FORLIANCE
GROWING CLIMATE ACTION

CORPORATE CARBON FOOTPRINT 2022

RAMPA GmbH & Co. KG

August 2023

SUMMARY

The subject of this report is the Corporate Carbon Footprint of RAMPA GmbH & Co. KG.

Object of consideration and methodology

The assessment covers the year 2022. The complete RAMPA GmbH & Co. KG was defined as the object of this assessment. To create a holistic assessment of all emissions, all relevant emissions of scopes 1, 2 and 3 were recorded. Beyond direct emissions, the company's upstream and downstream value chain was, therefore, also considered.

The methodological basis for the analysis performed is the "Greenhouse Gas Protocol Corporate Accounting and Reporting Standard" (GHG Protocol).

Results 2022

The total greenhouse gas emissions caused by RAMPA GmbH & Co. KG in the year 2022 amounts to 2,882.18 t CO2e (*market-based approach*).

Of this total, 6.43% can be attributed to emission sources that the company either owns or directly controls (scope 1), 0.03% to E-mobility in scope 2, and 93.53% to all other emission sources that arise as a result of the company's activities but are owned or controlled by a third party (scope 3, e.g. business travel, employee commuting).

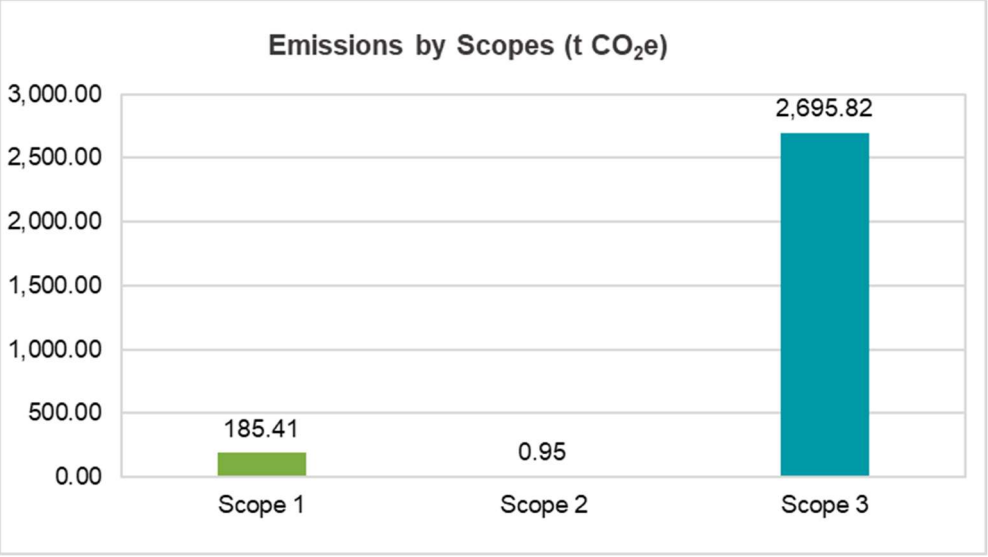

Figure 1: CO_2e emissions by scope (year 2022)

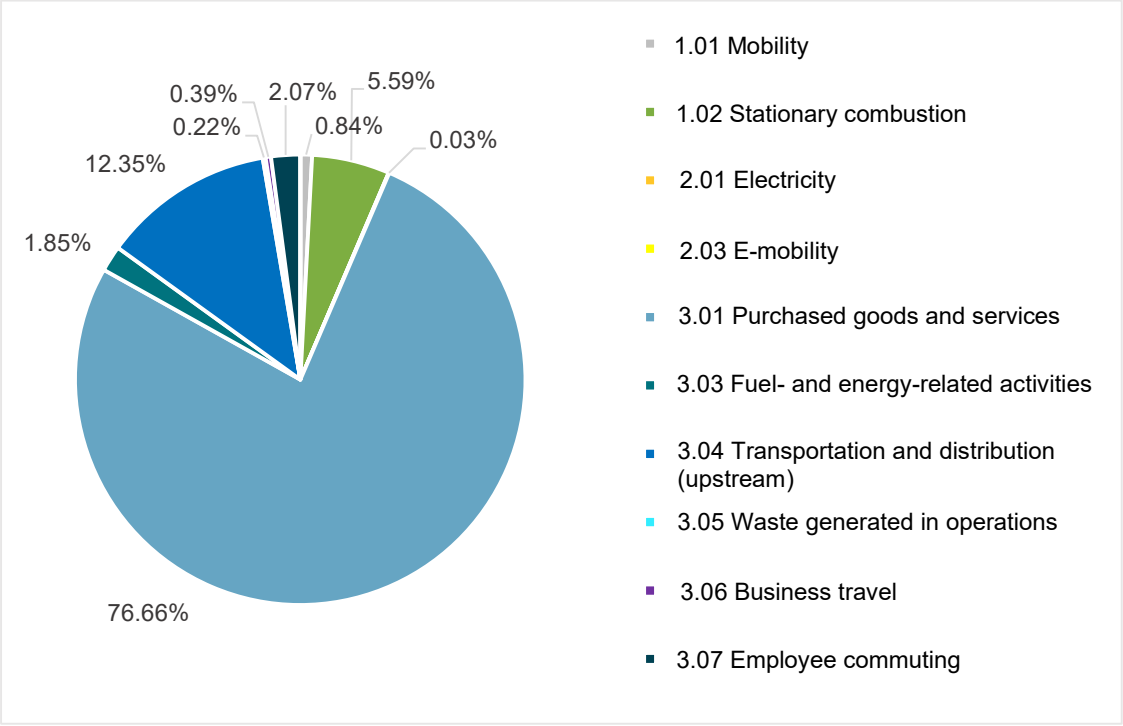

Figure 2: CO_2e emissions by category (year 2022)

Emission Hotspots

The emission hotspots are depicted in figure 2. The three identified emission hotspots account for 94.60 % of the total emissions.

1. Purchased goods and services (2,209.37 t CO_2e; 76.66 %)
2. Transport and distribution (upstream) (355.96 t CO_2e; 12.35 %)
3. Stationary combustion (161.24 t CO_2e; 5.59 %)

