Sustainability Report 2024

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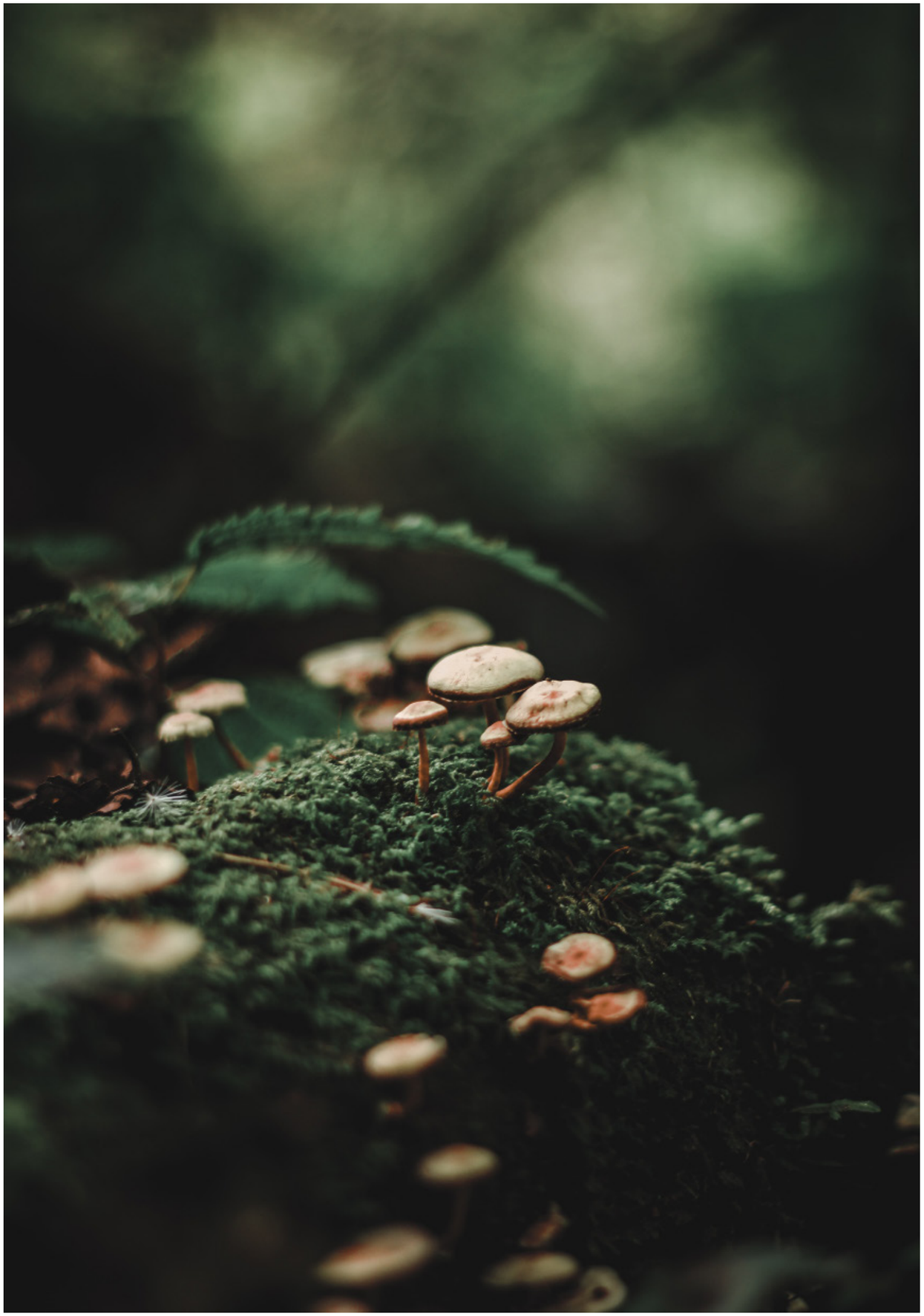


Content

Executive Summary

Introduction and Context
In 2023, a strategic effort to enhance environmental sustainability was initiated, focusing on mapping direct and indirect activities that generate emissions. This report, marking a significant step in our sustainability journey, covers our Scope 1 and 2 emissions for fiscal year 2023 and begins addressing Scope 3 emissions, with full coverage expected in future reports.

