GHG EMISSIONS INVENTORY 2021

BERGNER EUROPE

Report by ECODES, Zaragoza, June 2022

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1. INTRODUCTION

Climate change is one of the major challenges facing humanity in the twenty-first century. According to IPCC[1], not only is warming in the climate system unequivocal, but the human influence on the climate system is clear and climate change poses risks to human and natural systems.

Businesses should voluntarily take appropriate action to reduce the climate impact of their activity and should even consider this factor when designing their strategies. This is one of the objectives pursued by the Ecology and Development Foundation (ECODES), a non-profit and independent entity, within the Mitigation of Climate Change work area led by the CeroCO2 (Zero CO2) initiative. The initiative aims to promote the co-responsibility of all actors on climate change by proposing that each of them be aware of their emissions, reduce them as much as possible and offset the remaining emissions through projects in developing countries.

For this reason, Bergner Europe, aware of its responsibility to and towards the environment, calculates the 2021 carbon footprint of its activity on a voluntary basis as a step towards an active and coherent policy concerning climate change and the environment.

When compiling an emissions report or carbon footprint calculation, the GHG Protocol (Greenhouse Gas Protocol, the most widely used international tool for calculating and communicating the Emissions Inventory) divides the emission sources of all activities into three "Scopes", which are differentiated between direct emissions (Scope 1), produced in sources owned by the business, and under its control and direct responsibility, and indirect emissions (Scope 2 and 3), which are emissions derived from emission sources that are owned by another entity, or that are not directly under the control of the company that is conducting the analysis.

[1] The IPCC was created in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) to provide politicians and other stakeholders with objective, clear, balanced and neutral information on the state of knowledge on climate change.

2. BERGNER EUROPE 2021 EMISSIONS

2.1. General Data

Bergner Europe is a company dedicated to the distribution of household items. With more than twenty years of experience, they have become one of the most important companies globally in this field.

Aware of their impact and conscious of the environment, they take a series of measures to mitigate their effect on climate change. Therefore, they wanted to calculate the carbon footprint of the facilities detailed in Table 1 and their main activity, which is the shipment of products to any point in the world.

Address	Total built area in m^2	Number of employees
Edificio San Lamberto, Planta 3, Carr. del Aeropuerto, km 4, 50011 Zaragoza	1,872.56	111

Table 1. *Facilities, total built area and number of employees.*

The GHG inventory carried out in this report must correspond to the total of Bergner Europe's facilities in 2021. (see table 1).

2.2. Methodology

The "**IPCC Guidelines for National Greenhouse Gas Inventories",** developed by the Intergovernmental Panel on Climate Change, as well as **"The Greenhouse Gas Protocol, a Corporate Accounting and Reporting Standard**", have been used as a reference framework for this study.

The methodology applied is as follows:

1. Establishing the **limits of the assessment** to identify the main emission sources.
2. Collecting **activity data** to quantify emission sources.
3. Analysing the quality of the data and its sources.
4. **Calculating emissions** using the most appropriate conversion factors.
5. Analysing the **results** and evaluating them.
6. **Reduction** recommendations through the implementation of mitigation measures.

The approach chosen to consolidate the calculation of GHG emissions was an operational control approach, whereby the GHG emissions over which Bergner Europe has operational control were accounted for.

2.3. Greenhouse Gases

There are seven greenhouse gases recognised by the Kyoto Protocol: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).

To homogenise the individual effects of each gas on climate change, the emissions of the different greenhouse gases are converted into a "single currency": CO_2 equivalent. This conversion is made from the "warming potential" of each gas, obtained by comparing the effect of the molecules of each of the gases with the effect of the CO2 molecule (see Table 2).

Kyoto-recognised gas	Warming potential (over 100 years)
Carbon dioxide (CO_2)	1
Methane (CH_4)	28
Nitrous oxide (N_2O)	265
Sulphur hexafluoride (SF_6)	23,500
Nitrogen trifluoride (NF_3)	16,100
Perfluorocarbons (PFCs)	8,900–11,100
Hydrofluorocarbons (HFCs)	4–12,400

Table 2. *Warming potential of Kyoto greenhouse gases*[2].