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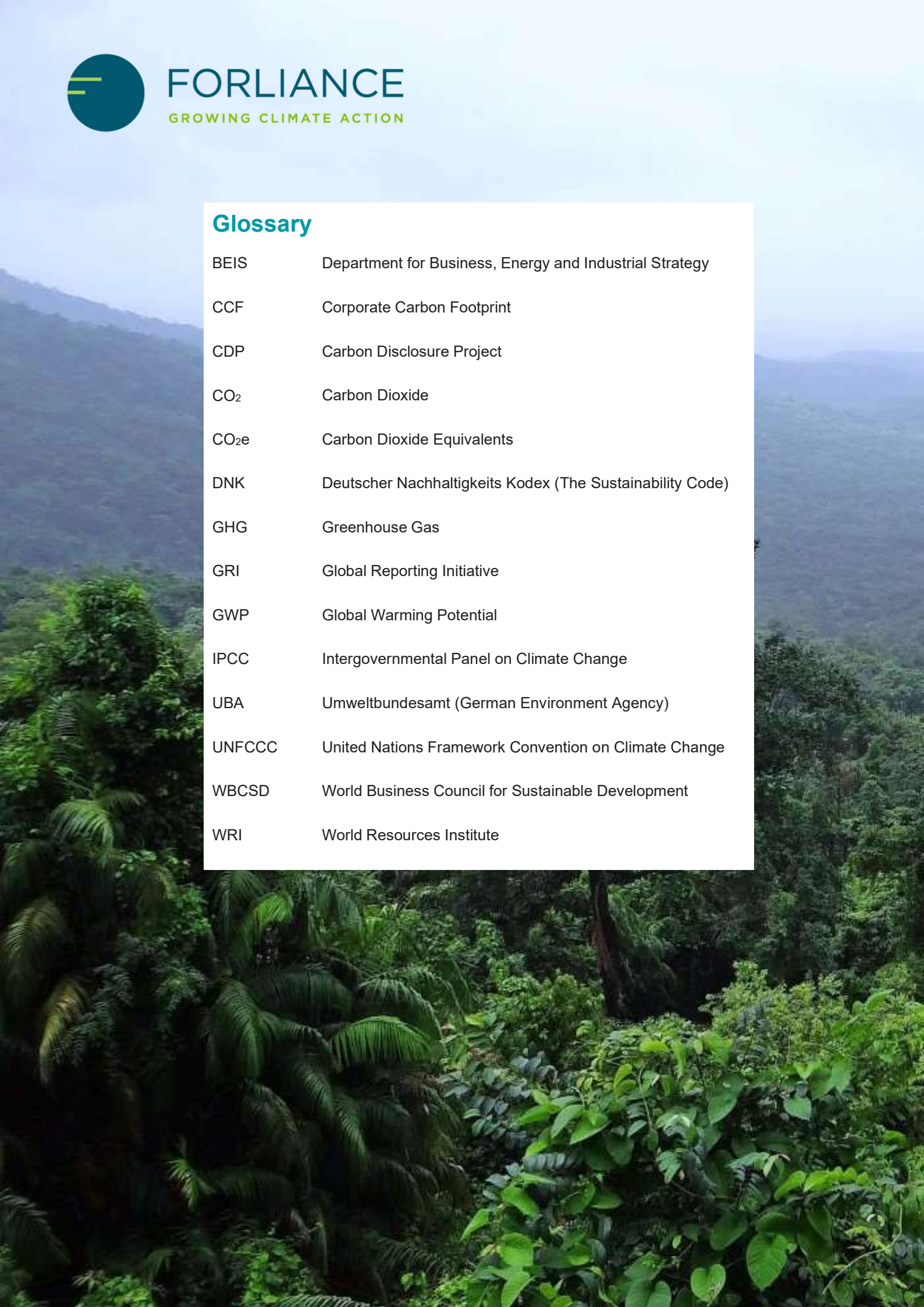
Glossary

BEIS	Department for Business, Energy and Industrial Strategy
CCF	Corporate Carbon Footprint
CDP	Carbon Disclosure Project
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalents
DNK	Deutscher Nachhaltigkeits Kodex (The Sustainability Code)
GHG	Greenhouse Gas
GRI	Global Reporting Initiative
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
UBA	Umweltbundesamt (German Environment Agency)
UNFCCC	United Nations Framework Convention on Climate Change
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute



1 INTRODUCTION

About RAMPA GmbH & Co. KG

RAMPA is a professional partner for connecting technology, where quality comes first. The high-quality inserts provide the required stability and long-term load-bearing capacity for structures in wood, metal and plastic. As a C-component supplier, RAMPA provides its customers with a reliable supply of connecting and fixing elements for wood applications such as threaded sleeves, threaded inserts, screw-in nuts and pan-head screws. Connections that are extremely strong and can also be undone several times can be created with these RAMPA elements (RAMPA 2021).

Subject of the report

The subject of this report is the Corporate Carbon Footprint (CCF) of RAMPA GmbH & Co. KG. A CCF is a core component of any profound climate strategy, as the CCF represents the central metric in terms of status quo, reduction targets, reduction measures, emission scenarios, and efficiency metrics.

The aim of the assessment is to determine the amount of greenhouse gas emissions caused by the company to subsequently develop a strategy for long-term reduction. The knowledge gained will be used to understand the company's impact on the global climate and to demonstrate to employees, partners, and other stakeholders a responsible role in the company's commitment to sustainability.

The assessment covers the year 2022. The complete RAMPA GmbH & Co. KG was defined as the object of consideration. In terms of a holistic approach, all relevant emissions of scopes 1, 2 and 3 are to be recorded. In addition to the direct emissions, the company's upstream and downstream value chain should also be considered.

The methodological basis for the analysis performed is the "Greenhouse Gas Protocol Corporate Accounting and Reporting Standard” (GHG Protocol). This international accounting standard for corporate greenhouse gas emissions is especially intended to guarantee transparency and enable comparability.

2 METHODOLOGY

With the aim of achieving a high degree of comparability, transparency and traceability of the results obtained, the carbon footprint was calculated according to the methodological specifications of the Greenhouse Gas Protocol (GHG Protocol) standard.

2.1 Greenhouse Gas Protocol

The GHG Protocol, developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), is the most widely used international standard for the accounting and reporting of corporate CO_2 emissions. The GHG Protocol Standard is internationally considered a best practice standard and is also recommended in the context of national and international CSR reporting. Both the Global Reporting Initiative (GRI) and the German Sustainability Code (DNK) explicitly mention the GHG Protocol as an accounting standard. According to the GHG Protocol, 92% of Fortune 500 companies reporting to the CDP reported in accordance with the GHG Protocol in 2016.

The addition of the "Corporate Value Chain (scope 3) Accounting and Reporting Standard" to the "Greenhouse Gas Protocol Corporate Accounting and Reporting Standard" provides practical guidelines for the accounting and reporting of emission sources in scopes 1-3.

2.2 Greenhouse Gas Emissions and Global Warming Potential

This Corporate Carbon Footprint includes the greenhouse gases carbon dioxide, methane, nitrous oxide, perfluorocarbon, chlorofluorocarbons, sulphur hexafluoride and nitrogen trifluoride (GHG Protocol), which are taken into account by the UNFCCC and the Kyoto Protocol. Since their respective Global Warming Potentials (GWP) differ considerably, they are converted to CO_2 equivalents (CO_2e) for the sake of better comparability. Table 1 lists the greenhouse gases with their respective global warming potential in CO_2e over a period of 100 years. The aim of taking all greenhouse gases into account is to provide a meaningful representation of the company's impact on anthropogenic climate change.

Greenhouse gas	**GWP**
Carbon dioxide (CO_2)	1
Methane (CH_4)	27.9
Nitrous oxide (N_2O)	273
Perfluorcarbon (PCFs)	7,430 – 12,400
Chlorofluorcarbons (HFCs)	4.84 – 14,600
Nitrogen trifluoride (NF_3)	17,400
Sulphur hexafluoride (SF_6)	25,200

Table 1: Greenhouse gases and their global warming potential according to UNFCCC/Kyoto-Protocol

2.3 Accounting principles

Generally, a carbon footprint is made up of two central components. One part is generally described as activity data or consumption data. This includes, for example, data such as kilometers traveled per means of transport, electricity usage, heating fuel consumption, or quantities of goods consumed.

On the other hand, there are emission factors. Emission factors enable the conversion of activity data into reliable emission values. As there is usually no on-site measurement of the emissions caused (primary data), secondary data (activity/consumption data) must be multiplied by emission factors. Emission factors represent the amount of greenhouse gas emissions caused in relation to a specific unit (e.g., per kilometer, per kWh, per kg). The activity data combined with the emissions factors enable the calculation of the total greenhouse gas emissions emitted.

Activity data x emission factor = total amount of GHG emissions

Example: 10,000 kilometers by car x 0.163 kg CO2e/passenger kilometer = 1,630 kg CO2e

If direct data on the emissions caused are available, these are to be preferred. In the ideal case, all market participants report their directly measured emissions and make this information (publicly) available. In this way, one would be able to calculate highly precise and complete corporate carbon footprints.

