Enaspol a.s.

GHG Protocol Report

May 15, 2024

Contractor
EnviTrail s.r.o.
Bucharova 2657/21
158 00 Prague 5
Czech Republic
ID: 109 21 443

Client
Enaspol a.s.
Velvěty 79
415 01 Rtyně nad Bílinou
IČO: 25006339

Lead author
Anna Zora Kloužková
Senior consultant
+420 732 179 173
klouzkova@envitrail.com

Represented by
Zdeněk Kalous
QA Manager
+420 771 137 463
kalous@enaspol.cz

Technical support
Lea Svobodová

Envitrail s.r.o. is a company certified by TÜV NORD CERT GmbH for operating a management system in accordance with the requirements of ISO 9001:2015, with the scope:

Carbon footprint calculation

Certificate Registration Number: 44 100 22 52 0013
Audit report No: 0212/202

Table of contents

1. Introduction

Enaspol a.s. is a traditional Czech chemical company that is a leading European manufacturer of surfactants (detergents) and auxiliary preparations for various industrial sectors. The company operates as a medium-sized family business. Both the headquarters and production facilities are located near the village of Velvěty in northern Bohemia.

With its advantageous location in the heart of Europe, more than 45 years of experience in manufacturing and research, and increasingly specialised sales sectors, the company has ideal prerequisites for exporting to all corners of Europe. Currently, Enaspol actively supplies more than thirty countries in Europe and Asia. Its ever-expanding production portfolio includes a diverse range of chemical products and specialties designated for the industries of laundry, cleaning and hygiene products, personal hygiene products, the construction industry, and other highly specialised industrial sectors such as emulsion polymerization, agriculture, textile industry, etc. For the year 2023, the company had its carbon footprint assessed in the scope of Scope 1&2.

2. GHG Protocol

The carbon footprint is the sum of greenhouse gases converted to CO_2 equivalents using global warming potential (GWP) coefficients (typically based on a 100–year timeframe, also known as GWP100). The GHG Protocol is the most used method of calculating greenhouse gases for companies in the private and public sectors. It includes seven groups of greenhouse gases according to the Kyoto Protocol: CO_2, SF_6, N_2O, CH_4, HFCs, PFCs and NF_3.

GHG accounting and reporting shall be based on the following principles:

- **Relevance** – ensure the GHG inventory appropriately reflects the GHG emissions of the company and serves the decision–making needs of users – both internal and external to the company.
- **Completeness** – account for and report on all GHG emission sources and activities within the chosen inventory boundary. Disclose and justify any specific exclusions.
- **Consistency** – use consistent methodologies to allow for meaningful comparisons of emissions over time. Transparently document any changes to the data, inventory boundary, methods, or any other relevant factors in the time series.
- **Transparency** – address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.
- **Accuracy** – ensure that the quantification of GHG emissions is systematically neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information.

The GHG Protocol divides emissions into three categories according to their origin:

Scope 1: Direct GHG emissions – refers to activities of the company which are controlled by the company and release emissions directly into the atmosphere. These include emissions from stationary and mobile fuel combustion, emissions from industrial processes, and fugitive emissions.

Scope 2: Electricity indirect GHG emissions – emissions from purchased electricity, steam, heat or cooling, which are associated with their production, but are not produced directly by the company.

Scope 3: Other indirect GHG emissions – emissions which are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. They include 15 categories into which GHG emissions are divided to avoid double counting. Some examples of scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services.

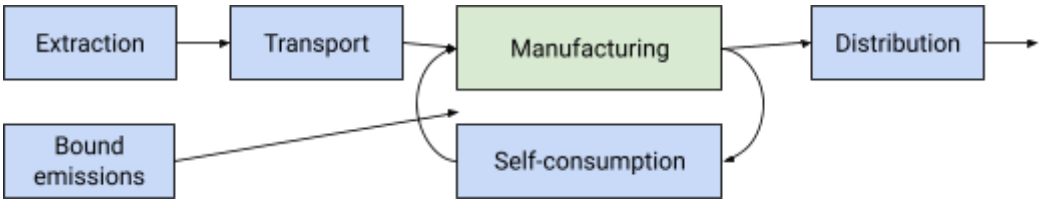
Reporting of GHG emissions in Scope 1 and Scope 2 is mandatory in terms of the GHG Protocol, while Scope 3 is voluntary, but it is important to comply with all five principles of the GHG Protocol. The resulting carbon footprint is measured in tonnes of carbon dioxide equivalent (tCO_2e).

