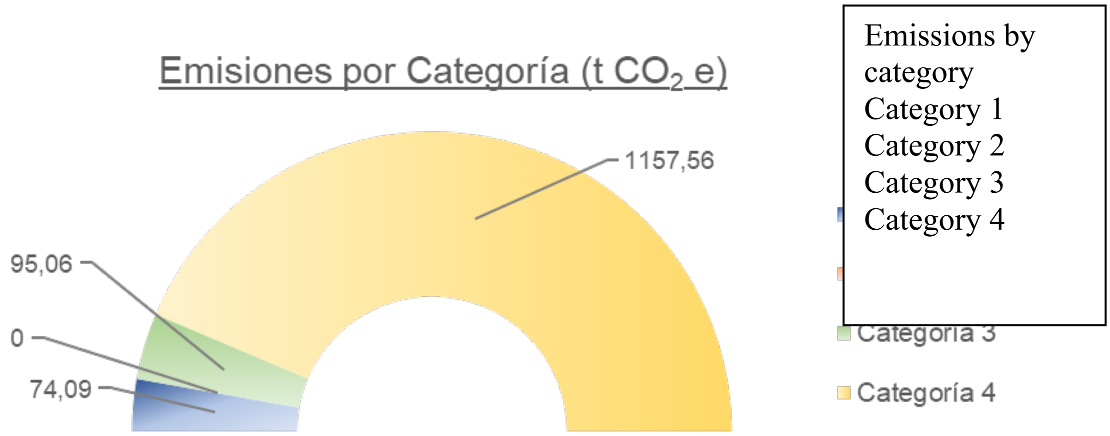



LAMP's carbon footprint is distributed as shown in the graph, **with 5.58% direct emissions (Scope 1), 0% indirect emissions from the consumption of electricity from the grid (Scope 2) and 94.42% emissions attributable to other indirect sources (Scope 3)**. This third group

Emissions by scope

Scope 1
Scope 2
Scope 3
Scope 4

of emissions, commonly known as Scope 3 emissions, is the most significant. In the following graph, we have organised emissions from different scopes into their respective categories.




The primary emission category is Category 4, encompassing components and materials acquired for luminaire production, along with other services (distinct from transportation services included in Category 3). It is an upstream category that some companies have started integrating into corporate carbon footprint assessments, yet it remains challenging to quantify due to its reliance on supplier data, often with notable uncertainties or data variability. Consequently, new emission sources may be incorporated over time as more information becomes available. For Lamp, its key suppliers have provided emission factors within their environmental product declarations, streamlining the accounting for the most significant portion of this emission category. Furthermore, this year has seen the inclusion and accounting of additional materials used in production, such as polycarbonate and its treatments.

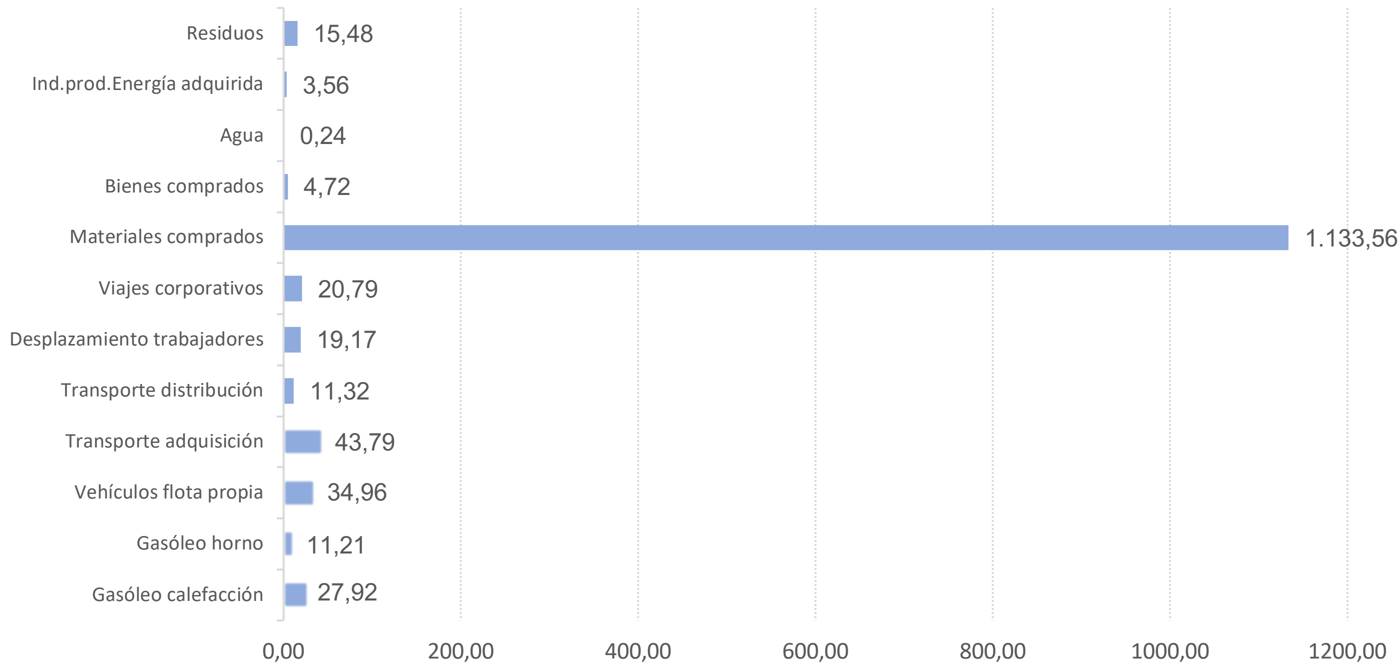
In the recent review of carbon footprints documented by the Catalan Office for Climate Change (2022), it emerged that, following the requirement for carbon footprints from 2021 onwards to integrate Scope 3 emissions to adhere to ISO 14064 standards, this category is the most significant, with proportions surpassing 80% of the total carbon footprint. This holds true for Lamp's carbon footprint, where, owing to its nil Scope 2 emissions due to utilising self-generated electricity combined with 100% renewable Guarantees of Origin (GoO), it exhibits a Scope 3 emissions percentage of 94.44%.

At present, many companies exclude Scope 3 emissions from their corporate carbon footprint calculations. Hence, it is crucial to contemplate the scopes encompassed in the calculations to assess organisations' emission performances.

These emissions are also the most challenging to mitigate, given that the company lacks direct oversight, instead depending on the decarbonisation endeavours of the supplying company. Section 10 outlines several measures to tackle the diverse emission sources integrated into the calculation.

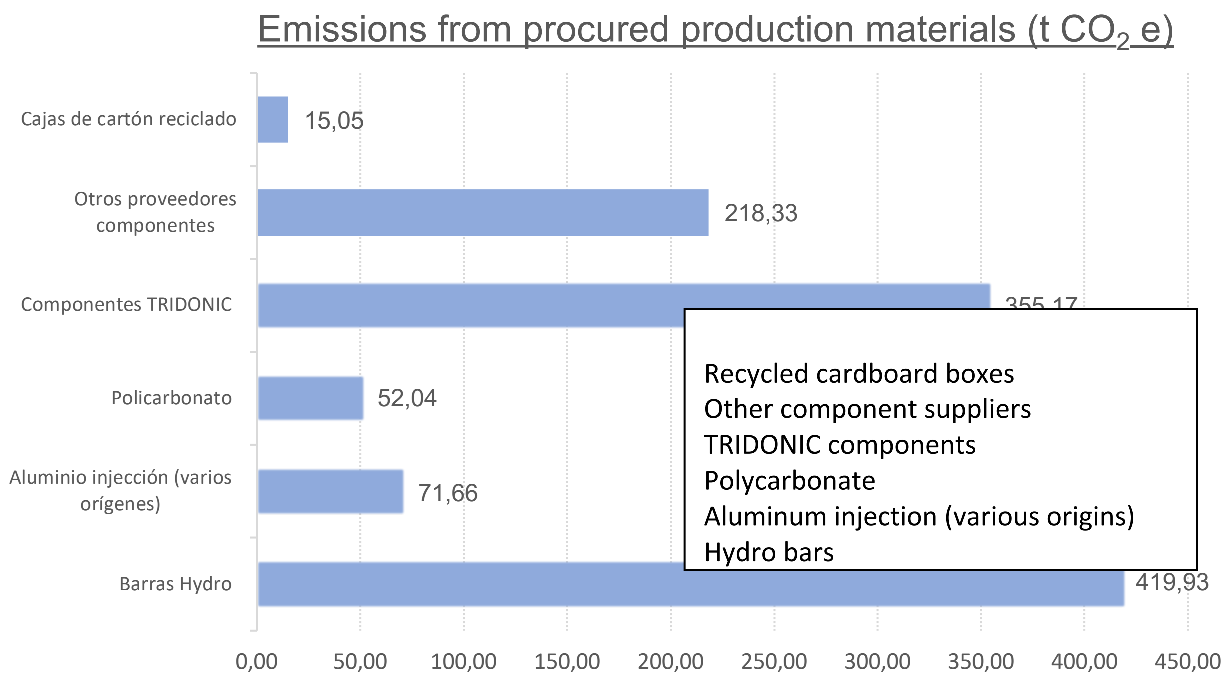
The subsequent bar chart delineates emissions by emission source.