3 PROCESS

3.1 Preparation of the assessment

The accounting process was built on the experience of the initial assessment for the reporting year 2020 and further discussions.

3.2 Organizational boundaries

The organizational boundaries have not been changed compared to the base year.

The **operational control approach** continues to be applied:

> *„A company has operational control over an operation if the former or one of its subsidiaries […] has the full authority to introduce and implement its operating policies at the operation. This criterion is consistent with the current accounting and reporting practice of many companies that report on emissions from facilities, which they operate (i.e., for which they hold the operating license). It is expected that except in very rare circumstances, if the company or one of its subsidiaries is the operator of a facility, it will have the full authority to introduce and implement its operating policies and thus has operational control. Under the operational control approach, a company accounts for 100% of emissions from operations over which it or one of its subsidiaries has operational control.* " (GHG Protocol Corporate Standard: S. 18)

The setting of these organizational accounting boundaries subsequently has an impact on the allocation of emissions to different emission scopes and thus responsibility. By choosing this accounting approach, direct emissions from energy consumption in rental properties, for example, are assigned to the scope 1 and 2 emission areas and not to the scope 3 area (more details on scopes see section 3.3).

3.3 Operational boundaries

Within the described organizational boundaries, emissions of scopes 1, 2 and 3 are to be covered. The aim is to take full account of all emission sources, if these can be determined in accordance with the principles of relevance, completeness, consistency, transparency, and accuracy.

The principle of scopes is based on the distinction between direct and indirect emission sources:

- **Direct emissions:** Emissions from sources that the company either owns or directly controls.
- **Indirect emissions:** Emissions that arise from activities of the company but occur at sources owned or controlled by another company.

Based on this, a distinction is made between three scopes. According to the GHG Protocol, all emissions from scope 1 and 2 must be included in the calculation and accounting of a CCF, while the inclusion of scope 3 emissions is voluntary but recommended.

- **Scope 1**: All emissions that occur directly within the company. In other words, emissions from sources that the company either owns or directly controls.
- **Scope 2:** All indirect emissions generated for the company's energy supply. In other words, emissions from purchased electricity and thermal energy.
- **Scope 3:** Any other emissions that arise as a result of the company's activities but are owned or controlled by a third party.

Figure 3 clearly illustrates the distinction between scopes 1-3 and shows examples of emission sources from the respective scopes.

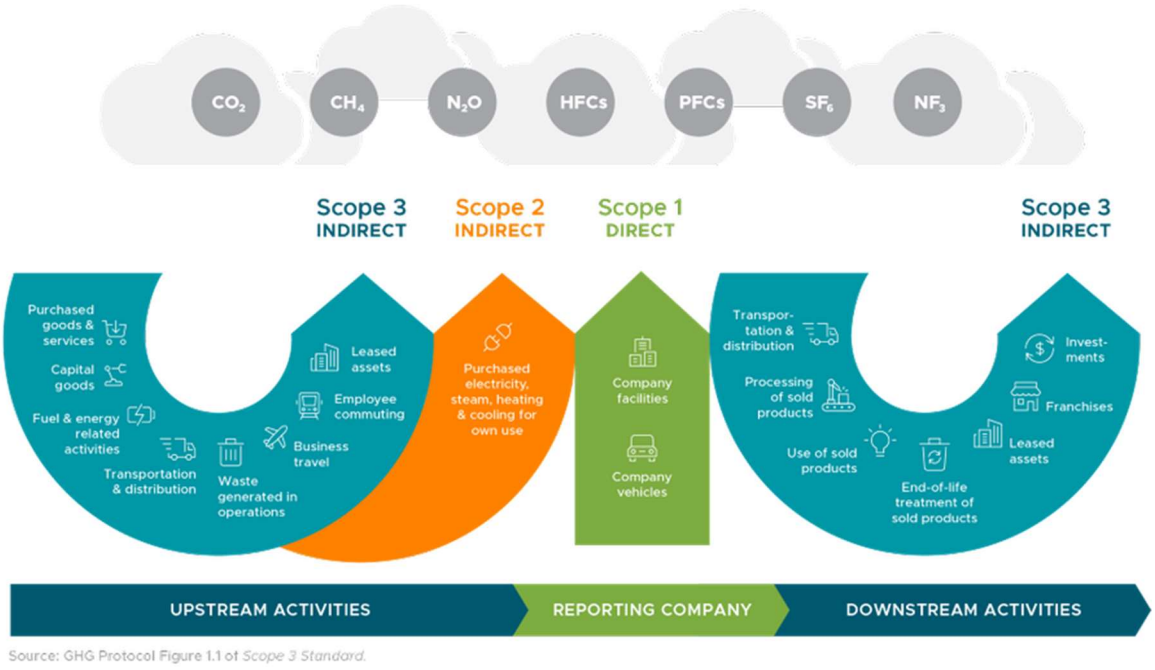


Figure 3: Overview of scopes and emission sources according to the methodology of the GHG Protocol (Source: based on GHG Protocol)

3.4 Emission sources RAMPA GmbH & Co. KG

The following emission sources were determined for RAMPA GmbH & Co. KG (see table 2):

Scope	Category		Emission source	Relevant?	Emission source – specific example
1			Stationary combustion	Yes	▪ Heating agent, fuel e.g., for generators
1			Company-owned vehicles	Yes	▪ Vehicle fleet (incl. leased vehicles)
2			Electricity usage	Yes	▪ Electricity usage
2			E-Mobilität	Yes	▪ Electric mobility
3	.1	Upstream	Yes	Yes	▪ Raw materials ▪ Trade goods ▪ Packaging ▪ Oil
3	.2	Upstream	Capital goods	No	
3	.3	Upstream	Fuel- and energy-related activities	Yes	▪ Indirect (upstream) emissions

3	.4		Transport and distribution	Yes	▪ Logistics service providers (upstream and downstream)
3	.5		Waste generated in operations	Yes	▪ Water ▪ Waste
3	.6		Business travel	Yes	▪ Air travel ▪ Car ▪ Railroad ▪ Overnight stays
3	.7		Employee commuting	Yes	▪ Emissions from employee commuting
3	.8		Upstream leased assets	No	
3	.9	Downstream	Downstream transportation and distribution	No	
3	.10		Processing of sold products	No	
3	.11		Use of sold products	No	
3	.12		End-of-life treatment of sold products	No	
3	.13		Downstream leased assets	No	
3	.14		Franchises	No	
3	.15		Investments	No	

Table 2: Considered emission sources RAMPA GmbH & Co. KG

The relevance analysis and thus the decision to include emission sources in the accounting process was made in exchange with RAMPA and was based on the experience of FORLIANCE. Omitted emission sources are discussed under 4.2.

3.5 Reporting period

The reporting period refers to the year 2022.

3.6 Data collection process

The data collection was carried out by RAMPA. The corresponding data collection sheets were set up by FORLIANCE based on the data collection of the previous year. The data on employee mobility was queried and collected by RAMPA. Review and verification of the collected data was done by FORLIANCE. Throughout the data collection period, there was a regular exchange between RAMPA and FORLIANCE. Data was collected, processed, and improved over several feedback rounds.

4 ACTIVITY DATA

As described, data was collected through individualized data collection sheets and submitted according to the previous year to allow for comparison.

4.1 Data format

Most of the data was submitted in the requested form. Only a few data points were converted/edited to represent the appropriate counterpart to the respective emission factor.

4.2 Omitted emission sources

The following emission sources were not considered:

- Purchased goods and services, except for raw materials and trade goods, including packaging (e.g., office equipment).
- Downstream emissions

The same scope of accounting was followed as in previous years. Raw materials, merchandise and packaging were included in the purchased goods category. Other consumables were not accounted for. Scope 3 downstream emissions were also not included in this footprint. The footprint focuses on sources that RAMPA can influence to implement mitigation measures. Omitted emission sources may be added in the future. Comparison to previous years is possible.

