GHG emission report 2022 & 2023

Erasmus University Rotterdam

Salacia Solutions B.V.
14 August 2024

Kantoorgebouw Microlab (kantoorruimte 9.24)
Aert van Nesstraat 45
3012 CA Rotterdam

+31 (0)10 322 05 20
info@salaciasolutions.com
salaciasolutions.com

Salacia solutions BV
KvK: 82231923
Btw nr: NL 862386548B01
Iban: NL36 RABO 0367 3960 25

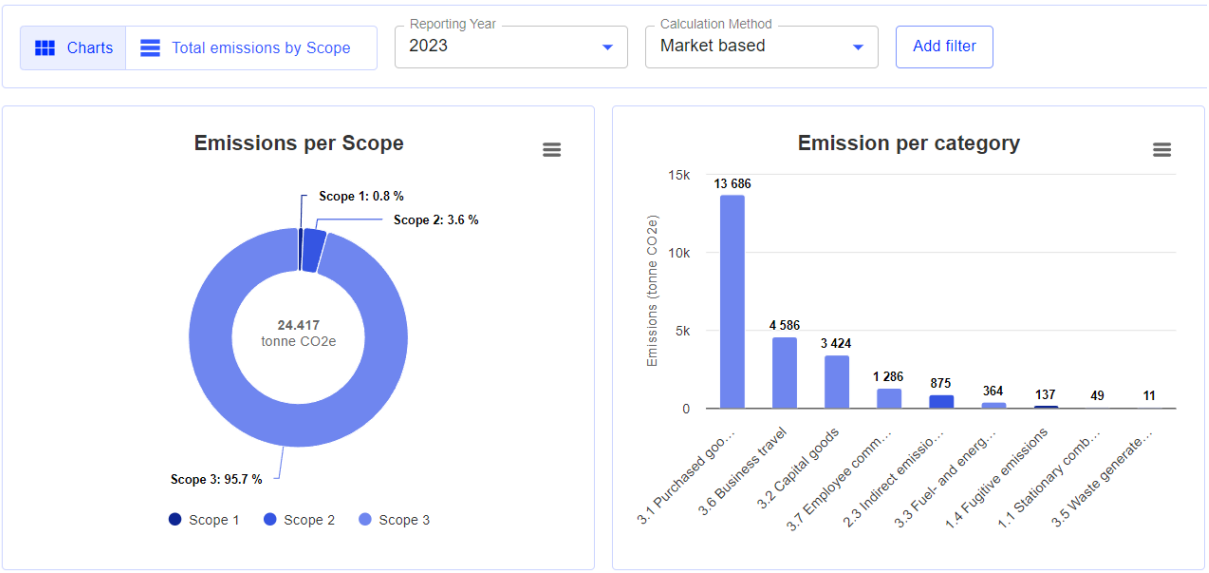
Introduction & Results Summary

Since October 2023, Erasmus University Rotterdam (EUR) has been working with Salacia Solutions to determine its climate impact (in CO_2 equivalents).

We are pleased to inform you that the results for the fiscal year 2022 and 2023 are now ready and can be viewed on your personal online dashboard through the following link: https://app.salaciasolutions.com/. The login information has been sent to you by e-mail.

The calculations include scope 1, scope 2 and scope 3 GHG emission categories for EUR. In total, ca. 3.298 data points were processed in the calculations. A detailed explanation of the calculations can be found in this report.

Results in brief



Screenshot of the results dashboard (market-based approach). The most up-to-date version is accessible online here.

1. The total climate impact is shown in figure 1 for location-based approach and in figure 2 for market-based approach[1]

[1] The difference stems from the fact that in the 'location-based approach', you have to calculate with the climate impact of the average electricity mix of the regions/countries where your facilities are located. In contrast, in the 'market-based approach', you may calculate with the actual impact of your specific energy supplier (if known). (Note that all organizations have to report the results for both approaches.)

Climate change impact (tonne CO2e)	Reporting yea	
Scopes	2022	2023
1	**28**	**186**
Fugitive emissions	7	137
Stationary combustion	20	49
2	**7,172**	**5,575**
Indirect emissions from the use of electricity (location)	6,327	4,700
Indirect emissions from the use of heating (location)	845	875
3	**33,794**	**23,356**
Purchased goods and services	12,011	13,686
Business travel	3,126	4,586
Fuel- and energy-related activities not included in scope 1 or scope 2	373	364
Employee commuting	928	1,286
Waste generated in operations	9	11
Capital goods	17,347	3,424
Grand Total	**40,994**	**29,117**

Figure 1: E1 Climate change results in the yearly comparison (location-based approach).