Scope 1 and 2 Emissions Management
We have established a framework for monitoring direct emissions (Scope 1) from company vehicles and indirect emissions (Scope 2) from energy use. This inaugural report outlines our emissions inventory process, calculation methods, and the initial results, setting a baseline for ongoing monitoring and improvements.

Scope 3 Emissions and LCAs
Preliminary work on Scope 3 emissions has started, focusing on mapping of categories to be included in future reports. Additional preparation has been initiated to develop a Life Cycle Assessment (LCA) framework, targeting selected product lines, with the intention to fully capture all indirect emissions.

Adoption of Science-Based Targets
Concurrently, preparations to adopt Science-Based Targets (SBTs) to establish near-term emission reduction goals have been initiated. Aiming to align our reduction strategies with scientifically backed global targets to limit climate change.

Strategic Directions and Future Commitments
Our strategies aim to enhance the sustainability performance of our own operations and to support and facilitate improvements across our value chain, fulfilling both internal objectives and external regulatory requirements, such as those under the EU's Corporate Sustainability Reporting Directive (CSRD).

Conclusion
This report presents the base year emissions for Scope 1 & Scope 2. Additionally, this report reflects our commitment to transparency and continuous improvement in environmental performance. Setting a foundation for future efforts to reduce emissions, engage with stakeholders, and advance our sustainability agenda in alignment with global goals and backed by scientific methodology.

- We support Barncancerfonden, Bris, Naturskyddsföreningen, Läkare utan gränser, SOS Barnbyar, Städa Sverige, Nattvandrarna och Nolltolerans mot mobbning.
- We are conducting systematic improvement work
- We are certified according to ISO 14001:2015 & ISO 9001:2015

Introduction

In the summer of 2023, a strategic endeavor was initiated and aimed at enhancing our environmental sustainability practices, with a specific emphasis on the quantification and documentation of emissions internally and throughout our value chain. This initiative is grounded in the methodologies and principles advocated by the Greenhouse Gas Protocol. By the onset of 2024, the necessary infrastructure to compile this inaugural Sustainability Report had been established. Compliant with the GHG Protocol standards, this report systematically documents our management and reduction efforts regarding Scope 1 and 2 emissions for the fiscal year 2023. Simultaneously, preliminary activities aimed at addressing the complexities associated with Scope 3 emissions were initiated, with the objective of incorporating emissions from Scope 3 into future Sustainability Reports.

In parallel to this report, the integration of Science-Based Targets (SBTs) through participation in the Science Based Targets initiative (SBTi) to set near-term reduction targets for Scope 1 & 2, has been initiated with the aim to validate Near-term targets in 2024.

Organiszation Type	First Financial Year Covered	First Filling Year
Large companies subject to NFRD	2024	2025
Large companies not subject to NFRD	2025	2026
Non-EU companies	2028	2029
SMEs*	2028	2029

Fig. 1. CSRD reporting timeline, these times are still subject to changes.

Additionally, the process of developing frameworks for conducting Life Cycle Assessments (LCAs) based on the GHG Protocol LCA standards and requirements have been scheduled to begin in 2024. The intention is to incrementally extend the LCA framework to include all products, thereby achieving a comprehensive assessment of the environmental impacts associated with all our products throughout their lifecycle.

The efforts to enhance sustainability through the value chain is motivated by internal policy objectives, external legislative requirements and stakeholder expectations, including those emanating from state and EU.

The Corporate Sustainability Reporting Directive (CSRD) presents significant considerations for our partners and suppliers. Consequently, our strategies are designed to improve our own sustainability practices as well as facilitating and supporting the transition towards sustainability across the value chain.

The scope of this report
This 2023 report serves as the base year for Scope 1 & 2.
The report is aligned with the GHG protocol standards and aims to provide a base for continuous sustainability reporting and efforts to reduce emissions internally and throughout the value chain.
This report was compiled based on the best available data, references and with the notion that reporting is a continuous process where improvements over time are needed.