4.3 Data consolidation

The provided data was reviewed and verified for plausibility by FORLIANCE and refined in consultation with RAMPA.

4.4 Data quality

The overall process of data collection has resulted in an extensive data catalog. Since data quality has a significant impact on the accuracy of the result, the data collected are qualitatively assessed by FORLIANCE in the following. The following categorization of activity data uses the following categories:

- High level of data accuracy (+); based on e.g., billings & real consumption data
- Moderate level of data accuracy (O); based on e.g., data extrapolation
- High level of data inaccuracy (-); based on e.g., estimates

The categorization is based on FORLIANCE's many years of experience.

SCOPE 1			
Emission source	**Quality**	**Original source**	**Comments**
Company-owned vehicles	+	Real consumption data	The kilometers driven were transmitted accurately. The data quality can be classified as high.
Stationary combustion	+	Real consumption data	The data was submitted as total kWh consumed. No conversion was necessary. Therefore, the data quality is rated as high.

SCOPE 2			
Emission source	**Quality**	**Original source**	**Comments**
Electricity usage	+	Real consumption data	The total quantity in kWh was transmitted. A conversion was not necessary. The data quality is rated as high.
E-Mobility	+/O	Real consumption data	The total quantity was transmitted in km. A conversion was not necessary since there are suitable emission factors. Nevertheless, kWh values are preferable. The data quality is rated as 'high to medium'.

SCOPE 3			
Emission source	**Quality**	**Original source**	**Comments**
Purchased Goods and Services	+	Real consumption data	The raw material, trade goods as well as packaging were completely transmitted. The total quantity was given in kg. This made the data ideal for processing. The data quality is therefore rated as high.
Fuel-and energy-related activities	+	Real consumption data	See scope 1 and 2.
Waste generated in operations – water/waste	O	Real consumption data	Data was submitted as total liters of waste and m^3 of water consumed. A conversion was necessary. Therefore, the data quality is rated as medium.
Business travel	+	Real consumption data	The data was supplied very accurately, and no conversions had to be made. The data quality can be classified as high.
Employee commuting	+	Survey results	By means of a survey, data was collected on the mobility of employees in terms of distance to work, the means of transport used and the number of working days. The data quality can be classified as high.
Home office	+	Survey results	The data for home office hours was submitted by RAMPA on a country-specific basis. As a result, the data quality can be classified as high.

Table 3: Data quality

Data Quality – Conclusion

Overall, the data quality can be described as very good. Nevertheless, there is room for improvement with regard to e-mobility and waste data. Kilowatt or weight data would be more meaningful compared to distance and volume data, as the conversion would be omitted.

Overall, the data submitted and processed, in combination with the emission factors (see Emission Factors section), allow a robust statement on the magnitude of total emissions as well as on the emission focal points. Thus, this balance represents a good basis for the next steps within the framework of a climate protection strategy.

5 EMISSION FACTORS

In addition to the activity data, the assessment of greenhouse gas emissions requires emission factors that enable the conversion of the activity data into emissions. For this purpose, the selection of the correct factor for each data item is of great importance. Therefore, emission factors were reviewed, evaluated, and selected in the analysis based on different criteria. These include:

- Technology: Is the correct technology depicted?
- Time: Is the correct time period represented?
- Geography: Is the correct geographic reference represented?
- Completeness: Is the value representative?
- Reliability: Are the sources and methods reliable and verified?

If it was necessary for the selection and evaluation of the emission factor, further qualitative information was requested in addition to the activity data (composition, origin, age, etc.). These criteria also lead to the following categorization:

- High accuracy (+)
- Medium accuracy (O)
- High inaccuracy (-)

The categorization is based on FORLIANCE's many years of experience.

Main sources

The main database sources for this assessment are the following:

- **Department for Business, Energy & Industrial Strategy (BEIS)**. UK Government GHG Conversion Factors for Company Reporting. 2022.
- **Ecoinvent 3.9.1.** (https://ecoinvent.org/).
- **Umweltbundesamt (UBA)** – several research papers and reports.

All sources are of high quality, are internationally recognized, and are maintained by public agencies as well as not-for-profit organizations. Nevertheless, these factors must also be partially converted and adjusted to form a matching counterpart to the corresponding activity data point.

5.1 Emission factor quality

The following table presents the quality of the emission factors (see table 4).

SCOPE 1			
Emission source	**Quality**	**Original source**	**Comments**
Company-owned vehicles	+	BEIS	The factors represent the direct emissions from vehicle use. Further life cycles are not taken into account. The quality of the factors is rated as high.
Stationary combustion	+	BEIS	The activity data allowed an accurate assessment of emissions. Specific emission factors could be used. The quality of the factors can be rated as high.

SCOPE 2			
Emission source	**Quality**	**Original source**	**Comments**
Electricity usage	+	Electricity supplier	RAMPA provided the emission factors directly. The emission factors are based on the measurement data of the electricity supplier. The quality is therefore classified as high.
E-Mobility	+	BEIS	The activity data allowed an accurate assessment of emissions. Specific emission factors could be used.

SCOPE 3			
Emission source	**Quality**	**Original source**	**Comments**
Purchased Goods and Services	+/O	BEIS, Ecoinvent 3.9	For a large part of the data, a precise selection of emission factors was possible. Therefore, specific emission factors could be used. The quality of the factors can be rated as medium.
Fuel-and energy-related activities	+	UBA, BEIS	A precise selection of emission factors was possible. Therefore, specific emission factors could be used. The quality of the factors can be rated as high.
Waste generated in operations – water/waste	+	Ecoinvent 3.9	A precise selection of emission factors was possible. Therefore, specific emission factors could be used. The quality of the factors can be classified as high.
Business travel	+	BEIS	A precise selection of emission factors was possible. Therefore, specific emission factors could be used. As a result, the quality of the factors can be rated as high.
Employee commuting	+	BEIS, UBA	The activity data enabled an accurate assessment of emissions according to vehicle size and fuel type. Specific differentiations could also be made for other modes of transport. Therefore, specific emission factors could be used. The quality of the factors can be classified as high.
Home office	O	BEIS, UBA, IEA	Country-specific electricity data was used. The emission factors for electricity and heating consumption were calculated by FORLIANCE, based on UBA reports. Therefore, the quality of the factors can be classified as medium.

Table 4: Emission factor quality

Conclusion on emission factor quality

Overall, the quality of the emission factors can be rated positively. In general, it was possible to rely on high-quality emission factors. It should be noted that the selection of emission factors is always indirectly related to the available activity data.

If emission factors are adjusted during subsequent assessments, these adjustments should also be implemented retroactively for the current assessment. Consistency should be maintained here.

6 RESULTS

The results presented hereinafter refer to RAMPA GmbH & Co. KG. The scope and time period of the assessment were described. The results of the Corporate Carbon Footprint for RAMPA are presented below according to the scopes (see section 3.3).

6.1 Total emissions RAMPA GmbH & Co. KG

According to the requirements of the GHG Protocol, a distinction has been made since 2015 between the market-based approach and the location-based approach (see Excursus GHG Protocol Scope 2 Reporting). RAMPA was able to submit supplier-specific emission values for the accounting year 2022, so that the emissions were accounted for according to the contractually guaranteed electricity mix. This approach is called the market-based approach.

Market-based approach

According to the ***market-based approach***, total GHG emissions for RAMPA for the year 2022 amount to

2,882.18 t CO_2e.