Climate change impact (tonne CO2e)	Reporting yea	
Scopes	2022	2023
1	**28**	**186**
Fugitive emissions	7	137
Stationary combustion	20	49
2	**845**	**875**
Indirect emissions from the use of electricity (market)	0	0
Indirect emissions from the use of heating (market)	845	875
3	**33,794**	**23,356**
Purchased goods and services	12,011	13,686
Business travel	3,126	4,586
Fuel- and energy-related activities not included in scope 1 or scope 2	373	364
Employee commuting	928	1,286
Waste generated in operations	9	11
Capital goods	17,347	3,424
Grand Total	**34,667**	**24,417**

Figure 2: E1 Climate change results in the yearly comparison (market-based approach).

1. The corresponding emission intensities are as follows:

2022	Emissions in ton CO2e (market-based)	Students + staff *	Intensity (kg CO2e / capita)	Gross floor area (in m2) **	Intensity (kg CO2e / m2)
Scope 1	28	32,459.3 (29,519 + 2,940.3)	0.86	207,940	0.13
Scope 2	845		26.03		4.06
Scope 3	33,794		1,041.12		162.52
Scope 1+2	873		26.90		4.20
Scope 1+2+3	34,667		1,068.01		166.72

* Unique students (per 1-10 of each yr; excluding Erasmus MC) + Staff in FTE (per 31-12 of each yr; excluding Erasmus MC).
** Tinbergen building currently out of scope, as it is under renovation until mid-2027.

2023	Emissions in ton CO2e (market-based)	Students + staff *	Intensity (kg CO2e / capita)	Gross floor area (in m2) **	Intensity (kg CO2e / m2)
Scope 1	186	32,088.8 (28,917 + 3,171.8)	5.80	230,194	0.81
Scope 2	875		27.27		3.80
Scope 3	23,356		727.86		101.46
Scope 1+2	1,061		33.06		4.61
Scope 1+2+3	24,417		760.92		106.07

* Unique students (per 1-10 of each yr; excluding Erasmus MC) + Staff in FTE (per 31-12 of each yr; excluding Erasmus MC).
** Tinbergen building currently out of scope, as it is under renovation until mid-2027.

2. The largest contributor to EUR's climate impact is the GHG category 'Capital goods' in 2022, followed by 'Purchased goods and services'; the latter category has the largest impact in 2023. Together, these two categories account for 85% of your total (market-based) impact in 2022 and 70% in 2023.
   In 2023, the second largest contributor to EUR's climate impact is the category 'Business Travel', which makes up 19% of your total impact in that year.

3. Prioritizing reduction efforts within the identified categories presents the most effective pathway to minimize your climate impact. The concluding chapter offers recommendations for enhancing data quality as a foundational step to inform more precise decision-making.

We hope that these results will be useful to both your reporting and your management.

Finally, we would like to thank you for your confidence in us and the energy you have put into this project.
We look forward to continuing this sensational collaboration.

Kind regards,
Lenny van Klink, Mart Beeftink, Sinja Li

Rotterdam, 14 August 2024

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Explanation of calculations

This chapter explains the calculation of the greenhouse gas (GHG) emission inventory for the reporting organization.

Calculation methodology

This GHG emissions inventory is in conformance with the GHG Protocol Corporate Standard, the GHG Protocol Scope 2 Guidance, and the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

The GHG Protocol is the internationally accepted, standard methodology for conducting a GHG emission inventory of organizations and companies. It is also the methodology for the climate impact calculations (European Sustainability Reporting Standards (ESRS) E1) under the EU Corporate Sustainability Reporting Directive (CSRD).

In a nutshell, the GHG Protocol distinguishes between three "scopes" of GHG emissions, each with several sub-categories:

1. An organization's directly controllable, internal emissions (Scope 1).
2. The indirect emissions of the energy which an organization purchases for its own use (Scope 2).
3. The indirect emissions that stem from a company's activities but are actually emitted by others, i.e. the GHG emissions that occur in the value chain – both upstream with suppliers and downstream with customers (Scope 3).

Within each of the three scopes, the GHG Protocol distinguishes several categories. An organization only needs to report on those categories that are relevant to it, based on an initial scoping.