The warming potential is a relative measure of how much heat can be trapped by a given greenhouse gas, compared to a reference gas, usually CO_2. For example, the warming potential over 100 years of methane is 28 and for nitrous oxide it is 265. In other words, the emission of 1 million tonnes of methane is equivalent to 28 million tonnes of CO_2 equivalent. Thus, carbon dioxide has a GWP value of 1.

This report refers to CO_2 equivalent since, in the calculations carried out, apart from the CO_2 warming potential, the heating potential of other greenhouse gases has also been considered depending on the different emission factors used.

[2] *Spanish Office of Climate Change May 2022 v20.*

2.4. Identification of emission sources

In this section we will see which sources of greenhouse gas emissions, classified in their corresponding scope, have been included in the study.

The three scopes are as follows:

- **Direct emissions or Scope 1**: Includes GHG emissions from emission sources owned or controlled by Bergner Europe, which occur on-site.

  In the case of Bergner Europe, there is no consumption of fossil fuels in fixed facilities and there are no records of leaks from refrigeration and air conditioning units. Therefore, the only consumption that corresponds to this scope is the consumption of diesel in rental vehicles owned by company employees.

- **Indirect emissions from energy or Scope 2**: Includes indirect emissions of GHGs produced by the generation of electricity consumed at Bergner Europe facilities.

  The total electricity consumption of the turnover of 2021 for the facilities is considered in table 1. This information has been provided by the entity.

  The company that provided energy for the facilities throughout the year of calculation is Endesa Energía S.A.U. The Spanish energy mix as a whole in 2021 remains within "category D". Endesa Energía S.A.U, is in "category G", three categories below the national average.

- **Other indirect emissions or Scope 3**: Includes indirect emissions not included in Scope 2, and which, as a consequence of the organisation's activities, originate from GHG sources that belong to or are controlled by other organisations.

  For this scope, indirect GHG emissions from paper consumption, product shipping and business travel, including travel and accommodation, have been taken into account.

All the data relating to the named scopes have been provided by the entity; electricity consumption has been accounted for thanks to monthly invoices and the rest of the data has been provided by internal records.

2.5. Calculation uncertainties

The calculation carried out takes as starting data the information provided by the entity to calculate the emissions associated with the exposed consumption.

It should be noted that all the consumption data used have been extracted from invoices and not from internal records. Although the uncertainty associated with these data is unknown given their nature, it is considered that the impact of the uncertainty is not significant.

2.6. Establishment of the base year

The result of the calculation in the first year of study, 2021, is taken as the basis. The annual recording of CO_2 emissions will make it possible to compare the impact of Bergner Europe's activity over the years, as well as to establish comparisons of emissions with other entities.

2.7. Result of the 2021 calculation by scope and sources

Following the GHG Protocol methodology, the information provided by Bergner Europe was verified, obtaining the following emission results represented by scope and emission sources.

SCOPE 1		tCO_2e	%
	RENTAL VEHICLES	72.26	13.03
	TOTAL SCOPE 1	**72.26**	**13.03**
SCOPE 2		**tCO_2e**	**%**
	ELECTRICITY CONSUMPTION	41.89	7.55
	TOTAL SCOPE 2	**41.89**	**7.55**
SCOPE 3		**tCO_2e**	**%**
	PAPER CONSUMPTION	0.24	0.04
	PRODUCT SHIPMENTS	387,20	69,01
	TRAVEL BY TRAIN	2.05	0,37
	AIR TRAVEL	47.11	8.50
	ACCOMMODATION	8.33	1.50
	TOTAL SCOPE 3	**440.43**	**79.42**
TOTAL EMISSIONS		**554.58**	**100**

Table 3. *Result of the 2021 calculation by scope and sources.*

Relative indicators

Total EMISSIONS per unit area (tCO_2e/m^2)	**0.681**
Total EMISSIONS per employee (tCO_2e/employee)	**11,487**

Table 4. *Relative indicators 2021.*

The total greenhouse gas emissions in 2021 of the activity according to the data provided by Bergner Europe (see Annex A) amounts to **554,58 tCO_2e**, coming from 72.26 tCO_2e from Scope 1, 41.89 tCO_2e from Scope 2, electricity consumption, and the rest of them from Scope 3. The emissions of Scope 1 correspond entirely to journeys made with rental vehicles; within Scope 3, the emissions come from paper consumption, 0.24 tCO_2e, from product shipments, 382,70 tCO_2e, from business trips, 2.05 tCO_2e emitted by train journeys and 47.11 tCO_2e by air travel, and finally, emissions due to accommodation, 8.33 tCO_2e.