Location-based approach

According to the ***location-based approach***, total GHG emissions for RAMPA for the year 2022 amount to

3,166.37 t CO_2e.

Classification

It is difficult to classify the amount of greenhouse gas emissions caused. In particular, comparison with other companies is fundamentally difficult due to insufficient comparative data and reference values (intensity values). If the emissions reported are compared with the emissions of an average German in 2022 (11.17 t CO_2e per year; Statista 2022), the emissions caused correspond to the amount of greenhouse gas emissions caused by 259 German citizens in one year.

Excursus: GHG Protocol Scope 2-Reporting

The GHG Protocol requires dual reporting for scope 2 emissions with respect to purchased electricity and clear documentation of the accounting method used. Two reporting methods are to be used for purchased electricity:

1. *Market-based approach*: Emissions are accounted for according to the contractually agreed electricity mix.
2. *Location-based approach*: Emissions are accounted for according to the local average emissions of the respective electricity mix (e.g., German electricity mix)

6.2 Emissions by scope

Further analysis of the results follows the ***market-based approach***. In the first step, the results are presented according to the principle of scopes (see figure 4).

The scope 1 emissions of RAMPA GmbH & Co. KG sum up to 185.41 t CO_2e (6.43 % of total emissions). Scope 2 emissions amount to 0.95 t CO_2e (0.03 % of total emissions). Scope 3 emissions are significantly higher at 2,695.82 t CO_2e (93.53 % of total emissions).

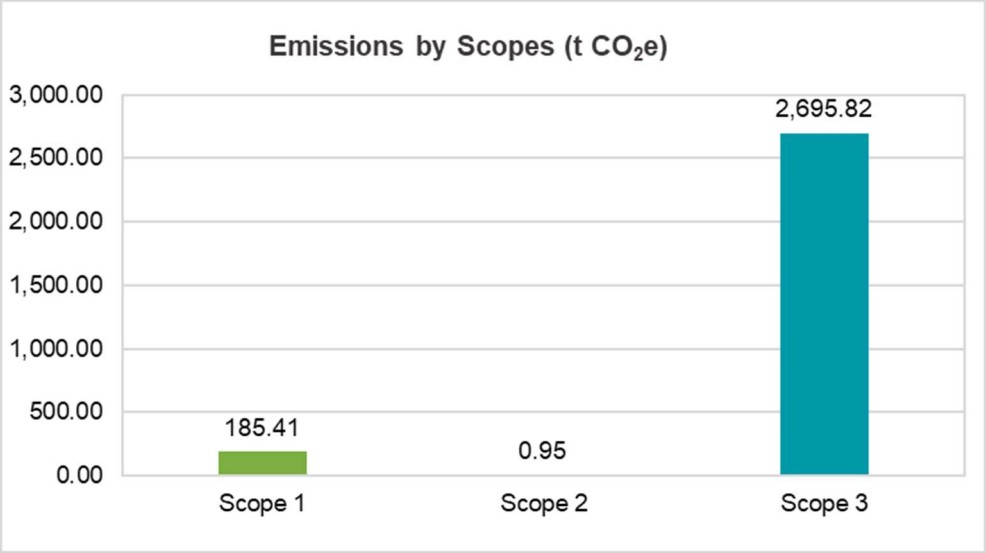


Figure 4: CO_2e emissions by scope (year 2022)

The presentation of emission sources by scopes and their subcategories is based on the methodological requirements of the GHG Protocol and serves the transparency of corporate carbon footprints. For a simplified understanding, the presentation according to emission sources within the scopes is useful. This results in the following categories (see Table 5 and Figure 5):

	Emission sources	**t CO_2e**	**[%]**
Scope 1	Stationary combustion	161.24	5.59
	Company-owned vehicles	24.17	0.84
Scope 2	Electricity usage	0.00	0.00
	E-Mobility	0.95	0.03
Scope 3	Purchased goods and services	2,209.37	76.66
	Fuel- and energy-related activities	53.20	1.85
	Transport and distribution (upstream)	355.96	12.35
	Waste generated in operations	6.22	0.22
	Business travel	11.30	0.39
	Employee commuting (including home office)	59.78	2.07

Table 5: Emissions by source

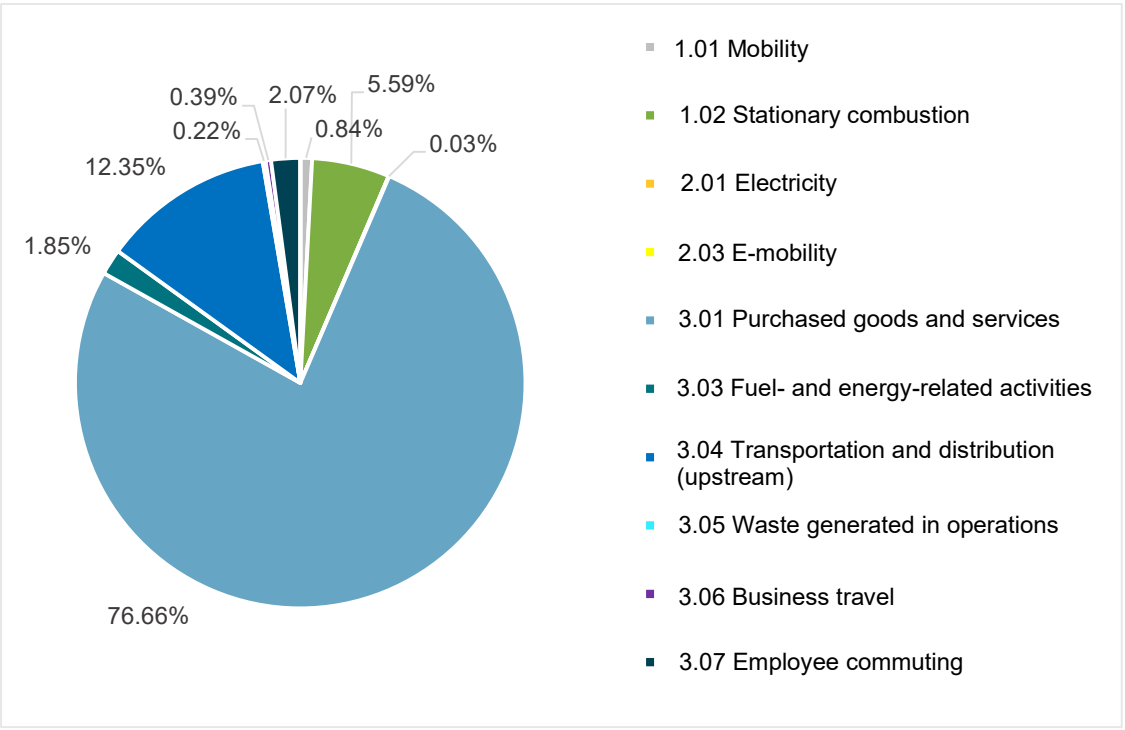


Figure 5: Percentual distribution of emissions by source

Emissions-Hotspots

From this plot (see Table 5 and Figure 5), the emission hotspots are very clear. The three identified emission hotspots account for 94.60 % of the total emissions.

1. Purchased goods and services (2,209.37 t CO_2e; 76.66 %)
2. Transport and distribution (upstream) (355.96 t CO_2e; 12.35 %)
3. Stationary combustion (161.24 t CO_2e; 5.59 %)

6.3 Detailed examination of the emission hotspots

A client specific breakdown of emissions allows for a detailed overview by location or subcategory. In the following, the emission hotspots are highlighted in more detail.