Scope of the inventory

Organizational scope

This inventory covers the legal entity of Erasmus University Rotterdam and the following subsidiaries:

- Erasmus Holding BV
- EURAC BV
- ESPR BV
- EUPT BV
- ERBS BV
- FEI BV
- IHS BV
- Risbo BV
- ECZ BV
- IMTA BV
- ECE BV
- DRIFT BV
- CCC BV
- EIBE BV
- EURflex BV

- Erasmus Q-Intelligence BV
- Erasmus Enterprise BV
- EFS BV

This inventory does not cover the following entities:

Name	Treatment in the reporting company's financial accounts	Justification of exclusion from this year's GHG inventory
Erasmus Academie BV		Not existing anymore
SEOR BV (Rotterdam Science Tower)	Included in financial accounts; has been excluded in the spend-based activity data	Independent research institute affiliated with Erasmus University Rotterdam
RSM BV		External tenant; not included in the financial data of the holding

GHG emission scope

This inventory covers the following GHG emission categories relevant for the reporting organization:

- Scope 1:
  - 1.1 - Stationary combustion
  - 1.4 - Fugitive emissions
- Scope 2:
  - 2.1 - Indirect emissions from the use of electricity
  - 2.3 - Indirect emissions from the use of heating
- Scope 3:
  - 3.1 - Purchased goods and services
  - 3.2 - Capital goods
  - 3.3 - Fuel- and energy-related activities not included in scope 1 or scope 2
  - 3.5 - Waste generated in operations
  - 3.6 - Business travel
  - 3.7 - Employee commuting

The following GHG emission categories were excluded from this inventory:

GHG emission category	Reason for exclusion
1.2 - Mobile combustion	University owned vehicles fully electric from 2022
1.3 – Process emissions	Not applicable
2.2 - Indirect emissions from the use of steam	Not applicable
2.4 - Indirect emissions from the use of cooling	Not applicable
3.4 - Upstream transport and distribution	Not applicable
3.8 - Upstream Leased Assets	Immaterial (based on screening); included in Scope 1/2
3.9 - Downstream transport and distribution	Not applicable
3.10 - Processing of Sold Products	Not applicable
3.11 - Use of sold products	Not applicable
3.12 - End-of-life treatment of sold products	Not applicable
3.13 - Downstream Leased Assets	Immaterial (based on screening); included in scope 1/2
3.14 - Franchises	Excluded, not applicable

3.15 - Investments	Excluded, not applicable

Data used

A detailed overview of all activity data used for the calculations can be found in the Salacia application.

Primary data

The reporting organization supplied primary data, which was utilized in the calculations for all GHG emission categories. This data comprised both physical measurements (e.g., kWh, GJ, kg, km) and financial expenditures (Euros).

Secondary data and assumptions

No secondary data was used.

Pre-calculated GHG emissions

For the following activities, the reporting organization has supplied not physical activity data (e.g. X liters of a fossil fuel) but instead a pre-calculated greenhouse gas impact (e.g. X tons of CO2e):

Scope & category	Activity	Quantity	Unit	Calculated by
3.6 - Business travel	Business travel by car	2022: 45 2023: 47	ton CO2e ton CO2e	EUR EUR
3.7 - Employee commuting	Commuting by car, motorcycle, etc.	2022: 928 2023: 1,286	ton CO2e ton CO2e	EUR EUR
3.1 Purchased goods and services	Cleaning purchases and services	2022:14,855 2023: 9,039	kg CO2e kg CO2e	EUR EUR
3.1 Purchased goods and services	Purchased goods VITAM	2023: 297,535 (spend-based in 2022)	kg CO2e	EUR

Since these GHG emissions had been pre-calculated by the reporting organization or a third party on behalf of the reporting organization, Salacia cannot validate and cannot be held responsible for the correctness of these datapoints.

Excluded data

A detailed overview of all excluded activities and the reason for exclusion can be found in the Salacia application.

Excluded activities are all derived from the financial expenditure dataset. The primary reasons for their exclusion are as follows:

- Activities not within the scope of GHG emission calculations for an organization (e.g. salaries or similar personnel expenses, donations, 'Rijksbijdrage')
- Exclusion to avoid double-counting (e.g. 'Overig - SA Reiskosten woon/werk' is already included in employee commuting data)
- Student subsidies were excluded from this GHG emissions inventory as they were not considered within the scope of GHG emission calculations for an organization. This decision may be revisited in the future.