3. ISO 14064 – Greenhouse gases

Another option for reporting a company's carbon footprint is the ISO standard 14064, which consists of three interrelated parts. ISO 14064–1 contains requirements for planning, implementation, management and reporting, and verification of greenhouse gas inventories for companies. The second part of the standard, ISO 14064–2, includes requirements for monitoring and reporting of achieved greenhouse gas emission reductions through project activities. The third part, ISO 14064–3, sets out the principles and requirements for greenhouse gas inventories, emission reduction projects and describes the validation.

3.1. The differences in emissions reporting according to the GHG Protocol and ISO 14064–1.

Both methods are almost an identical calculation of greenhouse gas emissions. Differences arise mainly in the calculation of indirect emissions from purchased energy – the GHG Protocol reports emissions from energy production in Scope 2, either in a market–based manner (in the case of energy purchased from a non–standard network) or in a location–based manner (according to the geographical location). In the case of reporting emissions according to ISO 14064, the company should use a location–based approach, using appropriate emission factors. However, if the company purchases energy with a green certificate, a market–based approach can be used.



In the case of the GHG Protocol, **emissions from energy production** are always included in Scope 2 and **other indirect emissions**, e.g. emissions associated with the extraction, processing and transport of fuel, the production of equipment necessary for electricity production, transmission and distribution losses, are then reported in Scope 3 in the relevant subcategories. In contrast, ISO 14064 classifies **emissions from energy production** into Category 2: Indirect emissions of greenhouse gases from purchased energy and the other additional emissions into Category 3: **Losses from energy generation sold to the end user**.

	GHG Protocol	**ISO 14064**
Direct emissions from energy production	Scope 2: Indirect emissions of the company purchasing energy	Category 2: Indirect greenhouse gas emissions from consumed (purchased) energy
Emissions from fuel processing, transport, distribution and transmission losses	Scope 3, Category 3 within the subcategories *of Distribution losses of energy, Losses from purchased electricity, Losses from purchased fuels, Losses from the generation of electricity sold to the end user*	Category 3: Losses from electricity generation sold to the end user