Green House Gas Protocol

The Greenhouse Gas Protocol (GHG Protocol) serves as the world's most widely used framework for measuring and managing greenhouse gas (GHG) emissions. Developed through a partnership between the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), this comprehensive protocol provides the accounting and reporting standards and tools needed by governments and businesses to ensure that their GHG inventories are robust and comparable.

The GHG Protocol standards are divided into several scopes and series, each tailored to different aspects of GHG management:

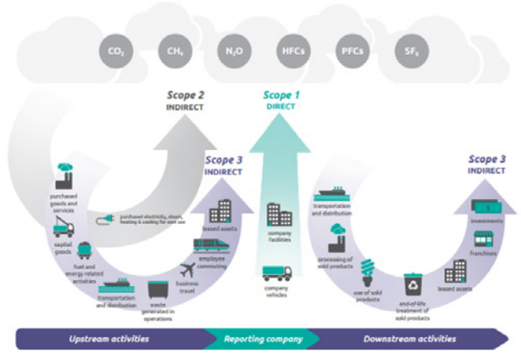


Fig. 2. GHG Protocol illustration of activities within the 3 scopes.

Scope 1: Direct Emissions
This scope includes emissions from sources that are owned or controlled by the company, such as emissions from combustion in owned or controlled vehicles, boilers, furnaces, etc.

Scope 2: Indirect Emissions from Electricity
This scope covers indirect emissions from the generation of purchased electricity consumed by the company. Scope 2 emissions physically occur at the facility where electricity is generated.

Scope 3: Other Indirect Emissions
This is an optional reporting category that allows for the treatment of all other indirect emissions not covered in Scope 2. Including emissions from activities such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g., T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

The GHG Protocol offers sector-specific standards and guidance to cater to the unique needs of various industries. This includes the Corporate Standard, which provides requirements and guidance for companies preparing a corporate-level GHG emissions inventory, and the Product Standard, which focuses on the lifecycle emissions of a product.

Adhering to the GHG Protocol ensures that the environmental impact of organizations is transparently and consistently reported, promoting a global approach to environmental responsibility and facilitating the implementation of sustainable practices.

SBTi Science Based Target initiative

As a part of our strategy, the base-year calculation for 2023 is done with the intent to apply for the Science Based Targets initiative (SBTi) near-term targets.

The SBTi Framework: A Science-Driven Approach
The SBTi is a collaboration between CDP, the United Nations Global Compact, the World Resources Institute (WRI), and the World Wide Fund for Nature (WWF). The initiative offers companies worldwide to set emission reduction targets grounded in the science of limiting global warming to well below 2°C above pre-industrial levels.

Harmonizing with the GHG Protocol
Our reporting adheres to comprehensive standards set by the GHG Protocol, ensuring our emission metrics are transparent, consistent, and comparable. The SBTi utilizes these standards as its foundation, enabling us to align our future climate goals with current scientific models for emission reductions. Through this, we ensure that our targets are not just aspirational but grounded in scientific imperatives.

The Importance of Setting Near-Term Targets
These targets will serve as milestones on our journey towards decarbonization, fostering innovation, and signaling to our stakeholders our commitment to a sustainable future.

Our Path Forward
In applying for these targets, we will undertake the following:

- GHG Emission Assessment: We will conduct a thorough assessment of our current emissions against SBTi criteria, encompassing all three scopes of the GHG Protocol.
- Target Setting: Our targets will be established through methodologies endorsed by the SBTi, ensuring they are in line with the latest climate science and industry best practices.
- Strategic Implementation: We will integrate these targets into our business strategy, engaging with every level of our operation and supply chain to drive collective action.
- Transparency and Reporting: Progress towards our science-based targets will be reported annually, ensuring transparency and enabling our stakeholders to track our progress.

The decision to align with the SBTi is a reflection of our stance on environmental responsibility and our commitment to achieving a more sustainable operation.
As we embed these science-based targets into our operations we take one additional step towards understanding our operational emissions.

Boundaries

Organizational boundary
For Gunnar Engstrand AB (GEAB), the organizational boundary is confined to GEAB itself. This demarcation is due to the absence of subsidiaries, the non-ownership of real estate, and the lack of other emission-generating capital goods. As such the Organizational boundary is confined to the organization that is GEAB.