Emissions by emission source (t $CO_2$ e)




Waste
Prod. ind. purchased energy
Water
Procured goods
Procured materials
Corporate travel
Worker commuting
Distribution transport
Acquisition transport
Own fleet vehicles
Diesel fuel
Heating oil

To enhance the understanding of the primary emission category, we've prepared a graph representing Category 4.1, focusing on components and materials procured for production. As noted, this category stands out as the most significant in terms of indirect emissions.




This category encompasses materials acquired in substantial quantities. As previously mentioned, the vast majority of materials come with emission factors supplied by the supplier, which is the preferred method for calculation, mitigating the risks of inaccuracies or uncertainties linked to emission factors derived from generic product tables. However, for injection materials, we had to rely on a value sourced from IPCC EF tables, which likely underestimates the emissions of this material. Upon the supplier providing the EF of their product, adjustments to the calculation will be necessary to evaluate the emission trends associated with this material accurately.

## 6.5. KEY PERFORMANCE INDICATORS

To provide the organisation with indicators that help assess the evolution of its carbon footprint while considering changes in its activity, three Key Performance Indicators (KPIs) have been calculated. By integrating components of both environmental aspects and the company's activity, these indicators will be instrumental in generating improvement strategies and objectively evaluating the footprint's evolution with changes made within the company.

KPIs 1 and 2 have been developed considering Scope 1+2 emissions to obtain an index that clearly reflects the evolution of emissions primarily associated with energy consumption. Conversely, KPI 3 is designed to provide an index of Lamp's overall activity, thus considering the entire calculated carbon footprint. This approach includes emission sources related to increased production.

To detect variations in detectable magnitudes, emissions have been measured in kg $CO_2$ e.

| Indicators | Considered company component | Component group value | Carbon footprint | KPI unit |
|---|---|---|---|---|
| KPI 1 | Number of operating hours for facilities | 1,766 hours of operation/year | Scope 1+2: 74,087 kg $CO_2$ | 41.952 kg CO2 e/h-facility operation |
| KPI 2 | Total worked hours (all employees' hours combined) for the year 2023 | 142,720 worker hours/year | Scope 1+2: 74,087 kg $CO_2$ | 0.519 kg $CO_2$ e/h-worker |
| KPI 3 | Revenue for the year 2023 | €13,337,420 | Scope 1+2+3: 1,326,710 kg $CO_2$ e | 0.0994 kg $CO_2$ e/€ |

## 6.6. EVOLUTION DATA 2022–2023

LAMP has calculated the carbon footprint for the year 2022, allowing us to assess the evolution of its carbon footprint and analyse the implemented measures.

### Evolution of Indicators 2022-2023

| | Considered company component | Component group value 2023 | Component group value 2023 | Carbon footprint | KPI 2022 | KPI 2023 | 2022–2023 |
|---|---|---|---|---|---|---|---|
| KPI 1 | Number of operating hours for facilities/year | 1,766 hours | 1800 hours | Scope 1+2 | 61.99 kg CO2 e/h- facility operation | 41.95 kg CO2 e/h- facility operation | ↓ |
| KPI 2 | Total worked hours (all employees' hours combined) | 142,720 hours | 144,000 hours | Scope 1+2 | 0.77 kg $CO_2$ e/h-worker | 0.52 kg CO2 e/h-worker | ↓ |
| KPI 3 | Annual revenue | €11,671,482 | €13,337,420 | Scope 1+2+3 | 0.1035 kg $CO_2$ e/€ | 0.0994 kg $CO_2$ e/€ | ↓ |

- All three evolution indicators relating carbon footprint to activity have improved, reducing the CF/activity ratio, despite an increase in the number of accounted emitting sources.
- The following table shows the evolution of each emitting source, including those included in the 2023 calculation.

| Category | Identified emission source | Emissions 2022 in $tCO_2$ e | Emissions 2023 in $tCO_2$ e | |
|---|---|---|---|---|
| 1.1 | Heating diesel | 33.82 | 27.92 | ↓ |
| | Furnace diesel | 9.52 | 11.21 | ↑ |
| 1.2 | Vehicle fleet consumption (owned or rented) | 45.02 | 34.96 | ↓ |
| 2.1 | Electricity | 23.22 | 0 | ↓ |
| 3.1 | Acquisition transport | Not accounted for | 43.79 | --- |
| 3.2 | Distribution transport | 92.37 (calculated from DAP, only included 55% of sales) | 11.32 | ↓ |
| 3.3 | Employee commutes | 18.81 (44 employees counted) | 19.17 (50 employees counted) | ↑ |
| 3.5 | Corporate travel | 35.37 | 20.79 | ↓ |
| 4.1 | Procured products and materials | 941.3 (polycarbonate not included) | 1133.56 | ↑ |
| 4.2 | Purchased goods | 1.78 | 4.72 | ↑ |
| 4.3 | Water consumption | 0.21 | 0.24 | ↑ |
| | Energy production | Not accounted for | 3.56 | --- |
| 4.4 | Waste | 3.38 | 15.48 | ↑ |

## Accounted emission evolution 2022–2023 (absolute values)

| | Category 1/Scope 1: Direct emissions in $tCO_2$ e | Category 2/Scope 2: Indirect emissions from energy purchase in $tCO_2$ e | Category 3+4/Scope 3: Other indirect emissions in $tCO_2$ e | TOTAL ($t CO_2$ e) |
|---|---|---|---|---|
| 2022 | 88.37 | 23.22 | 1,095.97 | 1,207.56 |
| 2023 | 74.09 | 0 | 1,252.62 | 1,326.71 |
| | ↓ | ↓ | ↑ | ↑ |

- In 2023, LAMP reduced emissions across the entirety of Category 2/Scope 2, and emissions from Category 1/Scope 1 also decreased.
- **% Reduction Scope 1+2: 33.6%**
- However, emissions from Category 3+4 increased, leading to an absolute increase in carbon footprint compared to 2022. Nevertheless, activity and the number of emitting sources included have also increased. Specifically:
    - Acquisition transport of raw materials has been accounted for and included.
    - A greater number of purchased materials and products have been accounted for and included.
    - Indirect emissions from the construction and maintenance of renewable electricity generating plants have been accounted for and included.

## 7. QUALITATIVE ASSESSMENT OF UNCERTAINTY

The estimated uncertainty of GHG emissions results from a combination or accumulation of uncertainties linked to activity data (both direct consumption and estimated data) and emission factors. Our assessment of uncertainty follows the methodology outlined in the "IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories" (IPCC, 2001).

- Emission factors have been meticulously chosen from official sources and suppliers, with a preference for local or national sources whenever feasible. Hence, we can reasonably assume that the uncertainty associated with emission factors is **low**.

- Direct consumption activity data have been directly provided by responsible personnel and custodians of relevant documentation throughout 2022. Consequently, the uncertainty regarding activity data is either **low or negligible**.

- The measurement equipment and meters used to obtain billed data are owned and maintained by the supplying companies, subject to calibration and verification checks mandated by regulations. These checks ensure that equipment uncertainties do not exceed +/- 2%.[1]

The OCCC has been approached regarding the uncertainty linked to its emission factors. However, they are presently working on this matter and are unable to provide a quantitative value. Nevertheless, they affirm that all emission factors are sourced directly from official and reputable sources, with plans to incorporate this information progressively as it becomes available. For CO2 emission factors sourced from official entities such as the IPCC or DEFRA, uncertainties are estimated at **+/- 5%**. [2]

[1] Royal Decree 244/2016, of 3 June, which elaborates on Law 32/2014 of 22 December, concerning Metrology.
[2] IPCC Guidelines 2006 (Vol. 3, chap. 4, sec. 4.4.2.1)

Therefore, conducting a qualitative assessment of uncertainty concerning activity data and emission factors across categories allows us to draw conclusions:

| Category | Uncertainty/inaccuracy of activity data | Uncertainty/inaccuracy of emission factors | Uncertainty/inaccuracy of emission calculations |
|---|---|---|---|
| **Category 1** | Low | Low | Low |
| **Category 2** | Low | Low | Low |
| **Category 3** | Low | Acceptable | Low |
| **Category 4.1** | Low | Overall acceptable The most uncertain emission factor is for injection aluminium. | Moderate given the category's importance |
| **Category 4.2** | Low | Acceptable | Low |
| **Category 4.3** | Low | Low | Low |
| **Category 4.4** | Low | Low | Low |

Considering that Category 4.1 is the main emitting source, it significantly affects the overall accuracy of the carbon footprint. Therefore, adjustments to this category in future calculations that enhance the origin and accuracy of emission factors may necessitate a recalculation of the base year.