Negative datapoints

There are two negative activities in the dataset, the most substantial being ''Overige - Reiskosten btnl - deel kosten onder forfait' with approx. -8 tonne CO2e in both years. It has been assessed with EUR that this reflects the actual impact of the travel expenses best, as the negative emissions will be offset by another account.

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Emission factors used

In order to calculate the CO_2 emissions of processes, activities, goods and services, activity data (e.g. physical volumes of material, distances travelled or amount of money spent) is combined with so-called emission factors, which give the climate impact of 1 unit of the corresponding process, activity, good or service (e.g. X kg CO_2/liter, X kg CO_2/km, X kg CO_2/EUR).

Emission factors from databases

The emission factors used in the calculations for this inventory originate from the following databases:

Database	Description	In this inventory, used to calculate emissions from:
BEIS & DEFRA	The emission factors provided by the British government (Department of Business, Energy & Industrial Strategy, BEIS, and Department of Environment, Food & Rural Affairs, DEFRA) are widely used by organizations and practitioners, even outside of the UK, because of their solid and consistent methodology and the large amount of activities covered.	3.5 - Waste generated in operations
CO2emissiefactoren.nl	CO2emissiefactoren.nl is the standard emission factor source in the Netherlands and mainly covers different types of energy combustion (both stationary and in vehicles) and refrigerant leakage.	1.4 Fugitive emissions 2.1 - Indirect emissions from the use of electricity (market- and location-based) 2.3 - Indirect emissions from the use of heating (market- and location-based) 3.3 - Fuel- and energy-related activities not included in scope 1 or scope 2 3.6 - Business travel
EXIOBASE	EXIOBASE is a comprehensive Multi-Regional Environmentally Extended Input-Output database that provides detailed information on the production and consumption of goods and services around the world. It includes data on the resources used, such as energy and materials, as well as the environmental impacts, such as greenhouse gas emissions and water use, of economic activities.	1.1 - Stationary combustion 3.1 - Purchased goods and services 3.2 - Capital goods 3.6 - Business travel
Database Milieubelasting Voedingsmiddelen	The RIVM database encompasses approximately 250 food items, categorized into groups like meat, dairy, bread, vegetables, drinks, and spreads, selected for their significant contribution to daily environmental impact and high consumption in the Netherlands. This database provides insights into the environmental burden of food consumption throughout their entire life cycle.	3.1 - Purchased goods and services

Other emission factors
No other emission factors were applied.

Overview of activity data and emission factors
An overview of the activity data and corresponding emission factors can be found in the Salacia application.

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GHG emission data improvement plan

This chapter provides suggestions for improvements of the quality of data provided by the reporting organization for the purpose of future GHG emission inventories.

Overall, the data quality at EUR is very good. Including spend-based financial data for primarily purchased goods and services, as well as capital goods marks an improvement over previous inventories, providing a more comprehensive view of EUR's climate impact. The next step is to focus on activities with the highest impact and transition towards using physical data. The recommendations outlined below under 1. and 2. not only offer a method to enhance data quality but also, in a subsequent step, support emission reduction by enabling adjustments to purchasing strategies towards more sustainable purchasing practices.

Main recommendations

1. Move from spending data towards physical data of materials and services purchased
    - The majority of EUR's impact stems from the two GHG emission categories 3.1 Purchased goods and services and 3.2 Capital goods for which the data has been almost purely delivered spend-based (besides catering products and cleaning purchases and services).
    - The construction of two new buildings in 2022 and primarily maintenance work in 2023 is covered by just one account/ activity ' Onderhoudslasten - MVA gebouwen te activeren posten', with an impact of 16,438 tonne CO2e in 2022 and 3,055 tonne CO2e in 2023.
    - EUR is advised to investigate if it is possible to split the activities within this account further and to see if physical volumes can be reported for a part of the activities. This would increase the accuracy in the calculations.
    - The same is the case for other high impact activities, such as 'Overige - Overige uitbestede werkzaamheden', 'Inventaris en apparatuur – Softwarelicenties', or 'Overige – Reproductiekosten'

2. Engage with main suppliers
    - Another approach to improve the data quality is to engage with main suppliers, specifically also for the activities mentioned under 1.
    - Supplier-specific emission factors are generally the most accurate method for calculating GHG emissions, provided they are based on a robust methodology. Future purchasing decisions could be guided by suppliers' ability to provide reliable emission data.

3. Start automating part(s) of data collection process
    - For this inventory, all data was collected manually by EUR. To streamline future GHG emission inventories, automating data collection for selected datasets, such as scope 1 and 2, through an API connection could be explored.