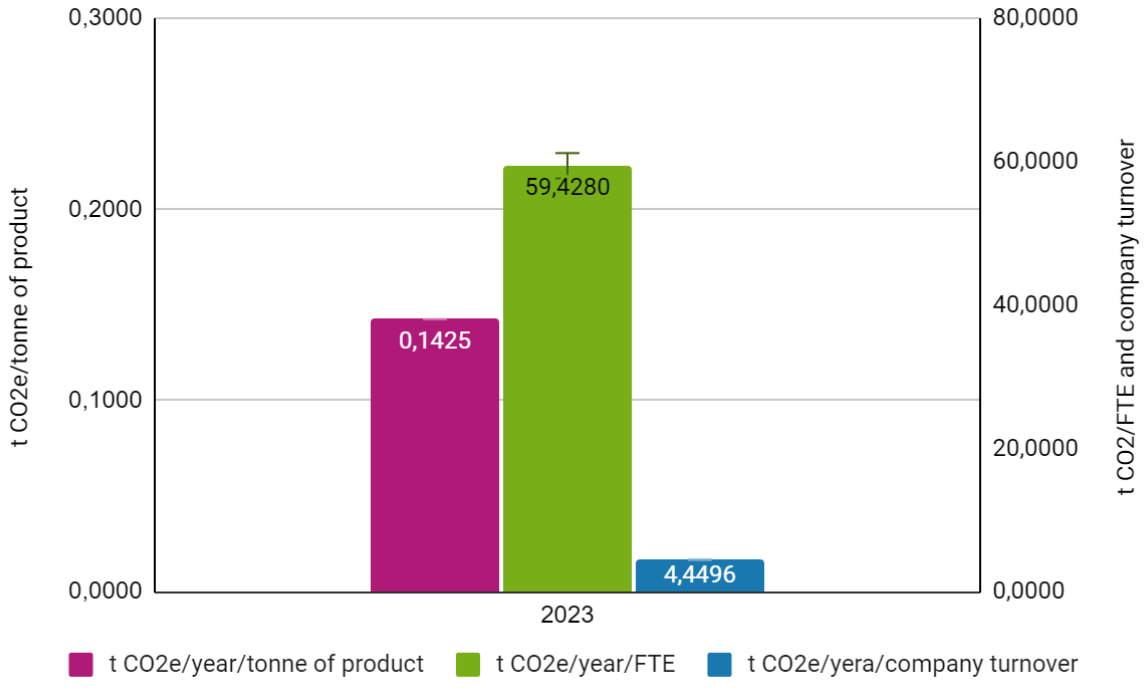
4. Executive summary

The carbon footprint of Enaspol a.s. for the year 2023 was calculated within Scope 1&2 according to the GHG Protocol standard, which is the most widely used global standard for calculating the carbon footprint, the calculation was performed by the certified company EnviTrail.

According to the calculation, **Enaspol a.s. had the following carbon footprint in 2023:**

GHG Protocol Scope	t CO_2e/year
Scope 1	4 222,80
Scope 2	3 205,69
Total	**7 428,49**

For a better understanding of these numbers, we have further established three indicators that convert the carbon footprint of Enaspol a.s. into the amount of products manufactured, the number of employees, and turnover.



The results in the report are presented according to the GHG Protocol standard and also according to ISO 14064-1. The methodology for data collection for individual categories in Scope 3 is attached to this report.

5. GHG Protocol – Required information

5.1. Description of company boundaries and inventory of greenhouse gases

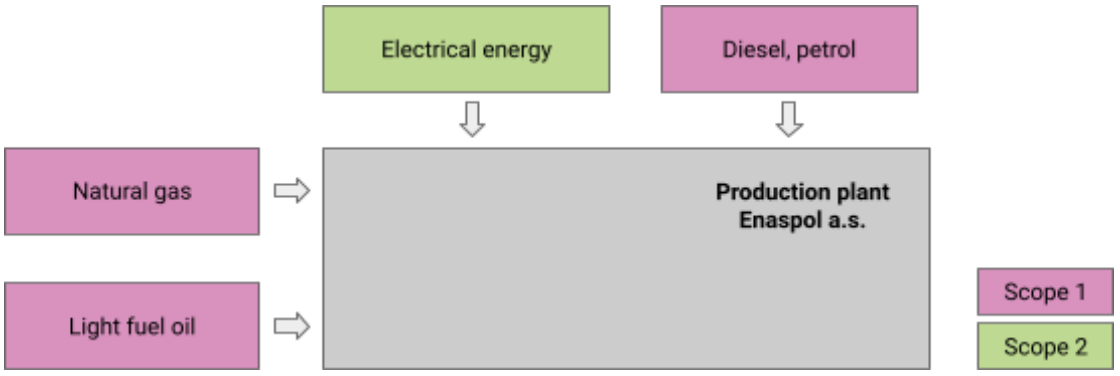
5.1.1. Organisational boundaries

The carbon footprint is assessed for the production plant of Enaspol a.s., located in Rtyně nad Bílinou, ID No. 25006339. The calculation does not cover the fully-owned subsidiary Enaspol GmbH, the sales point in Rtyně nad Bílinou and the other activities of Enaspol a.s. in properties other than the production plant, which fall under Scope 1 and 2.