## 8. CONCLUSIONS

This carbon footprint study of LAMP has been conducted with a dual focus:

- ✓ Calculating the corporate carbon footprint, encompassing all three scopes of emissions and the highest possible number of emitting sources for which data could be obtained with an acceptable level of uncertainty, following ISO 14064-1 methodology.

- ✓ Auditing the current state of available information, in terms of quantity and quality, from both LAMP and various suppliers, to establish a dual improvement plan: enhancements to the calculation method and improvements in emission reduction.

From this dual approach, we can draw the following conclusions:

- LAMP maintains a robust system for recording, reporting and obtaining data under its direct control. It possesses documents that would allow verification through reasonable assurance (invoices, certificates, delivery notes, official records, internal records).

- LAMP's primary suppliers provide data enabling the accounting of emissions from purchased goods. In 2023, efforts were made to include more indirect emitting sources and provide detailed information on purchased materials, assigning more accurate emission factors. Further collaboration with suppliers is necessary to improve the emission factor for injection aluminium.

- In the upcoming years, as data with higher uncertainty improves in accuracy, it will be necessary to evaluate whether a recalculation of the base year is warranted. Documenting the change in methodology will facilitate the analysis of carbon footprint evolution in the appropriate context.

- Initial carbon footprints of organisations often show variations due to the inclusion of emitting sources from Categories 3, 4 and 5 (Scope 3), making it challenging to assess the evolution. However, the evolution of Categories 1 and 2 (Scopes 1+2) follows a consistent methodology and number of emitting sources, allowing for the evaluation of the company's emission performance. Therefore, we suggest analysing the evolution by categories for Scopes 1 and 2, and for Categories 3, 4 and 5 (Scope 3), examining the evolution by subcategory of emitting source.

- Categories 1 and 2 (Scopes 1 and 2), along with emissions related to water, waste management and energy production, have lower levels of uncertainty. They are also the emitting sources on which LAMP can promptly implement improvement measures. Thus, we recommend prioritising these sources initially, or in the first phase, and gradually addressing other emitting sources as suppliers also work on reducing their emissions.

- In **2023, LAMP reduced emissions across the entirety of Category 2**/Scope 2, and emissions from Category 1/Scope 1 also decreased.
- **% Reduction Scope 1+2: 33.6%**
- **All three evolution indicators relating carbon footprint to activity have improved**, reducing the CF/activity ratio, despite an increase in the number of accounted emitting sources.
- The carbon footprint in absolute value has increased compared to 2022. Nevertheless, **activity and the number of emitting sources included have also increased**. Specifically:
  - ✓ Acquisition transport of raw materials has been accounted for and included.
  - ✓ A greater number of purchased materials and products have been accounted for and included.
  - ✓ Indirect emissions from the construction and maintenance of renewable electricity generating plants have been accounted for and included.

Section 9 outlines proposed improvements and actions to further enhance GHG management.

# 9. CONSIDERATIONS FOR THE FUTURE: IMPROVEMENT ACTIONS

## 9.1. ENHANCEMENTS IN GHG MANAGEMENT AND CALCULATIONS

The following tables present various measures and enhancements identified during the study:

| | | |
|---|---|---|
| Rental vehicle fleet | Improvements in GHG management | The suggested approach aligns with Lamp's current strategy: gradually replacing vehicles with hybrid models as their rental contracts expire, aiming to reduce emissions. **This source of emissions could potentially be reduced by approximately 34.96 t $CO_2e$ if full electric autonomy is achieved.** |
| | Calculation enhancements | The method of obtaining consumption data is accurate, as it is sourced directly from the fuel provider (Repsol Group). Nonetheless, while emissions calculation relies on fuel volume, it would be beneficial to collect information on the annual mileage of the fleet vehicles. This would facilitate the implementation of strategies to assign lower-emission vehicles to areas with higher mileage and enable analysis of emission reductions per kilometre. |

| | | |
|---|---|---|
| Fuel for stationary installations | Improvements in GHG management | For Lamp, the most effective strategy to reduce emissions from this source involves electrification using technologies like aerothermal systems, aiming for zero emissions. Alternatively, boilers that use less emitting fuels such as biomass, pellets or even natural gas are viable options. If transitioning to alternative energy sources is not feasible, it is advisable to carry out proper preventive maintenance and/or invest in more efficient equipment. A thermographic study can assess enclosures and insulation effectiveness. **Eliminating heating diesel would lead to a reduction in emissions by 27.91 t $CO_2e$.** |
| | Calculation enhancements | Data collection is accurate and sourced from reliable channels. |

| | | |
|---|---|---|
| Refrigerants and extinction equipment | Improvements in GHG management | No leaks have been detected. Continue with regular preventive maintenance. Gradually replace outdated equipment using R-22 with units utilising new refrigerants with significantly lower GWPs and no ozone layer depletion potential. Some equipment currently operates with refrigerants |

| | | |
|---|---|---|
| | | with GWPs close to 1000, or eco-friendly alternatives like hydrocarbons, which have a smaller ecological impact. |
| | **Calculation enhancements** | Data collection is accurate and sourced from reliable channels. |

| | | |
|---|---|---|
| Electricity | Improvements in GHG management | Neutral emission category. |
| | Calculation enhancements | Data collection and sources are accurate, verifiable and sufficient. |

| | | |
|---|---|---|
| Water | Improvements in GHG management | While water may not be a significant emission source, its scarcity underscores the importance of minimising consumption. Therefore, implementing measures to reduce usage is recommended, such as proximity IR detection taps, aerators, dual flush toilets and cleaning systems for large surfaces using air or high-pressure cleaners to minimise water usage. |
| | Calculation enhancements | Data collection and sources are accurate, verifiable and sufficient. |

| | | |
|---|---|---|
| Commute travel | Improvements in GHG management | Although not a major emission source, every opportunity for emission reduction matters. Increasing telecommuting days, particularly considering Lamp's various work profiles, holds potential for reducing emissions.<br>Survey responses have suggested ways to facilitate the use of zero-emission vehicles, especially bicycles. Installing secure bicycle parking areas would further encourage bicycle usage. |
| | Calculation enhancements | Enhancing the information and representative sample of employee commuting transport. |

<table>
<tr><td rowspan="2">Materials procurement: production</td><td>Improvements in GHG management</td><td>This represents the most significant emission source in Lamp's carbon footprint. Recommended actions for this source include:<br>✓ Opting for local suppliers<br>✓ Choosing suppliers with emission-reduction strategies<br>The aluminium component suppliers considered for this calculation are local, both claiming to work with recycled material. However, only Hydro provides clear and precise information, including environmental declarations of their products and a well-defined R&D policy aimed at emission improvement. Currently, Lamp sources Hydro Restore aluminium from this supplier.<br>The second supplier of injected aluminium parts included in this calculation lacks official data on their emissions or the environmental impact of their product, indicating an area for improvement. Similar to Hydro, this supplier operates locally, within the EU and the same country as Lamp.<br><br>Improving emissions from injection aluminium would require knowledge of the aluminium type used in the injection process. If the aluminium is secondary, derived from waste (100% recycled), emissions would only include those from transportation, aluminium conditioning, the injection process and preparation for shipment.<br><br>Among electronic component suppliers, only TRIDONIC can provide emission factors for their products. For other suppliers, equivalent data have been used based on acquired materials, but efforts are needed to obtain this information from suppliers to make emission-reduction decisions in this category.<br>Electronics and extrusion aluminium currently possess the most accurate emission factors, resulting in emission calculations with a more acceptable level of uncertainty. They also represent the two most emitting groups in Lamp's carbon footprint, making emission reduction in this category more challenging. Much will depend on the emission-reduction strategies of these suppliers.</td></tr>
<tr><td>Calculation enhancements</td><td>Emission factors Lamp collaborates with suppliers, most of whom have already calculated the emissions of their components or products sold. However, due to sector-specific characteristics, slightly different methodologies or standards are used, making it challenging to apply the emission factor directly or as recommended by ISO 14064, using the complete LCA emission factor of the component. Prioritising, as recommended by the OCCC, the application of emission factors provided by the supplier, as they are presumed to be more accurate than generic databases. Nevertheless, for one supplier, IPCC tables had to be used. As suppliers implement emissions calculations for their products, the uncertainty of some parameters can be improved.</td></tr>
</table>