The largest source of emissions corresponds to **product shipments**, which account for 69.01% of the total. Second is diesel consumption in **rental vehicles**, which accounts for 13,03%. The third largest source of emissions corresponds to **air travel** on business trips, with 8.50%. The rest of the sources do not reach 10% of the total emissions.

In order to understand the evolution of emissions over the years, as well as to be able to make comparisons with other companies in the sector that have calculated their carbon footprint, it is necessary to bring the figure of total emissions to relative indicators indicated in table 4.

The following graphs show the breakdowns in % and tonnes of emissions by source and by scope:

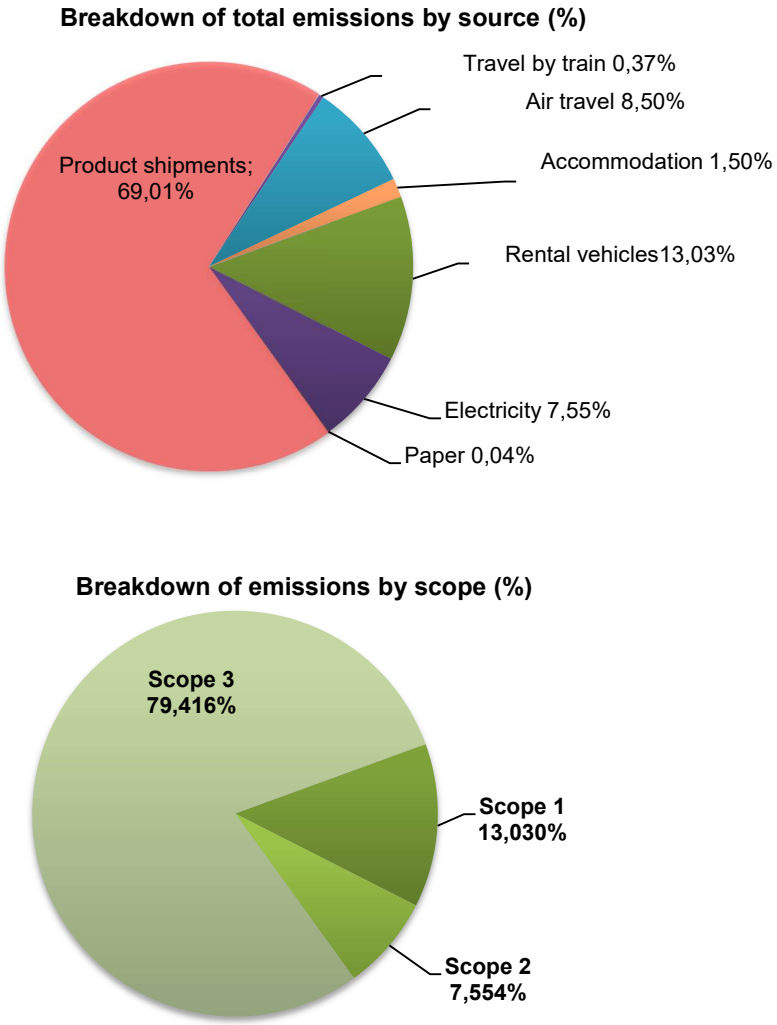

Figure 1. *Distribution % of emissions by sources and by scope.*

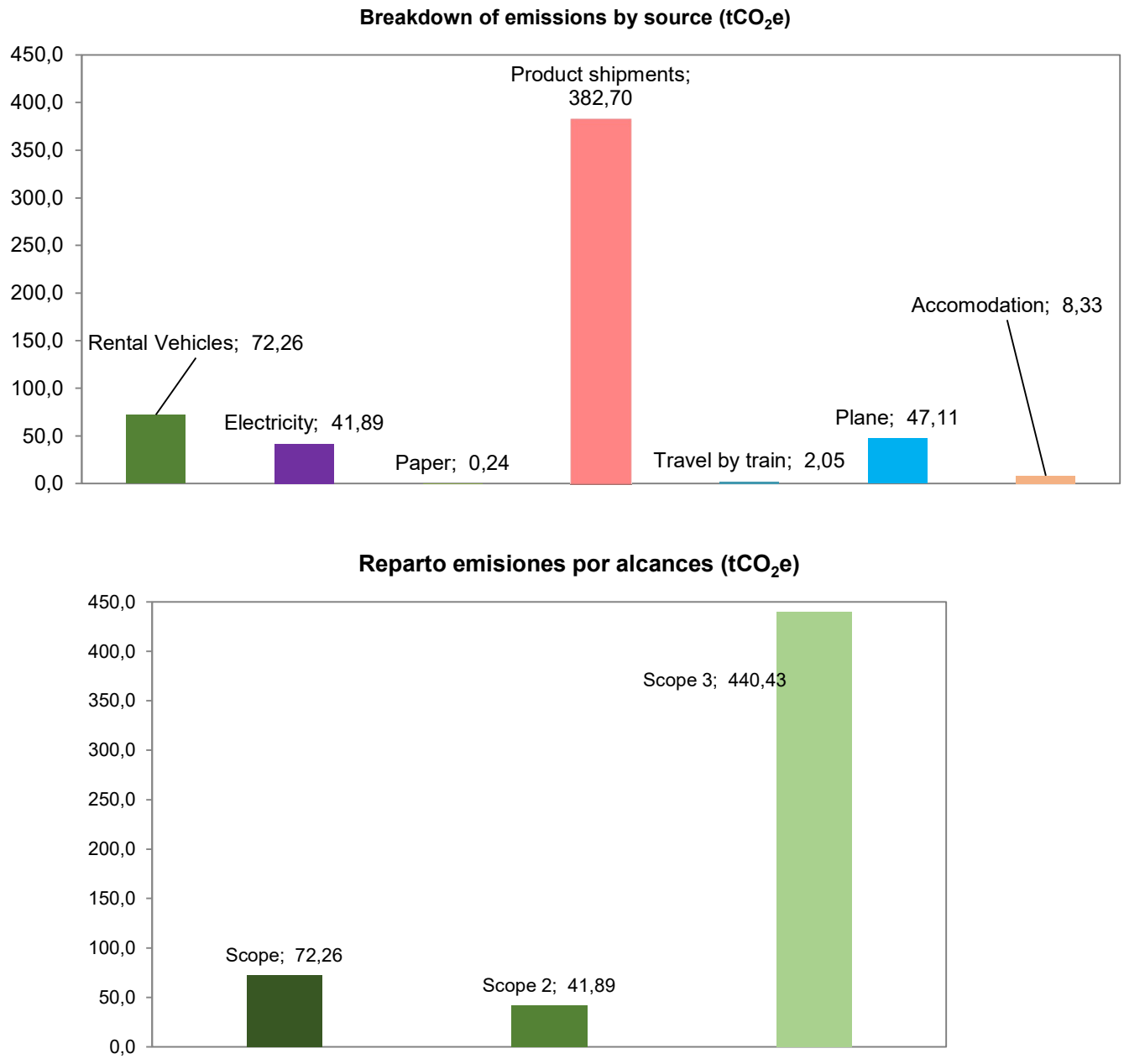

Figure 2. *Distribution of tCO_2e emissions by source and by scope.*

3. RECOMMENDATIONS AND ACTION PLAN

PRELIMINARY NOTE:

> We want to emphasise that no detailed visit of the entity's facilities was carried out, which is an essential stage for preparing a Reduction Plan. Therefore, general recommendations have been proposed, and it is the entity's responsibility to design an Action Plan to reduce its emissions.