Address	**Activities**
Velvěty 79 415 01 Rtyně nad Bílinou	Main operations, company headquarters, administrative facilities, production

5.1.2. Operational boundaries

The boundaries of the analysis are determined according to the operational control approach. Enaspol a.s. therefore reports greenhouse gas emissions from activities included within the organisational boundaries over which it has control. The inflows and outflows of the company, with a link to emissions included in Scope 1&2, is shown in the following graph:



5.1.3. Greenhouse gases according to the Kyoto Protocol

The calculation includes the following greenhouse gases:

- CO_2 – carbon dioxide
- CH_4 – methane
- N_2O – nitrous oxide

The following greenhouse gases are not relevant for Enaspol a.s.:

- HFC – Hydrofluorocarbons

- PFC –Perfluorocarbons
- SF6 – Sulphur hexafluoride
- NF_3 – Nitrogen trifluoride

Emissions of these greenhouse gases are expressed in CO_2 equivalent (CO_2e) based on their global warming potential over a 100-year time horizon (GWP100). The global warming potential (GWP) is based on the Fourth, Fifth, or Sixth Assessment Report (AR4, AR5, or AR6) of the Intergovernmental Panel on Climate Change (IPCC).

Below are the global warming potentials (GWP100) used in the Carbon+Alt+Delete software for different emission factor databases:

Group of Greenhouse Gases	**ADEME (2022)**	**AIB (2021)**	**DEFRA (2022)**
	AR 6	**AR 5**	**AR 4**
	GWP (100 years)		
CO_2	1	1	1
CH_4	28	28	25
N_2O	273	265	298
HFC	100 – 14 800	2 – 12 400	2 – 14 800
PFC	6 000 – 17 200	7 390 –17 700	7 690 –17 400
SF_6	25 200	23 500	22 800
NF_3	17 400	16 100	17 200

5.1.4. Base year and reporting period

Greenhouse gas emissions are calculated for Scope 1&2 for the year 2023. This is the first reporting of the carbon footprint for Enaspol a.s., therefore this year is considered to be the base year. If the organisational boundaries or analysis boundaries are changed in the subsequent reporting period, the final results cannot be compared.

5.1.5. Scope 1&2

In the Enaspol production plant, greenhouse gas emissions, falling within Scope 1&2 according to the GHG Protocol, arise from the following emission sources (see the table below). The table also describes the sources of primary data (from Enaspol a.s.) and the sources of emission factors used for the calculation.

GHG emission source	Description of data sources used for the calculation of CO_2e emissions	Emission factor source for the calculation of CO_2e emissions
Natural gas combustion (S1)	Invoices, Gasnet and Innogy	DBEIS, DEFRA [1]
Light fuel oil combustion (S1)	Invoices, NRG Komodity	DBEIS, DEFRA [1]
Combustion of fuels (company vehicles) (S1)	Email conversation with the company's contact person	DBEIS, DEFRA [1]
Fugitive emissions (S1)	Email conversation with the company's contact person	DBEIS, DEFRA [1]
Purchased electrical energy (S2)	Invoices, ČEZ, EPET	AIB 2022 [2]

5.1.5.1. Excluded items

In Scope 1&2, fugitive emissions were neglected. The company has no record of refrigerant and extinguishing agent replenishment in 2023. The calculation also excludes direct and indirect emissions from purchased power from the Enaspol GmbH subsidiary, the Enaspol Inc. sales point, and other properties where the company operates.

5.2. Data quality

The quality of primary data (information from Enaspol a.s.) and secondary data (carbon footprint emission factors) was assessed according to the following classification:

Data quality	Data type	Description
A	Primary	Measured data or calculated data based on measurements
	Secondary	Emission factor known precisely
B	Primary	Qualified estimate
	Secondary	Emission factor covers a wider range of activities than primary data.
C	Primary	Unqualified estimate
	Secondary	Emission factor is not available, use of sectoral emissions

5.2.1. Data quality estimation

The data quality for each category in the carbon footprint calculation of the Enaspol plant is expressed in the following table:

Category	Primary data	Secondary data	Overall quality
Energy production (stationary combustion)	A	A	**A**
Emissions from transportation (mobile combustion)	A	A	**A**
Purchased electrical energy	A	A	**A**

The mentioned assessment is used in the statistical evaluation of the carbon footprint result.