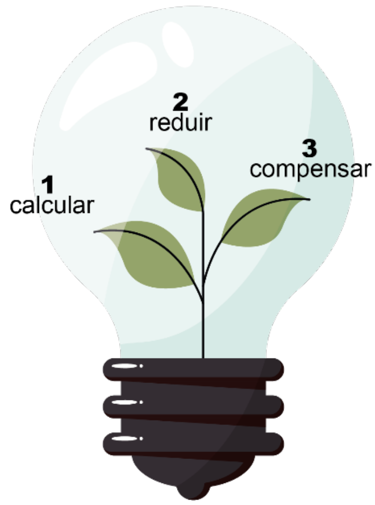
| | | |
|---|---|---|
| Acquisition and distribution transport | Improvements in GHG management | - Selecting service providers with an emissions reduction strategy.<br>- Given that the bulk of subcontracted transport emissions lies in material acquisition (long-distance air and sea transport), it would be beneficial to find suppliers of these materials within the EU. |
| | Calculation enhancements | Currently, some subcontracted companies have provided emission data for their services, while others have provided data enabling calculation using DEFRA's generic emission factors. Calculations have been made where activity data quality is assured, but there is always uncertainty regarding the emission factor used. In these cases, despite narrowing down the type of transport as much as possible, there is always more room for error than if the data were provided by the company itself. It is hoped that in the coming years, all transport companies will be able to provide emission data for their services. |

| | | |
|---|---|---|
| Waste | Improvements in GHG management | In 2023, Lamp generated a significantly higher volume of waste compared to 2022.<br><br>The fraction that has the most impact is managed as residual municipal waste, constituting 61.8% of the emissions generated by waste at Lamp in 2023. This is due to the fact that managing it as residual municipal waste has the highest emission factor. Efforts should be directed towards reducing this fraction. |
| | Calculation enhancements | Data collection and sources are accurate, verifiable and sufficient. |

## 9.2. OFFSETTING

To achieve carbon footprint neutrality, the primary focus should be on reducing GHG emissions. However, there are also other complementary mechanisms once the organisation has a reduction plan in the process of implementation or already implemented but has not yet achieved emission neutrality.

It is important to note that, according to regulations stemming from the European Green Deal, the entire business sector must reduce its emissions by 55% by 2030 compared to the base year (1990).




### Offsetting

Emission offsetting is a mechanism through which an organisation can neutralise a certain amount of emissions by investing in environmental projects aimed at increasing the planet's carbon sink capacity or providing solutions to avoid the production of GHGs.

We recommend implementing this with projects that use recognised and verified methodologies. If the organisation is interested in partially or fully offsetting its emissions, it can do so at any time. However, we recommend that it not be used as a substitute for a reduction plan but rather as a complement. Since Lamp is voluntarily registered with MITECO, it can choose to offset emissions in one of the offsetting projects registered in the same registry. This way, it could obtain certification that it is partially or fully offsetting its carbon footprint as part of its corporate environmental responsibility.

# 10. GLOSSARY

- **(GWP) Global Warming Potential.** Using the GWP of $CO_2$ as a reference, which is 1, we can determine the GWP of the other greenhouse gases.
- **$CO_2$ equivalent.** A universal unit indicating the global warming potential (GWP) of the six main greenhouse gases.
- **Scope.** Operational boundaries concerning direct and indirect emissions.
- **(AD) Activity data.** Includes consumption, production, etc.
- **Emissions.** The release of greenhouse gases into the atmosphere.
- **Direct emissions.** Emissions from sources owned or controlled by the organisation.
- **Indirect emissions.** Emissions stemming from the organisation's operations but arising from sources not owned or controlled by it.
- **(GHG) Greenhouse Gases.** Gases listed in the Kyoto Protocol: CO2, CH4, N2O, HFCs, PFCs and NF3.
- **(EF) Emission factor.** A parameter allowing the estimation of GHG emissions based on available activity data.
- **Emission inventory.** A list quantifying GHG emissions and emission sources corresponding to an organisation.

# 11. BIBLIOGRAPHY

**Documents consulted**


- UNE-ISO 14064-1:2018 Standard: Greenhouse gases. Part 1: Specification with guidance at the organisation level for the quantification and reporting of greenhouse gas emissions and removals.
  ***UNE. 2019***
- Guide for the progressive introduction of indirect GHG emissions within the framework of the Voluntary Agreements Programme.
  ***Catalan Office for Climate Change. 2023***
- IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories.
  ***IPCC. 2001.***
- Emission Factors. Carbon Footprint Registry, Offsetting and Carbon Dioxide Absorption Projects.
  ***Ministry for the Ecological Transition and the Demographic Challenge. 2023.***

- Guide for Carbon Footprint Calculation and the development of an Organisation Improvement Plan.
  ***Ministry for the Ecological Transition and the Demographic Challenge. 2020.***
- Guide for estimating carbon dioxide absorption.
  ***Ministry for the Ecological Transition and the Demographic Challenge. 2019.***
- Calculation and verification of the carbon footprint. Emission reduction actions.
  ***AENOR. 2017.***
- Guide for calculating greenhouse gas emissions.
  ***Department of Climate Action, Food and Rural Agenda. 2023.***
- Royal Decree 244/2016, of 3 June, which elaborates on Law 32/2014, of 22 December, concerning Metrology.
  ***BOE (Official State Gazette). 2016.***

**Consulted websites**

- Spanish Office for Climate Change.

https://www.miteco.gob.es/es/cambio-climatico/temas/organismos-e-instituciones-implicados-en-la-lucha-contra-el-cambio-climatico-a-nivel-nacional/oficina-espanola-en-cambio-climatico/default.aspx

- Catalan Office for Climate Change.

https://canviclimatic.gencat.cat

- Ministry for the Ecological Transition and the Demographic Challenge.

https://www.miteco.gob.es

- Intergovernmental Panel on Climate Change.

https://www.ipcc.ch/languages-2/spanish/

- UN Environment Programme: UNEP.

https://www.unep.org/es/sobre-onu-medio-ambiente

- World Meteorological Organization.

https://public.wmo.int/en/media/press-release/greenhouse-gas-concentrations-surge-new-record

- Greenhouse Gas Protocol.

https://ghgprotocol.org/

# 12. APPENDICES

## 12.1. Appendix 1 - Emission Factors/GWP

The following tables detail the emission factors used for the calculation of the year 2023.

| Emissions | | Identified emission source | Emission factor units | Emission factor | | | Total kg $CO_2$ e/unit | Source of data |
|---|---|---|---|---|---|---|---|---|
| | | | | $CO_2$ | $CH_4$ | $N_2O$ | | |
| | | | | kg $CO_2$/unit | kg $CO_2$ e/unit | kg $CO_2$ e/unit | | |
| 1.1 | Direct emissions from stationary combustion | Diesel C | kg $CO_2$ e/l | 2.87 | 0.00325 | 0.0061 | 2.87 | OCCC. March 2024 version |
| 1.2 | Direct emissions from mobile combustion | Petrol 95 | kg $CO_2$ e/l | 2.230 | 0.0069 | 0.0069 | 2.24 | OCCC. March 2024 version |
| | | Diesel E+ NEO | kg $CO_2$ e/l | 2.471 | 0.0002 | 0.0315 | 2.50 | OCCC. March 2024 version |
| 2.1 | Indirect emissions from imported electricity | Electricity | kg $CO_2$ e/kWh | 0 | | | 0 | OCCC. March 2024 version |
| 3.1 and 3.2 | Acquisition and distribution transport | Air | kg CO2/t*km | 0.53358 | 0.00004 | 0.00505 | - | DEFRA 2024 ICAO 2024 |
| | | Lorry | kg CO2/t*km | 0.05899 | 0.00001 | 0.00089 | - | DEFRA 2024 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Maritime | kg CO2/t*km | 0.01305 | 0.000004 | 0.000178 | - | DEFRA 2024 |
| | | Van | kg CO2/t*km | 0.56617 | 0.00001 | 0.00416 | - | DEFRA 2024 |
| 3.3 | Emissions from employees' daily commuting | Commute travel | Refer to the "Commute travel" section of this Appendix | | | | | |
| 3.5 | Corporate travel emissions | Plane trips | Emissions calculated using the ICAO 2024 calculation tool. See breakdown of corporate travel in Table 2 of Appendix 3. | | | | | |
| 4.1<br>4.2<br>4.3 | Emissions from procured materials and products | Refer to the "Procurement of materials and products for production" section of this Appendix | | | | | | |
| | Emissions from procured office materials and products | Refer to the "Purchases of office supplies" section of this Appendix | | | | | | |
| | Emissions from procured goods | Refer to the "Purchases of office supplies" section of this Appendix | | | | | | |
| | Electricity production | Indirect from the purchase of non-renewable energy | kg $CO_2$ e/kWh | --- | --- | --- | 0.026 | OCCC. March 2024 version |
| 4.3 | Emissions from other sources | Water consumption | kg $CO_2$ e/m$^3$ | --- | --- | --- | 0.385 | OCCC. March 2024 version |

| | | | |
|---|---|---|---|
| 4.4 | Emissions from the disposal of solid and liquid waste | Industrial waste | Refer to the “Industrial waste” section of Appendix 3 Table 4 |