Differentiation of emissions due to purchased goods

The purchased goods were grouped and listed in Table 6 with the corresponding quantities and emissions. The overview shows that the purchased raw material represents the largest emission item. The free-cutting steel is a major contributor to the emissions. It should be noted, however, that the emission intensity (kg CO_2e/kg material) of brass is significantly higher than that of free-cutting steel. In the case of merchandise, most emissions are caused by the steel purchased.

Classification	kg	t CO_2e
Raw material	**543,448.50**	**1,194.83**
Machining steel	509,567.00	1,008.28
Stainless steel	11,874.00	58.77
Brass	22,007.50	127.79
Trade goods	**449,282.79**	**985.73**
Trade goods steel	398,089.53	787.70
Trade goods brass	14,573.03	84.62
Trade goods stainless steel	6,373.25	31.54
Trade goods zinc	30,177.90	81.22
Trade goods plastic	69.08	0.64
Packaging	**13,300.49**	**13.09**
Packaging cardboard	12,396.49	10.28
Packaging foils	904.00	2.82
Oils	**11,181.05**	**1566**

Table 6: Emissions of purchased goods and services.

Differentiation of emissions due to transport and distribution

Emissions from transport and distribution were divided into process-related upstream and downstream transport. That is, into the transport of raw materials from the supplier to RAMPA and into the transport of finished products from RAMPA to the customer.

Methodologically, it should be noted here that the GHG Protocol does not understand upstream and downstream emissions in process terms, but in monetary terms. The criterion is the purchase and sale of services. Since transportation is not carried out by RAMPA, but service providers were contracted, all emissions belong to Scope 3, upstream.

The upstream and downstream transport processes were subdivided into sub-sections, as individual sections were carried out using different means of transport. This specification can also be found in Table 7. It is striking that in upstream transport the highest emissions are attributable to trucks, although the distance covered via water (sea freight) was the greatest. This can be explained by the emission intensity of the transport mode. Trucks are more emission-intensive modes of transport than ships, meaning their emissions per tonne-kilometer (kg CO_2e/tkm) are higher. The distance traveled by truck is also the largest contributor to emissions in the downstream transport process.

The process-related downstream transport emissions were differentiated according to the means of transport as well as their delivery conditions in order to be able to better allocate the responsibility for emissions incurred. RAMPA informed in this context that the delivery condition *“ex works” (original: Ab Werk)* means that the decision of the mode of transport as well as the costs are borne by the customer. In case of the delivery condition “*free delivery” (original: Frei Haus),* the responsibility, the decision as well as the costs lie with RAMPA itself. Therefore, in this case only the emissions for free domicile were accounted for and listed as emissions in the overall result.

It should be noted that part of the process-related downstream transport has already been compensated by RAMPA's selection of service providers. The resulting emissions are methodically still part of the balance but would not have to be compensated anymore. This is the climate-neutral transport of GLS (18.15 t CO_2e). A corresponding certificate was submitted to FORLIANCE.

Classification	t CO_2e	Specification	t CO_2e
Upstream Transport (Scope 3, upstream)	294.83	Air freight	28.64
		Sea freight	101.91
		Truck > 12 t	163.73
		Truck (vkm)	0.55
Downstream Transport (Scope 3, upstream)	61.13	Truck >12 t	42.95
		Air freight	0.03
		GLS Shipping (CO_2e Compensation)	18.15

Table 7: Emissions of transport and distribution

Differentiation of emissions due to electricity usage

The energy-related emissions could be broken down by site on the basis of the data available. The allocation is shown in Table 8.

Schwarzenbek	t CO_2e	Büchen	t CO_2e
Stationary combustion Schwarzenbek (Scope 1)	72.78	Stationary combustion Büchen (Scope 1)	88.46
Electricity usage Schwarzenbek (Scope 2)	0.00	Electricity usage Büchen (Scope 2)	0.00
Energy related emissions Schwarzenbek (Scope 3)	29.37	Energy related emissions Büchen (Scope 3)	17.52

Table 8: Emissions of energy usage

7 DEVELOPMENT & ANALYSIS

This chapter serves to compare the second balance sheet with the subsequent balance sheet (third balance sheet). The main changes are to be highlighted and examined in more detail.

7.1 Development of emissions in comparison

Compared to the previous year, total emissions increased by 80.56%. This increase can be explained by the rise in emissions in Scope 3. Scope 3 emissions increased by a total of 92.81 %. This significant increase can be seen in all major Scope 3 categories, including purchased goods, transportation, and business travel. Scope 2 emissions minimal due to e-vehicles. Scope 1 emissions drop slightly. Details can be found in Table 9 and Figure 6.

	2021	2022	Development	
	t CO_2e	t CO_2e	t CO_2e	%
Total	1,596.27	2,882.19	**1,285.92**	**80.56%**
Scope 1	198.10	185.42	**-12.68**	**-6.40%**
Stationary combustion	174.77	161.26	-13.51	-7.73%
Company-owned vehicles	23.33	24.17	0.84	3.58%
Scope 2	0.00	0.95	**0.95**	
Electricity usage	0.00	0.00	0.00	
E-Mobility	0.00	0.95	0.95	
Scope 3	1,398.17	2,695.82	**1,297.65**	**92.81%**
Purchased goods and services	1,063.03	2,209.37	1,146.33	107.84%
Fuel- and energy-related emissions	74.91	53.20	-21.71	-28.98%
Transport and distribution (upstream)	202.83	355.96	153.13	75.50%
Waste generated in operations	6.05	6.22	0.17	2.78%
Business travel	0.59	11.30	10.71	1,821.77%
Employee commuting (including Home Office)	50.76	59.78	9.02	17.77%

Table 9: Development of emissions in comparison

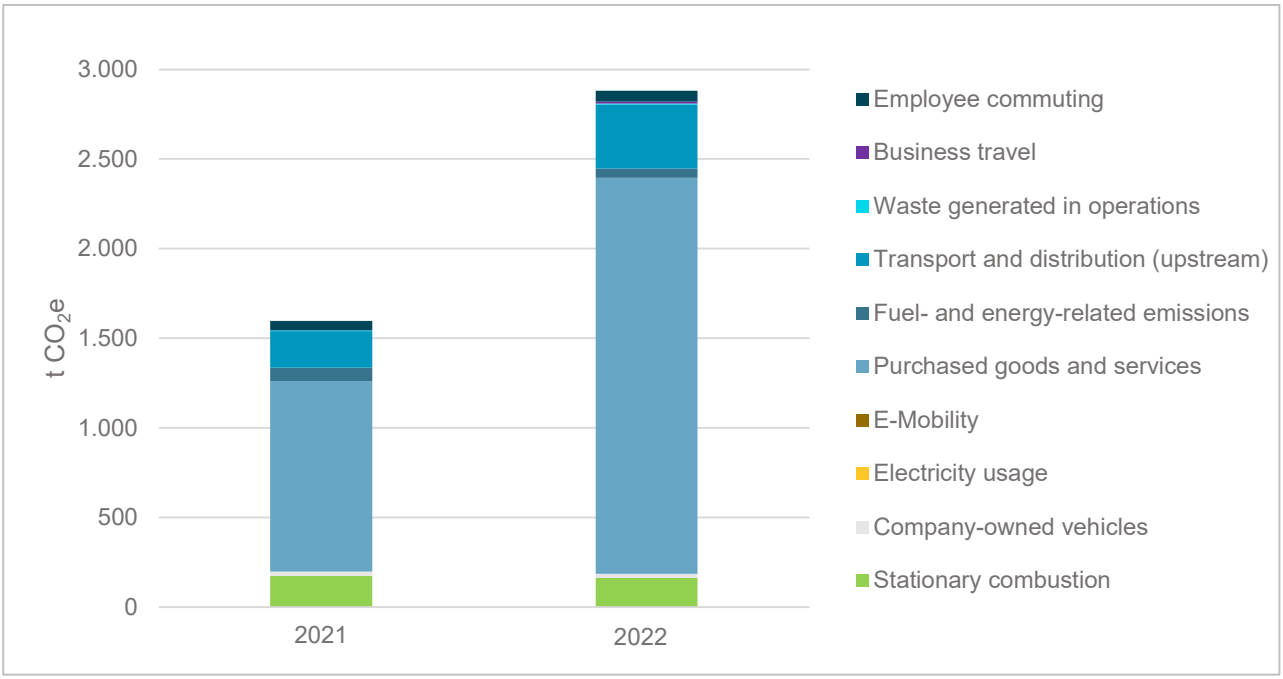


Figure 6: Development of emissions in comparison

7.2 Analysis of the emission development

The following section takes a closer look at the reasons for the significant changes compared to the base year.