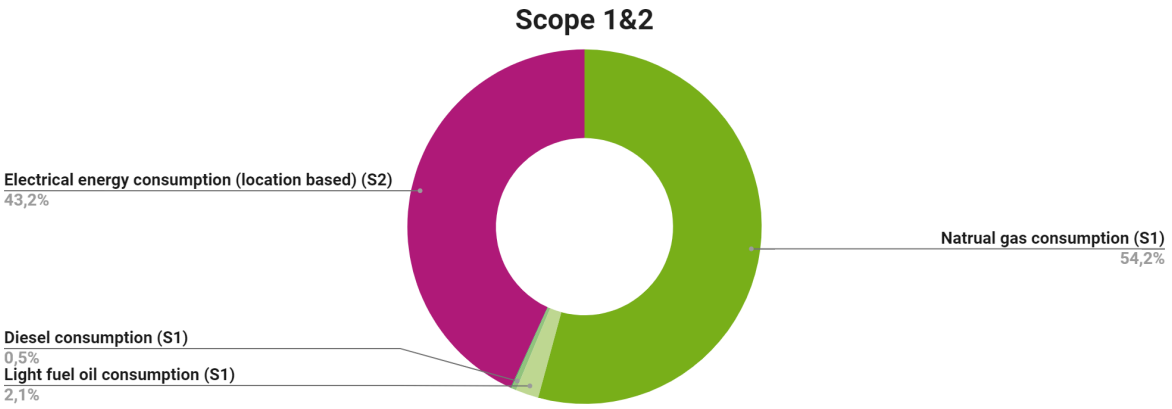
5.3. Emissions information

5.3.1. Emissions Scope 1&2

The greenhouse gas emissions inventory is provided in *Annex 1 – Enaspol GHG Inventory*. The amount of GHG emissions in the individual categories of Scope 1&2, namely direct emissions from the company and indirect emissions from purchased energy, for the year 2023 are listed in the following table:

Category	t CO_2e/year	Share of total emissions (%)
Scope 1	4 222,80	56,85%
Stationary combustion (natural gas, light fuel oil)	4 183,28	56,31%
Mobile combustion (diesel, petrol)	39,53	0,53%
Scope 2 – Purchased electrical energy (market based)	3 480,01	46,85%
Scope 2 – Purchased electrical energy (location based)	3 205,69	43,15%
Total (Scope 1&2)	**7 428,49**	**100,00%**

Scope 2 only includes purchased electrical energy. The Enaspol production plant purchases electricity from the regular distribution network. Last year, the construction of a photovoltaic power plant (PV) was initiated, but it was not yet in operation in 2023.



The results of the statistical data processing are shown in the following table. A log-normal distribution with a geometric standard deviation is assumed.

	Emissions (t CO_2e)	Uncertainty (95% confidence)	Share of total emissions (%)
Direct emissions - Scope 1	4222,80	-5% až +5%	56,80%
Electricity - Scope 2 (location based)	3205,69	-8% až+9%	43,20%
Total GHG emissions	**7428,49**	**-5% až +5%**	100,00%

6. GHG Protocol – Optional information

Optional information in the GHG Protocol includes performance ratio indicators or a more detailed breakdown of Scope 3 categories.

6.1. Proportional performance indicators

Three performance ratio indicators from the total GHG emissions were evaluated, namely:

- GHG emissions converted to the quantity of products
- GHG emissions converted to the number of company employees
- GHG emissions converted to company revenue