## Commute travel

| Detailed emission source | Emission factor units | Disaggregated emission factor | | | | Source of data |
|---|---|---|---|---|---|---|
| | | $CO_2$ | $CH_4$ | $N_2O$ | Total kg $CO_2$ e/unit | |
| | | kg $CO_2$/unit | kg $CO_2$ e/unit | kg $CO_2$ e/unit | | |
| Suburban train | kg $CO_2$ e/passenger*km | --- | --- | --- | 0.03 | OCCC. March 2024 version |
| Petrol car | kg $CO_2$/litre | 2.230 | 0.0069 | 0.0069 | 2.2438 | OCCC. March 2024 version |
| Motorcycle petrol | kg $CO_2$/litre | 2.230 | 0.0607 | 0.0120 | 2.3027 | OCCC. March 2024 version |
| Diesel car | kg $CO_2$ e/litre | 2.471 | 0.0002 | 0.0315 | 2.5027 | OCCC. March 2024 version |
| LPG car | kg $CO_2$/litre | 1.647 | 0.0059 | 0.0044 | 1.6573 | OCCC. March 2024 version |

## Purchases of office supplies

| Detailed emission source | Emission factor units | Aggregated emission factor | | | | Source of data |
|---|---|---|---|---|---|---|
| | | $CO_2$ | $CH_4$ | $N_2O$ | Total kg $CO_2$ e/unit | |
| | | kg $CO_2$/unit | kg $CO_2$ e/unit | kg $CO_2$ e/unit | | |
| Recycled paper | kg $CO_2$/kg | --- | --- | --- | 1.8 | OCCC. March 2024 version |
| Virgin fibre paper | kg $CO_2$//kg | --- | --- | --- | 3 | OCCC. March 2024 version |
| Laptop | kg $CO_2$/unit | --- | --- | --- | 374 | OCCC. March 2024 version |
| Desktop computer | kg $CO_2$/unit | --- | --- | --- | 423 | OCCC. March 2024 version |
| Mobile phone | kg $CO_2$/unit | --- | --- | --- | 60 | OCCC. March 2024 version |
| Tablet | kg $CO_2$/unit | --- | --- | --- | 98 | OCCC. March 2024 version |
| Keyboard | kg $CO_2$/kg | --- | --- | --- | 24.87 | DEFRA 2023 |

## Procurement of materials and products for production

| MATERIAL OR COMPONENT | CONSUMPTION OR EMISSIONS | UNITS | Emission factor |
|---|---|---|---|
| Hydro bars (La Roca del Vallès) | 83,986.00 | kg | 5 kg CO2/kg. Provided by the supplier. |
| Injection aluminium (various sources) | 39,809.00 | kg | 1.8 kg co2/kg IPCC. |
| POLYCARBONATE Injection and treatments | 52,040.00 | kg CO2 | Emissions provided by the supplier. |
| TRIDONIC, 144515 units counted (GROUPED) | 355,170.96 | kg CO2 | Emission factors extracted from the EPD, see next TRIDONIC table |
| OTHER ELECTRONIC SUPPLIERS, 89753 units counted (GROUPED)[3] | 218,330.59 | kg CO2 | Emission factors extracted from the EPD of analogous products from TRIDONIC. |
| Recycled cardboard boxes | 46,180.00 | kg | 0.326 t CO2/t cardboard Procarton |

3

| Type: | Quantity | Similar to: | EF (TRIDONIC EPD used in 2022) | |
|---|---|---|---|---|
| **DRV NR** | 25838 | LC | 1.36 | 35139.68 |
| **Adjustable DRV** | 16696 | LCA | 7.21 | 120378.16 |
| **COB LED Module** | 17040 | | 1.14 | 19425.6 |
| **Linear LED Module** | 29419 | LLE 280mm | 1.45 | 42657.55 |
| **Other LED Modules** | 760 | DLE | 0.96 | 729.6 |
| | | TOTAL EMISSIONS | | 218330.59 |

| Product group TRIDONIC | Description | QTY [pcs] | EDP emission factor A1-A3 kgCO2 e/unit | Total emissions 2023 |
|---|---|---|---|---|
| LLE ADV/EXC LED Module | | | | |
| | LLE 24x280mm 650lm 840 HV ADV5 | 18,840 | 1.596 | 30068.64 |
| | LLE 24x280mm 650lm 830 HV ADV5 | 14,872 | 1.596 | 23735.712 |
| | LLE 24x560mm 1300lm 830 HV ADV5 | 14,100 | 1.84 | 25944 |
| | LLE 24x280mm 1250lm 840 HV ADV5 | 10,698 | 1.596 | 17074.008 |
| | LLE 24x560mm 1300lm 840 HV ADV5 | 9,612 | 1.84 | 17686.08 |
| | LLE 24x560mm 1300lm 940 HV ADV5 | 7,052 | 1.84 | 12975.68 |
| | LLE 24x560mm 2400lm 840 HV ADV5 | 5,940 | 1.84 | 10929.6 |
| | LLE 24x560mm 2400lm 940 HV ADV5 | 4,416 | 1.84 | 8125.44 |
| | LLE 24x140mm 325lm 940 HV ADV5 | 2,348 | 0.455 | 1068.34 |
| | LLE 24x70mm 160lm 940 HV ADV5 QTY4 | 2,011 | 0.912 | 1834.032 |
| | LLE 16x560mm 1300lm 840 HV ADV5 | 1,872 | 1.32 | 2471.04 |
| | LLE 24x140mm 325lm 840 HV ADV5 | 1,816 | 0.455 | 826.28 |
| | LLE 24x280mm 1250lm 830 HV ADV5 | 1,680 | 1.596 | 2681.28 |
| | LLE 16x560mm 1300lm 830 HV ADV5 | 1,524 | 1.30 | 1981.2 |
| | LLE 24x560mm 2400lm 830 HV ADV5 | 1,152 | 1.84 | 2119.68 |
| | LLE 24x70mm 160lm 840 HV ADV5 QTY4 | 432 | 0.912 | 393.984 |
| | LLE 16x280mm 650lm 840 HV ADV5 | 427 | 0.759 | 324.093 |
| | LLE 24x560mm 1300lm 930 HV ADV5 | 228 | 1.84 | 419.52 |
| | LLE 24x140mm 650lm 830 HV ADV5 | 220 | 0.455 | 100.1 |
| | LLE 24x70mm 160lm 830 HV ADV5 QTY4 | 216 | 0.912 | 196.992 |
| | LLE 24x280mm 650lm 930 HV ADV5 | 128 | 1.596 | 204.288 |
| | LLE 16x560mm 1300lm 827 HV ADV5 | 108 | 1.3 | 140.4 |
| | LLE 16x140mm 325lm 830 HV ADV5 | 50 | 0.471 | 23.55 |
| | LLE 24x140mm 650lm 840 HV ADV5 | 44 | 0.455 | 20.02 |
| | LLE 16x70mm 325lm 840 HV ADV5 QTY4 | 36 | 0.782 | 28.152 |
| | LLE 24x70mm 325lm 830 HV ADV5 QTY4 | 30 | 0.946 | 28.38 |
| | LLE 24x560mm 1300lm 930 LV ADV5 | 25 | 1.84 | 46 |
| | LLE 16x560mm 1300lm 930 HV ADV5 | 20 | 1.32 | 26.4 |
| | LLE 24x280mm 650lm 930 HV ADV6 | 2 | 1.596 | 3.192 |
| | LLE 24x280mm 650lm 940 HV ADV6 | 2 | 1.596 | 3.192 |
| | LLE 24x140mm 325lm 830 HV ADV6 | 1 | 0.455 | 0.455 |