As we have mentioned, the most important source of emission is the **shipment of products**, as is logical since Bergner Europe's activity is focused on it. As a possible mitigation measure to reduce the associated carbon footprint amounting to 387,20tCO_2e, it is advisable to study the the contracting of a logistics company that part of its fleet is hybrid, its implementation being difficult due to the lack of options.On the other hand, to reduce the number of trips made, it is advisable to carry out a study of shipment optimisation.

As we see in the following graph, most of the emissions (more than 60%) come from land transport, which is there may be the possibility of some sustainable option.

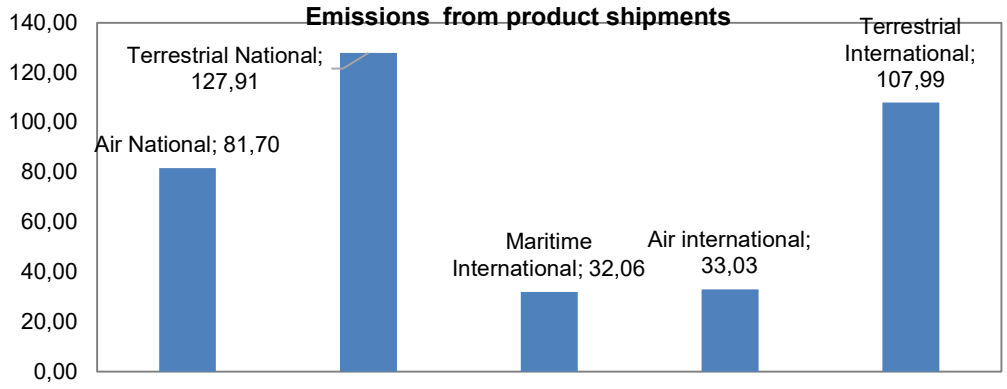

Figure 3. *Emissions from product shipments.*

As the second most important source of emission we find the consumption of diesel **by rental vehicles**. Therefore, it is recommended to study the possibility of switching to vehicles with a type of combustion that has less impact, reducing 13% of its emissions.

In order to reduce emissions caused by **electricity consumption**, contracting a 100% renewable electricity provider would be an easy-to-implement measure. This would result in a reduction of more than 40 tCO_2e generated by Bergner Europe's activity. If this measure cannot be addressed in the short term, a conventional electricity provider may be requested to set a minimum on the percentage of renewables with which they supply the factory, reflecting this in the contract. In this way, it can be known what part of the consumption has guarantees of 100% renewable origin.

The environmental impact of the electricity consumed depends on the energy sources used for its generation. An energy provider that supplies energy of exclusively renewable origin to its customers will always have a zero-emission factor and, consequently, its customers will have zero emissions for this source. In the same way, a provider that offers only a part of the electricity it provides with renewables will have a higher emission factor, as is the case of the provider contracted by Bergner Europe. The following table shows a comparison between the provider contracted by Bergner Europe and one with a 100% renewable certificate of origin.

ORIGEN	Endesa Energía S.A.U.	**100% renewable energy provider**
Renewable (Pure + Hybrid)	5.9%	**100.00%**
High-efficiency cogeneration	3.9%	**0.00%**
Combined natural gas cycles	31.6%	**0.00%**
Coal	6.3%	**0.00%**
Fuel/Gas	1.8%	**0.00%**
Nuclear	38.0%	**0.00%**
Others	12.5%	**0.00%**
CO_2 (emissions kg/kWh)	**0.258**	**0**
Classification category	**G**	**A**

Table 5. *Origin production of the electricity of Endesa Energía S.A.U. and of a 100% renewable provider.*

This information is extracted from the annual report published by the National Commission on Markets and Competition for the year 2021, the latest available at the date of writing this report.