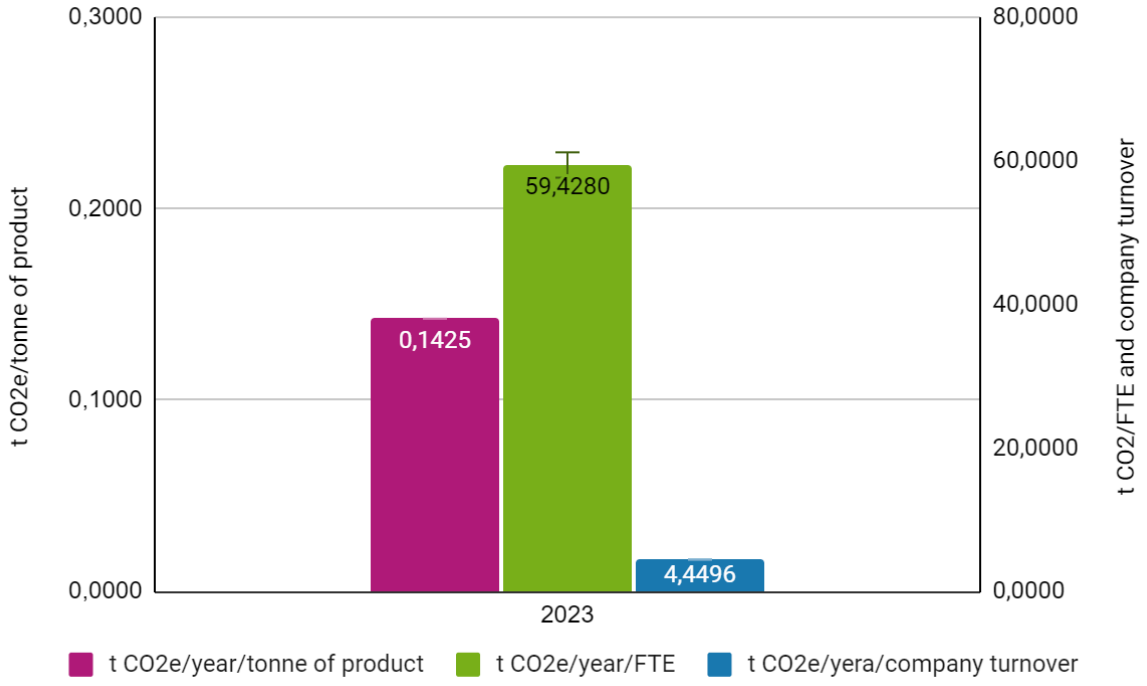
These ratio indicators had the following input values for the year 2023:

	t CO_2e/year	amount of product (t)	FTE	company turnover (mil. CZK)
2023	7 428,49	52128	125	1669,475

The results are considered to be relative values that can serve Enaspol a.s. in the future for comparing the carbon footprint over time or for monitoring the development of the decarbonization strategy.

	t CO_2e/year	t CO_2e/year/tonne of product	t CO_2e/year/FTE	t CO_2e/year/company turnover
2023	7 428,49	0,1425	59,4280	4,4496

The following graph displays all three ratio indicators:



6.2. Information about offsets

Enaspol a.s. does not operate any offset programs or invest in any programs of this type.

6.3. Scope 3 emissions

The evaluation of greenhouse gases in Scope 3 was not part of this year's calculation. If processed in the next reporting period, the relevance of each category is prepared in the following table. The data collection methodology for each category is attached to this report.

Scope 3 category	Relevance	Notes on Data Collection
Purchased Goods	Relevant	The company has information on raw material consumption across the entire production plant.
Purchased services	Relevant	-
Capital Goods	Relevant	-
Fuel- and energy-related activities	Relevant	No additional input data collection is necessary for this category; it is calculated from Scope 1&2.
Upstream transport	Relevant	-
Waste generated in operations	Relevant	-
Business Travel	Relevant	-
Employee Commuting	Relevant	-
Upstream Leased Assets	x	This category is relevant if the company leases property, equipment.
Downstream Transport	x	This category is relevant, for example, if the transport of the company's products is paid by a third party.
Processing of Sold Products	Not relevant	There is an exception for chemical products; this category does not need to be reported.
Use of Sold Products	x	Depends on the products, subject to discussion.
End of Life of Products	x	Depends on the products, subject to discussion.
Downstream Leased Assets	x	This category is relevant if the company leases property, equipment to another party.
Franchises	Not relevant	-
Investments	Not relevant	-

7. Total emissions of the company and their conversion to the seven Kyoto Protocol greenhouse gas groups

Below is the breakdown of emissions of the seven greenhouse gases according to the Kyoto Protocol for each emission category: CO_2, CH_4, and N_2O, which are converted to CO_2e in the final value.