| | | | | |
|---|---|---|---|---|
| | LLE 24x140mm 325lm 840 HV ADV6 | 1 | 0.455 | 0.455 |
| | LLE 24x280mm 650lm 830 HV ADV6 | 1 | 1.596 | 1.596 |
| | LLE 24x280mm 650lm 840 HV ADV6 | 1 | 1.596 | 1.596 |
| | LLE 24x560mm 1300lm 830 HV ADV6 | 1 | 1.84 | 1.84 |
| | LLE 24x560mm 1300lm 840 HV ADV6 | 1 | 1.84 | 1.84 |
| | LLE 24x140mm 650lm 830 HV ADV6 | 1 | 0.455 | 0.455 |
| | LLE 24x140mm 650lm 840 HV ADV6 | 1 | 0.455 | 0.455 |
| | LLE 24x280mm 1250lm 830 HV ADV6 | 1 | 1.596 | 1.596 |
| | LLE 24x280mm 1250lm 840 HV ADV6 | 1 | 1.596 | 1.596 |
| | LLE 24x560mm 2400lm 830 HV ADV6 | 1 | 1.84 | 1.84 |
| | LLE 24x560mm 2400lm 840 HV ADV6 | 1 | 1.84 | 1.84 |
| **Conv linear LED O4A** | | | | |
| | LCA 50W 100-400mA one4all lp PRE | 7,940 | 7.87 | 62487.8 |
| | LCA 35W 150-700mA one4all lp PRE | 2,300 | 7.46 | 17158 |
| | LC 60/150-550/230 o4a NF h16 EXC4 | 800 | 7.3 | 5840 |
| | LCA 75W 100-400mA one4all lp PRE | 520 | 7.87 | 4092.4 |
| | LCA 75W 350-1050mA one4all lp PRE | 150 | 7.87 | 1180.5 |
| | LC 35/80-400/95 o4a NF h11 PRE3 | 120 | 11.2 | 1344 |
| | LC 35/150-700/54 o4a NF lp PRE3 | 110 | 9.69 | 1065.9 |
| | LCA 75W 250-550mA one4all lp PRE | 10 | 6.35 | 63.5 |
| | LC 60/75-330/330 o4a NF h16 EXC4 | 10 | 7.22 | 72.2 |
| | LC 90/200-800/230 o4a NF h16 EXC4 | 10 | 7.22 | 72.2 |
| **LED module DLE** | | | | |
| | DLE G4 65mm 3000lm 840 R ADV | 5,868 | 0.96 | 5633.28 |
| | DLE G4 65mm 3000lm 830 R ADV | 1,146 | 0.96 | 1100.16 |
| **Conv linear LED ADV** | | | | |
| | LC 69W 350-500mA flexC lp ADV | 3,300 | 3.35 | 11055 |
| | LC 38W 350-500mA flexC lp ADV | 2,750 | 2.77 | 7617.5 |
| **LED module outdoor** | | | | |
| | RLE 2x4 2000lm 830 HP EXC2 OTD | 1,422 | 0.805 | 1144.71 |
| | RLE 2x8 4000lm 840 HP EXC2 OTD | 1,176 | 1.44 | 1693.44 |
| | RLE 2x4 2000lm 840 HP EXC2 OTD | 1,016 | 0.805 | 817.88 |
| | RLE 2x8 4000lm 830 HP EXC2 OTD | 890 | 1.47 | 1308.3 |
| | RLE 2x8 4000lm 730 HP EXC2 OTD | 88 | 1.44 | 126.72 |
| | RLE 2x8 6000lm 830 HP HE EXC3 OTD | 1 | 1.47 | 1.47 |
| **Conv linear LED FO** | | | | |
| | LC 50W 100-400mA flexC lp EXC | 1,320 | 4.74 | 6256.8 |

| | | | | |
|---|---|---|---|---|
| | LC 25W 100-500mA flexC lp EXC | 700 | 3.86 | 2702 |
| | LC 75W 100-400mA flexC lp EXC | 400 | 6.35 | 2540 |
| | LC 75W 250-550mA flexC lp EXC | 120 | 6.35 | 762 |
| | LC 75W 350-1050mA flexC lp EXC | 90 | 6.35 | 571.5 |
| | LC 40/75-400/220 flexC NF h16 EXC4 | 30 | 4.64 | 139.2 |
| | LC 50W 350-1050mA flexC lp EXC | 10 | 4.74 | 47.4 |
| **LED Conv comp ADV** | | | | |
| | LC 14/250-350/40 flexC R ADV2 | 1,500 | 2.31 | 3465 |
| | LC 24/500-600/40 flexC R ADV2 | 800 | 2.31 | 1848 |
| | LC 20W 350/500/700mA flexC SR ADV | 100 | 2.31 | 231 |
| **LED Conv com SNC** | | | | |
| | LC 10/150-250/42 flexC SC SNC4 | 1,001 | 2.74 | 2742.74 |
| | LC 10/700/14.5 fixC SC SNC2 | 800 | 1.37 | 1096 |
| | LC 30/700/43 fixC SR SNC2 | 343 | 2.06 | 706.58 |
| | LC 15/350/43 fixC SC SNC2 | 50 | 1.84 | 92 |
| | LC 8/200/40 fixC SC SNC2 | 1 | 1.37 | 1.37 |
| **LED Conv comEXC Dali** | | | | |
| | LC 27/100-500/54 o4a NF SR EXC3 | 1,800 | 11.3 | 20340 |
| | AC 14/100-400/42 o4a NF SC EXC3 | 20 | 4.38 | 87.6 |
| **LED accessory indu** | | | | |
| **LED Conv Linear SNC** | | | | |
| | LC 25/200-350/70 flexC lp SNC4 | 600 | 2.06 | 1236 |
| | LC 19/200-350/54 flexC lp SNC4 | 600 | 2.06 | 1236 |
| | LC 35/200-350/121 flexC lp SNC4 | 250 | 2.2 | 550 |
| | LC 50W 700mA fixC lp SNC | 100 | 2.15 | 215 |
| | LC 65W 700mA fixC lp SNC | 50 | 2.15 | 107.5 |
| | LC 38/700/54 fixC lp SNC2 | 50 | 3.3 | 165 |
| | LC 38/400-700/54 flexC lp SNC4 | 10 | 3.3 | 33 |
| | LC 10/200-350/29 flexC lp SNC4 | 1 | 2.74 | 2.74 |
| **Accu LiFePO4** | | | | |
| | ACCU-LiFePO4 3.0Ah 2A CON | 700 | 1.34 | 934.73 |
| | ACCU-LiFePO4 1.5Ah 1A CON | 105 | 0.79 | 83.09 |
| | ACCU-LiFePO4 4.5Ah 3B CON | 15 | 1.78 | 26.71 |
| | PACK-LiFePO4 4.5Ah 3 CON | 15 | 1.85 | 27.82 |
| **EM convertaLED PRO** | | | | |
| | EMconverterLED PRO 205 MH/LiFePO4 250V | 545 | 8.01 | 4365.45 |
| | EMconverterLED PRO 203 MH/LiFePO4 250V | 80 | 8.01 | 640.8 |

| | | | | |
|---|---|---|---|---|
| | EMconverterLED PRO 202A MH/LiFePO4 50V | 20 | 7.96 | 159.2 |
| | EMconverterLED PRO 203 MH/LiFePO4 50V | 10 | 7.99 | 79.9 |
| | EMconverterLED PRO 204 MH/LiFePO4 50V | 4 | 7.99 | 31.96 |
| **LED LLE to lens syst** | | | | |
| | LLE 20x280mm 750lm 930 LV MD ADV1 | 420 | 1.596 | 0 |
| | LLE 20x280mm 750lm 940 LV MD ADV1 | 158 | 1.596 | 252.168 |
| | LLE 20x280mm 750lm 927-965 LV MD ADV1 | 17 | 1.596 | 27.132 |
| **LED Conv CV Ind SNC** | | | | |
| | LC 100W 24V SC SNC | 430 | 4.64 | 1995.2 |
| | LC 60W 24V SC SNC | 112 | 4.48 | 501.76 |
| **LED tunable shop** | | | | |
| | LCA 38W 350-1050mA DT8 SR PRE | 472 | 14.5 | 6844 |
| | LCA 38W 350-1050mA DT8 C PRE | 10 | 13.3 | 133 |
| **EM convertaLED BASIC** | | | | |
| | EMconverterLED BASIC 205 MH/LiFePO4 250V | 160 | 3.05 | 488 |
| | EMconverterLED BASIC 202 MH/LiFePO4 50V | 110 | 3.03 | 333.3 |
| | EMconverterLED BASIC 203 NiCd/NiMH 250V | 30 | 3.37 | 101.1 |
| | EMconverterLED BASIC 202A MH/LiFePO4 50V | 10 | 3.75 | 37.5 |
| | EMconverterLED BASIC 203 NiCd/NiMH 90V | 3 | 3.99 | 11.97 |
| **LED Conv comp O4A** | | | | |
| | LCA 25W 350-1050mA one4all SR PRE | 138 | 7.55 | 1041.9 |
| | LCA 25W 350-1050mA one4all SC PRE | 40 | 7.55 | 302 |
| | LCA 45W 500-1400mA one4all SC PRE | 20 | 14.5 | 290 |
| **LED Conv comp WI-INT** | | | | |
| | LC 38/350-1050/50 bDW TW SR PRE2 | 75 | 7.26 | 544.5 |
| | LC 10/150-400/40 bDW SC PRE2 | 40 | 4.36 | 174.4 |
| | LC 17/250-700/50 bDW SC PRE2 | 10 | 4.35 | 43.5 |
| | LC 25/350-1050/50 bDW SC PRE2 | 10 | 4.39 | 43.9 |
| **LED Conv com CV PRE** | | | | |
| | LCA 100W 24V one4all SC PRE | 50 | 9.65 | 482.5 |
| | LCA 60W 24V one4all SC PRE SP | 50 | 8.515 | 425.75 |
| | LCA 150W 24V one4all SC PRE | 20 | 10.2 | 204 |
| | LCA 35W 24V one4all SC PRE | 10 | 7.38 | 73.8 |
| **LED Conv comp FO** | | | | |

| | | | | |
|---|---|---|---|---|
| | LC 25W 350-1050mA flexC SC EXC | 60 | 2.31 | 138.6 |
| | LC 60W 900-1750mA flexC C EXC | 50 | 4.48 | 224 |
| | LC 10W 150-400mA flexC SC EXC | 10 | 3.64 | 36.4 |
| | LC 45W 500-1400mA flexC SC EXC | 10 | 2.15 | 21.5 |
| **LED Conv Indu O4A** | | | | |
| | LCI 100/200-850/300 o4a sl PRE | 100 | 9 | 900 |
| | LCI 150/325-1050/300 o4a sl PRE mod | 10 | 9.02 | 90.2 |
| **LED Conv lin EXC1-10** | | | | |
| | LC 75W 100-400mA 1-10V lp EXC | 100 | 5.15 | 515 |
| | | | | **355,170.96** |