Development of energy related emissions

Energy consumption has changed significantly. Natural gas and electricity consumption has fallen in Schwarzenbek and risen in Büchen. Vehicle fleet emissions have also increased. A corresponding emissions development can be seen in the Scope 3 area, energy-related emissions.

	2021	2022	Development		
Differentiation	**Amount**	**Amount**	**Amount**	**%**	**% t CO_2e**
Natural gas (Schwarzenbek, kWh)	439,189.00	398,720.00	-40,469.00	-9.21%	-9.52%
Natural gas (Büchen, kWh))	514,999.00	484,611.00	-30,322.00	-5.90%	-6.22%
DE Mix / green electrcity (Schwarzenbek, kWh)	625,470.00	547,057.00	-78,413.00	-12.54%	0%
DE Mix / green electrcity (Büchen, kWh)	73,100.00	78,944.00	5,844.00	7.99%	0%
Vehicle fleet car - medium diesel (vkm)	124,017.00	123,129.00	-888.00	-0.72%	1.12%
Vehicle fleet car - medium gasoline (vkm)	9,060.00	11,490.00	2,430.00	26.82%	24.69%
Vehicle fleet car - small gasoline (vkm)	7,824.00	9,260.00	1,436.00	18.35%	16.03%
E-Mobility (vkm)	0.00	44,33700*	44,337.00		

**Kilometers that cause additional energy consumption, outside of electricity consumption at the company premises*

Table 10: Development of scope 1 and 2 consumptions in comparison

Development of purchased goods and services

Emissions in the purchased goods category increased significantly by 107.84%. This increase is due to the growth in the volume of purchased goods. The main factor here is the volume of free-cutting steel. However, significantly higher volumes were also purchased for other goods. One reason for the increase in the area of purchased goods and services at RAMPA in the accounting year 2022 is an increased inventory build-up. However, the increased emissions are not only due to the increased purchasing volume. Emission factors have also developed so that the global average factors for 2022 reflect higher emissions compared to the previous year. This is particularly evident in the steel and brass sectors.

To illustrate the increase in emissions due to the change in emission factors, the amount of purchased goods from 2022 was paired with the emission factors from 2021. When the results of this calculation are compared to the current emissions from 2022, a difference of 600.89 t CO_2e can be observed. Accordingly, RAMPA's total emissions in 2022 (if raw materials and merchandise are paired with the 2021 emission factors) would be 600.89 t CO_2e lower.

	2021	2022	Development		
Differentiation	**kg**	**kg**	**kg**	**%**	**t CO_2e**
Raw material	**398,126.00**	**543,448.50**	**145,322.50**	**36.50%**	**57.58%**
Machining steel	337,490.00	509,567.00	172,077.00	50.99%	123.45%
Stainless steel	23,761.00	11,874.00	11,887.00	-50.03%	-40.48%
Brass	36,875.00	22,007.50	-14,867.50	-40.32%	-38.64%
Trade goods	**173,371.11**	**449,282.79**	**275,911.68**	**159.15%**	**244.97%**
Trade goods steel	151,095.98	398,089.53	246,993.55	163.47%	289.92%
Trade goods brass	5,438.82	14,573.03	9,134.21	167.94%	175.47%
Trade goods stainless steel	3,691.52	6,373.25	2,681.73	72.65%	105.64%
Trade goods zinc	12,910.68	30,177.90	17,267.22	133.74%	128.30%
Trade goods plastic	234.11	69.08	-165.03	-70.49%	-69.25%
Packaging	**16,784.84**	**13,300.49**	**-3,484.35**	**-20.76%**	**50.90%**
Packaging cardboard	8,934.47	12,396.49	3,462.02	38.75%	40.04%
Packaging foils	429.60	904.00	474.40	110.43%	110.43%
Oils	**7,420.77**	**11,181.05**	**3,760.28**	**50.67%**	**50.67%**

Table 11: Development of purchased goods and services in comparison

Development of transport and distribution (upstream)

Compared to the previous year, the distances traveled and thus also the associated emissions have changed significantly. Particularly noteworthy here is upstream transport, i.e. transport for the procurement of goods.

		2021	2022	Development		
		km	**km**	**km**	**%**	**t CO_2e**
Upstream	Air freight (tkm)	37,630.37	28,107.48	-9,522.894	-25.31%	--25.31%
	Sea freight (tkm)	2,042,886.07	6,314,128.07	4,271,242.00	209.08%	277.01%
	Truck >12t (tkm)	216,285.64	423,576.81	207,291.17	95.84%	122.64%
	Truck 40t (vkm)	410.00	900.00	490.00	119.51%	127.37%
Downstream	Truck >12t (tkm)	125,756.31	111,108.64	-14,647.67	-11.65%	0.44%

Table 12: Development of transported tkms and vkms in comparison

Development of business travel

Business trips have significantly increased compared to the previous year, resulting in a significant increase in emissions. Compared to the previous year, there is an increase of 1,821.77%. Within this category, however, the emission developments for passenger cars medium diesel, long-distance rail and flights 750-3700 km are particularly relevant.

	2021	2022	Development		
Differentiation	**Amount**	**Amount**	**Amount**	**%**	**t CO_2e**
Car - Medium Diesel (vkm)	1,041.00	6,863.00	5,822.00	559.27%	571.44%
Car – Medium Gasoline (vkm)	0.00	152.00	152.00		
Car - Small Gasoline (vkm)	0.00	374.10	374.10		
Train Long distance (pkm)	0.00	5,287.00	5,287.00		
Taxi/Uber (pkm)	0.00	233.00	233.00		
Flight (< 750km per route, pkm)	810.00	682.00	-128.00	-15.80%	-15.80%
Flight 750 - 3700 km (pkm)	0.00	5,008.00	5,008.00		
Flight > 3700 km (pkm)	0.00	43,232.00			
Hotel (N° nights)	8.00	47.00	39.00	487.50%	231.47%

Table 13: Development of traveled pkms and vkms, as well as the number of overnight stays, in comparison

Conclusion Comparison

There is a clear increase in emissions. The increased purchase of goods has caused a greater emission load in this area, which in turn has led to an increase in emissions in the transport of goods. However, the increase in emissions is not only due to the increased volume of goods and transport, but also to the changed emission factors for the purchased goods.

8 CONCLUSION & OUTLOOK

The aim of RAMPA GmbH & Co. KG was to have the emissions from the year 2022 accounted and to enable an emissions comparison.

According to the market-based approach, the total greenhouse gases caused for the entire company in 2022 amount to **2,882.18 t CO_2e.** This includes scope 1, 2 and 3 emissions. This is a total increase in emissions of **80.56 %.** Here, the purchased goods and the resulting transportation as well as the emission factor development are the main contributors to this increase in emissions.

The data collection was carried out by RAMPA. FORLIANCE evaluated and processed the incoming data. The data quality can be classified as good. The quality of the emission factors was rated as positive.