According to the GHG Protocol:

Greenhouse gas emissions dat											
According to the GHG Protocol											
Emission category		Scope	All GHG (tCO_2e)	CO_2 (tCO_2e)	CH_4 (tCO_2e)	N_2O (tCO_2e)	SF_6 (tCO_2e)	NF_3 (tCO_2e)	HFCs (tCO_2e)	PFCs (tCO_2e)	CO_2e^* (tCO_2e)
1	**Scope 1 - Direct Emissions fro**	**Scope 1**	**4 222,80**	**4 213,57**	**6,45**	**2,78**					
1.1	Stationary combustion	Scope 1	*4 183,28*	*4 174,52*	*6,42*	*2,33*					
1.2	Mobile combustion	Scope 1	*39,53*	*39,04*	*0,03*	*0,46*					
1.3	Process emissions	Scope 1									
1.4	Fugitive emissions	Scope 1									
2	**Scope 2 - Indirect emissions f**	**Scope 2**	**3 205,69**	**3 205,69**							
2.1	Purchased elec market based	Scope 2	*3 480,01*	*3 480,01*							
	location based	Scope 2	*3 205,69*	*3 205,69*							
2.2	Purchased steam, heating, coc	Scope 2									
Total GHG emissions			**7 428,49**								

According to ISO 14064-1:

Greenhouse gas emissions data										
According to ISO 14064-1										
Emission category		All GHG (tCO_2e)	CO_2 (tCO_2e)	CH_4 (tCO_2e)	N_2O (tCO_2e)	SF_6 (tCO_2e)	NF_3 (tCO_2e)	HFCs (tCO_2e)	PFCs (tCO_2e)
1	**Direct GHG emissions**	**4 222,80**	**4 213,57**	**6,45**	**2,78**				
1.1	Stationary combustion	*4 183,28*	*4 174,52*	*6,42*	*2,33*				
1.2	Mobile combustion	*39,53*	*39,04*	*0,03*	*0,46*				
1.3	Process emissions								
1.4	Fugitive emissions								
1.5	Land use changes								
1.1	**Indirect GHG emissions from imported energy**	**3 205,69**	**3 205,69**						
2.1	Purchased elec location based	*3 480,01*	*3 480,01*						
	market based	*3 205,69*	*3 205,69*						
2.2	Purchased energy (other)								
Total GHG emissions		**7 428,49**							

8. Disclaimer

Enaspol a.s. is responsible for the underlying data for the report, while EnviTrail s.r.o. is responsible for the calculations and emission factors. EnviTrail also notes that the emission factors are the intellectual property of EnviTrail – Enaspol may use them for its own needs, but may not distribute them further. It also warns that there is always a risk of non-representativeness of the studied data.

Please note that the carbon footprint represented by greenhouse gas emissions is only one of many indicators of human impact on the environment. The company's goal must be holistic environmental protection. When implementing decarbonisation measures, nature must not be harmed in other areas, such as the destruction of biodiversity, water resources, the unnecessary use of arable land, etc.

In Prague, May 13, 2024

EnviTrail s.r.o.:

Za Enaspol a.s.:

Anna Zora Kloužková
Senior consultant

Zdeněk Kalous
QA Manager

9. List of attachments:

Annex 1 – Enaspol GHG Inventory
Annex 2 – Metodika sběru dat Scope 3

10. Sources of Emission factors

[1] Department for Business, Energy & Industrial Strategy and Department for Environment Food & Rural Affairs. (2022). Conversion factors 2022: full set (for advanced users). Retrieved May 4, 2024, from https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022

[2] Association of Issuing Bodies. (2022). Residual Mix Results 2022. Retrieved May 4, 2024, from https://www.aib-net.org/sites/default/files/assets/facts/residual-mix/2022/AIB_2022_Residual_Mix_Results_inclAnnex.pdf