## 12.2. Appendix 2 - Correspondences of the REG 2150/2022 group and LER code

| LER Code | Description of waste | Corresponding REG 2150/2022 group |
|---|---|---|
| 150110 | Empty contaminated containers | 6 |
| 200139 | Plastics | 20 |
| 200301 | Ordinary | 34 |
| 80111 | Expired paint | 6 |
| 80113 | Paint sludges | 6 |
| 101112 | Glass containers | 16 |
| 130205 | Oils | 4 (6) |
| 140603 | Non-halogenated solvents | 1 |
| 160504 | Aerosol containers | 6 |
| 200101 | Paper and cardboard | 18 |
| 200133 | Batteries (P) | 30 (35) |
| 200136 | WEEE (P) | 25 (35) |
| 150202 | Absorbents | 6 |
| 200121 | Fluorescent tubes (P) | 26 (35) |

## 12.3. Appendix 3 - Breakdown of activity data

### Table 1: Commute travel

| Means of transportation | Number of users | Daily distance per user (km/day) | Total annual km travelled by users[4] or | t $CO_2$ e emissions |
|---|---|---|---|---|
| Petrol car | 25 | 270.8 | 61,913.72 | 0.02825 |
| Diesel car | 13 | 286.8 | 55,437.8 | 0.09124 |
| Hybrid car | 5 | 85.4 | 16,644.72 | 0.0040 |
| Electric car | 1 | 52 | 11,596 | |
| Biodiesel car | 1 | 20 | 4,460 | 0.01235 |
| Electric scooter | 1 | 5 | 1,115 | |
| Train | 2 | 74 | 15,877.6 | 0.63304 |
| Walking | 2 | 3.5 | 713.6 | 0 |

| Means of transportation | Number of users | Total user daily consumption (l/day) | Total user annual consumption (l/year) | Emissions in t $CO_2$ e by GHG type | | | t $CO_2$ e total emissions |
|---|---|---|---|---|---|---|---|
| | | | | $CO_2$ | $CH_4$ | $N_2O$ | |
| Petrol car (EFITEC 95) | 25 | 20.0096 | 4,111.83 | 9.1687 | 0.02825 | 0.02825 | 9.225 |
| Diesel car | 13 | 14.814 | 2,900.12 | 7.1652 | 0.00052 | 0.09124 | 7.256 |

[4] 223 effective working days including commuting have been taken into account

# Table 2: Corporate travel

## Plane travel

| Route | No. of tickets (segments) | kg $CO_2$ |
|---|---|---|
| Alicante – Palma de Mallorca | 1 | 48.23 |
| Barcelona – Madrid | 1 | 61.90 |
| Alicante – Palma de Mallorca – Alicante | 1 | 95.20 |
| Barcelona – Bogotá – Santiago de Chile – Bogotá - Barcelona | 1 | 1,308.67 |
| Barcelona – Bogotá – Barcelona | 1 | 776.80 |
| Barcelona – London | 1 | 123.14 |
| London – Barcelona | 1 | 124.43 |
| Barcelona – Milan – Barcelona | 1 | 162.80 |
| Barcelona – Madrid – Barcelona | 1 | 124.63 |
| Barcelona – Madrid – Barcelona | 1 | 122.49 |
| Barcelona – Madrid – Barcelona | 1 | 123.50 |
| Barcelona – Madrid – Barcelona | 1 | 124.06 |
| Barcelona – Madrid – Barcelona | 1 | 123.63 |
| Madrid – Barcelona | 1 | 61.33 |
| Barcelona – Madrid – Barcelona | 1 | 124.63 |
| Barcelona – Madrid – Barcelona | 1 | 123.80 |
| Madrid – Barcelona | 1 | 61.90 |
| Madrid - Venice - Madrid | 1 | 267.29 |
| Madrid - Venice - Madrid | 1 | 267.29 |
| Barcelona – Madrid – Barcelona | 1 | 124.06 |
| Barcelona - Frankfurt - Barcelona | 1 | 193.80 |
| Barcelona - Frankfurt - Barcelona | 1 | 193.80 |
| Barcelona - Frankfurt - Barcelona | 1 | 193.80 |
| Barcelona - Frankfurt - Barcelona | 1 | 193.80 |
| Barcelona - Frankfurt - Barcelona | 1 | 193.80 |
| Barcelona - Frankfurt - Barcelona | 1 | 193.80 |
| Barcelona - Frankfurt - Barcelona | 1 | 193.80 |
| Barcelona - Frankfurt - Barcelona | 1 | 193.80 |
| Barcelona - Frankfurt - Barcelona | 1 | 193.80 |
| Barcelona - Frankfurt - Barcelona | 1 | 193.80 |
| Barcelona - Frankfurt - Barcelona | 1 | 190.87 |
| Barcelona - Frankfurt - Barcelona | 1 | 190.87 |
| Vigo - Barcelona | 1 | 100.40 |
| Barcelona - Singapore - Hong Kong - Guangzhou - Singapore - Barcelona | 1 | 1,189.74 |
| Barcelona - Singapore - Hong Kong - Guangzhou - Singapore - Barcelona | 1 | 1,189.74 |

| | | |
|---|---|---|
| Barcelona - Singapore - Hong Kong - Guangzhou - Singapore - Barcelona | 1 | 1,189.74 |
| Barcelona - Singapore - Hong Kong - Guangzhou - Singapore - Barcelona | 1 | 1,189.74 |
| Barcelona - Singapore - Hong Kong - Guangzhou - Singapore - Barcelona | 1 | 1,189.74 |
| Barcelona - Mexico City - Barcelona | 1 | 1,249.22 |
| Barcelona - Mexico City - Barcelona | 1 | 1,249.22 |
| Barcelona - Dubai - Barcelona | 1 | 669.28 |
| Barcelona - Lisbon - Barcelona | 1 | 231.03 |
| Barcelona - Newark NJ - Barcelona | 1 | 643.06 |
| Barcelona - Venice - Barcelona | 1 | 197.20 |
| Barcelona - Seville - Barcelona | 1 | 179.20 |
| Barcelona - Madrid | 1 | 61.33 |
| Barcelona - Seville - Barcelona | 1 | 179.20 |
| Barcelona - Seville - Barcelona | 1 | 179.20 |
| Barcelona - Seville - Barcelona | 1 | 179.20 |
| Barcelona - Seville - Barcelona | 1 | 179.20 |
| Barcelona - Seville - Barcelona | 1 | 179.20 |
| Barcelona - Oviedo - Barcelona | 1 | 176.40 |
| Málaga - Barcelona | 1 | 85.00 |
| Barcelona - Seville - Barcelona | 1 | 179.20 |
| London - Barcelona | 1 | 118.40 |
| Barcelona - Bilbao - San Sebastian - Barcelona | 1 | 128.20 |
| Barcelona - Mallorca - Barcelona | 1 | 71.40 |
| Mallorca - Alicante | 1 | 48.60 |
| Barcelona - Seville | 1 | 89.60 |
| Seville - Barcelona | 1 | 89.60 |
| Barcelona - Venice - Barcelona | 1 | 197.20 |
| Barcelona - Venice - Barcelona | 1 | 197.20 |
| Barcelona - Venice - Barcelona | 1 | 197.20 |
| Paris - Barcelona - Paris | 1 | 189.20 |
| Barcelona - La Coruña - Santiago de Compostela - Barcelona | 1 | 194.50 |
| Barcelona - Bilbao - Barcelona | 1 | 122.80 |
| Barcelona - Bilbao - Barcelona | 1 | 122.80 |
| Vigo - Barcelona - Vigo | 1 | 200.80 |
| **TOTAL** | **20,502.3** | |