4. OFFSETTING EMISSIONS

In order to achieve carbon neutrality, there is a final step, which consists in offsetting emissions that institutions **cannot avoid emitting after implementing reduction plans**. This offsetting involves the voluntary contribution of an economic amount, proportional to the tonnes of CO_2 generated, for a project that aims to:

- Capture a quantity of tonnes of CO_2 that is equivalent to that generated by the activity of the establishment, through the implementation of a carbon sink project for reforestation.
- Avoid the emission of a quantity of tonnes of CO_2 that is equivalent to that generated by the activity of the establishment through an energy-saving or energy-efficiency project, replacing fossil fuels with renewable energies, waste treatment or avoided deforestation.

The offsetting projects with which CeroCO_2 collaborates are located in developing countries and have the dual objective of combating climate change and poverty. Projects are verified according to some of the Voluntary Carbon Market (VCM) standards.

The VCM makes it easier for entities and individuals outside the regulated sectors to commit to climate care by “offsetting” their emissions through clean projects in developing countries.

Emissions offset through the CeroCO_2 platform count as a donation and are processed as such. Bergner Europe will receive the emission offsetting certificate and tax certificate of the donation once it has been made.

Offsetting is included among the issues that generate benefits and tax deductions for individuals or entities that donate to non-profit entities (NPE), taking into account Law 49/2002, of 23 December, on the tax regime of non-profit entities and tax incentives for patronage.

You may consult the currently available projects with which CeroCO2 collaborates at the following link:

www.ceroco2.org/soluciones-ceroco2/compensacion-co2/projectos-compensacion-ceroco2

5. OBTAINING LABELS

The CeroCO$_2$ calculated footprint label (figure 4), issued by CeroCO$_2$, certifies that the greenhouse gas (GHG) emissions generated by the Bergner Europe's activity during a specific period, in this case 2021, have been calculated for scopes 1, 2 and 3.

Figure 4. *CeroCO$_2$ Calculated Footprint label.*

These labels can be used in all own communication channels and in the press, and should be used in official documents, **always under the approval and validation** of said materials and their applications by CeroCO$_2$. For any questions of use, please contact info@ceroco2.org.

6. ANNEXES

A. CONSUMPTION STARTING DATA

Emission source			2021
Diesel consumption in rental vehicles (l)			28,676
Electricity consumption (kWh)			162,377
Paper consumption (kg)			184.96
Product shipments	National	Air	556,161 km 87,981.75 kg
		Terrestrial	8,209,391 km 8,746,585.78 kg
	International	Maritime	316,440 km 313,423.86 kg
		Air	1,315,215 km 134,627.05 kg
		Terrestrial	4,526,452 km 2,049,616.43 kg
Travel by train (km)			81,232
Air travel (km)		Short distance	1,710
		Mid distance	263,579
		Long distance	93,928
Accommodation (nights)			188

Table 66. *Consumption data provided by Bergner Europe for the calculation year 2021.*

B. EMISSION FACTORS

The emission factors are updated annually, using the most internationally recognised sources in order to achieve the utmost rigour and precision.

The emission factors used were as follows:

Emission source			2021
Diesel[3] ($kgCO_2e/l$)			2.52
Endesa Energía S.A.U. electricity[3] ($kgCO_2e/kWh$)			0.258
Virgin paper[4] ($kgCO_2e/kg$)			1.28
Product shipments[5]	Truck	($kgCO_2e$/tonne·km)	0.0260
		($kgCO_2e/km$)	0.2089
	Cargo flight	National ($kgCO_2e$/tonne·km)	0.4919
		International ($kgCO_2e$/tonne·km)	0.1116
	Cargo ship ($kgCO_2e$/ton·km)		0.0132
High-speed train [6] ($kgCO_2e$/passenger·km)			0.0252
Tourist aeroplane[5] ($kgCO_2e$/passenger·km)	Short distance		0.2459
	Mid distance		0.1510
	Long distance		0.1479
4-star accommodation[7] ($kgCO_2e$/noches)			44.3

Table 7. *Emission factors used.*

[3] Spanish Office of Climate Change May 2022 v20
[4] Ecoinvent 3.8 + IPCC 2021 GWP100 V1.00
[5] 2021 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting
[6] OCCC GEH Emissions Calculation Guide. Version 2022.
[7] 2010 Extrapolation ADEME - Carbon Neutral Company.

https://www.ceroco2.org/inicio-2022