Process

RAMPA has now had a Corporate Carbon Footprint drawn up for the third time in succession. The repetition allows a direct comparison of the balance sheet years.

Recommendations

To consolidate efforts toward decarbonization, FORLIANCE recommends:

- Comparison of the CCF with other years
  - This allows the forecasting of a general trend
  - The regular review of emissions also enables the rapid identification of emission hotspots and corresponding intervention options
- Verification of the data of significant emission changes
  - Only by comparison with the previous year is a change in emissions visible. Significant changes should be reviewed
- Compensation of non-avoidable emissions
  - This is achieved by investing in high-quality climate protection projects, so that climate neutrality can be achieved in the long term.

9 ANNEX

Emission details

Scope	Emission source according to GHG Protocol	Own category	Specifics	t CO_2e	%
Scope_1.	Stationary combustion	Natural gas	direct	72.78	2.53
Scope_1.	Stationary combustion	Natural gas	direct	88.47	3.07
Scope_1.	Mobility	Car - medium diesel	direct	20.69	0.72
Scope_1.	Mobility	Car – medium gasoline	direct	2.12	0.07
Scope_1.	Mobility	Car - small gasoline	direct	1.36	0.05
Scope_2.	Mobility	E-Mobilität		0.94	0.03
Scope_2.	Electricity	Green electricity	direct	0.00	0.00
Scope_2.	Electricity	Green electricity	direct	0.00	0.00
Scope_upstream_3.	Purchased goods and services	Machining steel	Raw material	1.008.28	34.98
Scope_upstream_3.	Purchased goods and services	Stainless steel	Raw material	58.77	2.04
Scope_upstream_3.	Purchased goods and services	Brass	Raw material	127.79	4.43
Scope_upstream_3.	Purchased goods and services	Trade goods steel		787.70	27.33
Scope_upstream_3.	Purchased goods and services	Trade goods brass		84.62	2.94
Scope_upstream_3.	Purchased goods and services	Trade goods stainless steel		31.54	1.09
Scope_upstream_3.	Purchased goods and services	Trade goods zinc		81.22	2.82
Scope_upstream_3.	Purchased goods and services	Trade goods plastic		0.64	0.02
Scope_upstream_3.	Purchased goods and services	Packaging cardboard	Cardboard	10.28	0.36
Scope_upstream_3.	Purchased goods and services	Packaging foils	Plastic	2.82	0.10
Scope_upstream_3.	Purchased goods and services	Oils	Oil	15,66	0.54
Scope_upstream_3.	Waste generated in operations	Water consumption	Consumption	0.05	0.00
Scope_upstream_3.	Waste generated in operations	Water consumption	Aufbereitung	0.09	0.00
Scope_upstream_3.	Waste generated in operations	Residual waste		3.31	0.11
Scope_upstream_3.	Waste generated in operations	Paper		0.28	0.01
Scope_upstream_3.	Waste generated in operations	Plastic		2.54	0.09
Scope_upstream_3.	Waste generated in operations	Metal scrap	Recycling		
Scope_upstream_3.	Waste generated in operations	Brass chips	Recycling		
Scope_upstream_3.	Waste generated in operations	Brass core scrap	Recycling		
Scope_upstream_3.	Waste generated in operations	Stainless steel chips	Recycling		
Scope_upstream_3.	Waste generated in operations	Steel chips	Recycling		
Scope_upstream_3.	Business travel	Car – medium diesel		1.15	0.04
Scope_upstream_3.	Business travel	Car – medium gasoline		0.03	0.00
Scope_upstream_3.	Business travel	Car – small gasoline		0.05	0.00
Scope_upstream_3.	Business travel	Train long distance		0.02	0.00
Scope_upstream_3.	Business travel	Taxi/Uber		0.03	0.00
Scope_upstream_3.	Business travel	Flight (< 750km pro Strecke)		0.17	0.01
Scope_upstream_3.	Business travel	Flight 750 - 3700 km		0.77	0.03
Scope_upstream_3.	Business travel	Flight > 3700 km		8.35	0.30
Scope_upstream_3.	Business travel	Overnight stays	Germany	0.36	0.01
Scope_upstream_3.	Business travel	Overnight stays	Poland	0.13	0.00
Scope_upstream_3.	Business travel	Overnight stays	Austria	0.18	0.01
Scope_upstream_3.	Business travel	Overnight stays	Switzerland	0.01	0.00
Scope_upstream_3.	Business travel	Overnight stays	Czech Republic	0.04	0.00
Scope_upstream_3.	Employee commuting	Home office - electricity	DE electricity mix	1.80	0.06
Scope_upstream_3.	Employee commuting	Home office - electricity	DE green electricity	0.00	0.00
Scope_upstream_3.	Employee commuting	Home office - heating	Home office Heating	13.08	0.45
Scope_upstream_3.	Employee commuting	Walking		0.00	0.00
Scope_upstream_3.	Employee commuting	Bike		0.00	0.00
Scope_upstream_3.	Employee commuting	E-Bike		0.19	0.01
Scope_upstream_3.	Employee commuting	Motorcycle		0.07	0.00
Scope_upstream_3.	Employee commuting	Public Transportation		0.11	0.00
Scope_upstream_3.	Employee commuting	Train local		1.26	0.04
Scope_upstream_3.	Employee commuting	Motorrad klein		0.33	0.01
Scope_upstream_3.	Employee commuting	Car – small gasoline		5.84	0.20
Scope_upstream_3.	Employee commuting	Car - small diesel		0.65	0.02
Scope_upstream_3.	Employee commuting	Car – medium gasoline		6.83	0.24
Scope_upstream_3.	Employee commuting	Car - medium diesel		20.46	0.71
Scope_upstream_3.	Employee commuting	Car – medium electro		0.33	0.01
Scope_upstream_3.	Employee commuting	Car - medium average		0.03	0.00
Scope_upstream_3.	Employee commuting	Car - large gasoline		4.82	0.17
Scope_upstream_3.	Employee commuting	Car - large diesel		3.99	0.14

Scope_upstream_3.	Fuel- and energy related activities	Natural gas	indirect	12.40	0.43
Scope_upstream_3.	Fuel- and energy related activities	Natural gas	indirect	15.07	0.52
Scope_upstream_3.	Fuel- and energy related activities	Green electricity	indirect	16.97	0.59
Scope_upstream_3.	Fuel- and energy related activities	Green electricity	indirect	2.45	0.08
Scope_upstream_3.	Fuel- and energy related activities	Car – medium diesel		4.95	0.17
Scope_upstream_3.	Fuel- and energy related activities	Car – medium gasoline		0.61	0.02
Scope_upstream_3.	Fuel- and energy related activities	Car – small gasoline		0.39	0.01
Scope_upstream_3.	Upstream transportation and distribution	Sea freight tkm	upstream	101.91	3.54
Scope_upstream_3.	Upstream transportation and distribution	Air freight tkm	upstream	28.64	0.99
Scope_upstream_3.	Upstream transportation and distribution	Truck tkm	upstream	19.21	0.66
Scope_upstream_3.	Upstream transportation and distribution	Truck vkm	upstream	0.55	0.02
Scope_upstream_3.	Upstream transportation and distribution	Truck tkm	upstream	135.77	4.71
Scope_upstream_3.	Upstream transportation and distribution	Air freight tkm	downstream	0.03	0.00
Scope_upstream_3.	Upstream transportation and distribution	Truck vkm	downstream	42.95	1.49
Scope_upstream_3.	Upstream transportation and distribution	GLS Shipping (CO_2e compensation)	downstream	18.15	0.63
				2.882.18	

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