## Rail travel: AVE

| Route | km | kg $CO_2$ |
|---|---|---|
| Madrid – Barcelona | 620.90 | 16.52 |
| Madrid – Barcelona | 620.90 | 16.52 |
| Madrid - Barcelona - Madrid | 1,241.80 | 33.03 |
| Madrid - Barcelona - Madrid | 1,241.80 | 33.03 |
| Madrid - Seville – Madrid | 941.60 | 25.05 |
| Barcelona – Madrid | 620.90 | 16.52 |
| Madrid – Barcelona | 620.90 | 16.52 |
| Barcelona - Madrid | 620.90 | 16.52 |
| Barcelona - Madrid | 620.90 | 16.52 |
| Zaragoza – Barcelona | 314.20 | 8.36 |
| Zaragoza – Barcelona | 314.20 | 8.36 |
| Zaragoza – Barcelona | 314.20 | 8.36 |
| Barcelona – Zaragoza | 314.20 | 8.36 |
| Barcelona – Zaragoza | 314.20 | 8.36 |
| Barcelona – Zaragoza | 314.20 | 8.36 |
| Valencia – Barcelona | 375.60 | 9.99 |
| Barcelona – Valencia | 375.60 | 9.99 |
| Málaga – Seville | 267.30 | 7.11 |
| Seville – Málaga | 267.30 | 7.11 |
| Barcelona - Zaragoza | 314.20 | 8.36 |
| **TOTAL** | **282.91** | |

## Table 3: Office Supplies

| Item | Consumption | Units | Emission factor (kg $CO_2$/ unit or kg) | t $CO_2$ e emissions |
|---|---|---|---|---|
| Recycled A3 paper | 19.92 | kg | 0.0018 | 0.03586 |
| Recycled A4 paper | 747 | kg | 0.0018 | 1.3446 |
| Laptops | 12 | Unit | 0.374 | 4.48 |

| | | | | |
|---|---|---|---|---|
| Mobile phones | 4 | Unit | 0.06 | 0.24 |

### Table 4: Waste

| LER Code | Description | REG 2150/2002 group | Disposal method | Tonnes produced | Emission factor in kg $CO_2$ / tonne of waste | t $CO_2$ emissions |
|---|---|---|---|---|---|---|
| 150103 | Wooden packaging | 21 | V15 | 6.26 | 37.53 | 0.234 |
| 150110 | Packaging containing residues of hazardous substances or contaminated by them | 6 | T62 | 0.25 | 225.42 | 0.0563 |
| 150111 | Metal packaging, including empty pressure containers, containing a hazardous solid and porous matrix (e.g., asbestos) | 43 | T62 | 0.05 | 215.44 | 0.01253 |
| 150202 | Absorbents, filtration materials (including oil filters not specified in another category), contaminated cleaning rags and protective clothing contaminated by hazardous substances | 6 | T62 | 0.21 | 225.42 | 0.04734 |
| 160601 | Lead batteries | 30 | T62 | 1.53 | 215.44 | 0.355 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 200101 | Paper and cardboard | 18 | V11 | 16.08 | 159.87 | 2.57 |
| 200121 | Fluorescent tubes and other residues containing mercury | 26 | T62 | 0.10 | 215.44 | 0.023 |
| 200133 | Batteries and accumulators specified in codes 160601, 160602 or 160603 and unclassified batteries and accumulators containing those batteries | 30 | T62 | 0.04 | 215.44 | 0.0092 |
| 200136 | Discarded electrical and electronic equipment other than those specified in codes 200121, 200123 and 200135 | 25 | V41 | 1.99 | 215.44 | 0.188 |
| 200139 | Plastics | 20 | T62 | 3.87 | 106.22 | 0.411 |
| 200139 | Plastics | 20 | V12 | 2.20 | 106.22 | 0.043 |
| 200140 | Metals | 15 | V41 | 28.12 | 69.17 | 1.945 |
| 200301 | Municipal waste mixtures | 34 | T62 | 10.50 | 912.21 | 9.578 |

## Table 5: Electricity

| Bill | (kWh) |
|---|---|
| January | 15,739 |
| February | 15,589 |
| March | 13,134 |
| April | 7,356 |
| May | 9,244 |
| June | 9,810 |
| July | 12,694 |
| August | 10,186 |
| September | 10,568 |
| October | 7,827 |
| November | 13,092 |
| December | 11,549 |
| **TOTAL** | **136,788** |

### Table 6: Water

| Month | (m3) |
|---|---|
| March | 115 |
| June | 137 |
| September | 214 |
| December | 149 |
| **TOTAL** | **615** |

## Table 7: Diesel C

| Month | Heating (litres) | Month | Furnace paint (litres) |
|---|---|---|---|
| January | 2,500 | January | |
| February | 3,251 | February | 1,515 |
| March | 1,959 | March | 570 |
| April | 365 | April | |
| May | | May | 655 |
| June | | June | |
| July | | July | 514 |
| August | | August | |
| September | | September | |
| October | | October | |
| November | 565 | November | 641 |
| December | 1,064 | December | |
| **TOTAL** | **9,704** | **TOTAL** | **3,895** |

## Table 8: Transportation subcontracts

### Acquisition transport

| Company | Remarks | $CO_2$ emissions (kg) |
|---|---|---|
| Logisber | Long-distance transport - maritime. Provided emissions data. | 1,371.07 |
| TVS | Long-distance transport - air - maritime - road. Provided data for emission calculation. Cargo carried: 59,060 kg | 41,395.02 |
| DSV | Road transport. Provided data for emission calculation. Cargo carried: 14,945 kg | 1,022.82 |

### Distribution transport

| Company | Remarks | CO2 emissions (kg) |
|---|---|---|
| FedEx | Road transport. Provided emissions data. Cargo carried: 81.36 kg | 299.76 |
| DVS | Road transport. Provided data for emission calculation. Cargo carried: 16,947 kg | 1,483.89 |
| DHL | Road transport. Provided emissions data. Cargo carried: 228.41 kg | 7,052.18 |
| FullExpress | Air-road transport. Provided data for emission calculation. Cargo carried: 3,633.5 kg | 2,488.95 |

## 12.4. APPENDIX 4 – COMPANY CERTIFICATES

Certificate of purchase of energy with 100% renewable GoO

energianufri

# CERTIFICADO

**Este establecimiento consume electricidad 100% renovable**

**Energía Nufri** certifica un suministro de energía eléctrica de origen 100% renovable a favor de:

LAMP SAU

01/01/2023

## Refrigerant Gas Certificate

*Aire Condicionat, Refrigeració i Fred Industrial*

ALGIS CLIMA

Terrassa a 31 de Gener de 2024

LAMP
C/ CÒRDOVA, 16
08226 - TERRASSA (BARCELONA)

ALGIS CLIMA S.L., com a empresa com a empresa instal·ladora, mantenidora i reparadora d'aire condicionat i refrigeració amb número d'inscripció al Registre d'Agents de la Seguretat Industrial de Catalunya (RASIC): RASIC-005004072. exposa:

El passat any 2023 no es va procedir a cap operació de recuperació o càrrega de gas refrigerant a les instal·lacions de clima de les seves dependències de LAMP al C/ Còrdova 16 a Terrassa.

Molt atentament

ALGIS CLIMA S.L.

ALGIS CLIMA

## Extinguishing Equipment Certificate

**GrupRead**
FIRE PREVENTION & TECHNICAL SERVICES

LAMP, SA
A08478042
CORDOBA, 16
08226-TERRASSA
BARCELONA

**CERTIFICADO DE FUGAS DE INSTALACIONES DE PROTECCIÓN CONTRA INCENDIOS**
**CORDOBA, 16 – TERRASSA**

Previfoc material contra incendios S.L.U con domicilio en Anoia 12 Santa perpetua con el CIF B63408546, de acuerdo con el Reglamento de instalaciones de Protección contra incendios, RIPCI, aprobado por el Real Decreto 513/2017 del 22 de Mayo:

CERTIFICA:

Que durante el año 2023, se han verificado las presiones de los equipos que forman parte de las instalaciones de protección contraincendios existentes en el centro situado en calle Córdoba 16, de Terrassa (Barcelona) del titular citado en cabecera. Los equipos sometidos a presión son siguientes:

- Extintores de incendio ($CO_2$)
- Extintores de incendio (Polvo polivalente + Nitrógeno)

El resultado de las verificaciones se detalla a continuación:

- No se ha producido fuga alguna en el periodo indicado.

Previfoc material contra incendios SLU dispone de la autorización para la instalación y mantenimiento de sistemas de protección contra incendios con el número Registro Industrial 08/0173631.

En Santa perpetua a 23 de Febrero de 2024

GrupRead
FIRE PREVENTION & TECHNICAL SERVICES
Carrer Anoia, 12 - Polígon Industrial Can Bernades - Subirà
08130 Santa Perpètua de Mogoda (Barcelona)
Previfoc Material Contra Incendios SLU - CIF B63408546

Project’s Technical Team:

Elisabeth García Portero
Noelia Cobos Trujillo

WORKTITUDE FOR **LIFE**

Worktitude for light