Operational boundary
Our operational boundary extends to include all direct and indirect emissions — categorized within Scope 1, Scope 2, and Scope 3, as defined by the GHG Protocol. Scope 1 encompasses direct emissions from sources that are owned or controlled, such as our car fleet. Scope 2 covers indirect emissions from the generation of purchased electricity and heating that is consumed.

Scope 3 represents both upstream and downstream emissions that are a consequence of our operations but occur from sources not owned or controlled. This includes upstream activities such as raw material extraction, processing conducted by other companies, as well as downstream activities such as transportation, use, and end-of-life treatment of products sold.

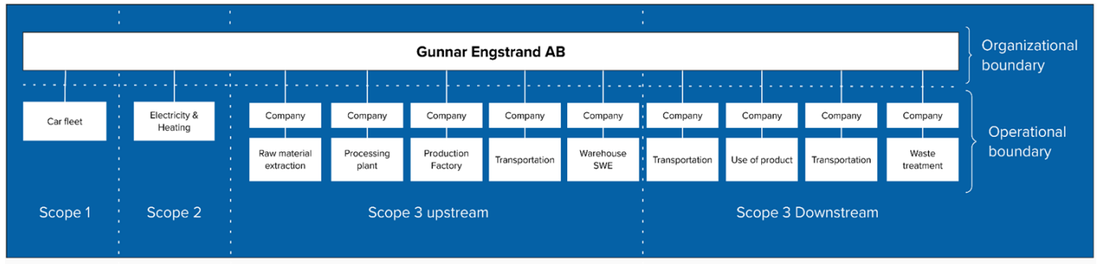


Fig 3. Illustration of the Organizational and operational boundaries of GEAB identified ahead of GHG inventory mapping.

Commitment to Emission Reduction
This depiction of our organizational and operational boundaries underscores the ongoing efforts to identify and manage our direct and indirect environmental impact. By understanding where emissions arise and how to categorize them, we are better positioned to engage with our value chain partners, seek efficiencies, and explore opportunities for reducing emissions. Our approach ensures that we are considering the broader implications of our indirect associations.

As we prepare for the full Scope 3 estimation, we are dedicated to enhancing our data collection methods, refining our emission calculations, and strengthening the collaborations necessary to achieve our sustainability objectives in accordance with the SBTi based on the GHG Protocol standards and requirements.

Mapping Scope 1, 2 & 3

Methodology

Scope 1
In Scope 1, emissions identified came from leased and owned company cars. The cars are from different years, of different brands and run on different fuels. The ideal scenario for these calculations was deemed to identify emission factors presented by the manufacturer of the car. As such information was not attainable for all cars additional emission factors were gathered from the car.info database.

Data collection was conducted by gathering the distance each car had driven during the year as presented by each driver.

The emission factors selected were all based on the WLTP method.

Calculation formula
Emissions (tons CO2e) = ((Activity data (km) x Emission factor (g CO2e /km)) /1000) /1000

Scope 2
Included in Scope 2 emissions were electricity usage and heating at the office in Stockholm. For the results of Scope 2 one market-based approach, one location-based approach were calculated and both results are presented in the Scope 2 results. The report presents the figures for both the market-based approach and the location-based approach as demanded by the GHG Protocol standards.

Electricity
The market-based emission factor was collected from the supplier invoice where both the energy mix and the emission factor was presented.
To prepare a location-based calculation the emission factor was obtained from IVL (2021) where a Nordic residual mix for electricity production was selected.

Calculation formulas
Market-based Emissions (tons CO2e) = ((Activity data (kWh) * Market based Emission factor (g CO2e/kWh)) /1000) /1000

Location-based Emissions (tons CO2e) = ((Activity data (kWh) * Location based Emission factor (g CO2e/kWh)) /1000) /1000

Activity data was collected through supplier invoices where the supplier presented kWh usage for electricity for the year 2023.

Heating
Due to the district heating being included in the rent of the office the calculation of energy usage for heating was based on the energy declaration conducted for the building in 2021. The specific energy usage presented for the building was 142 kWh / m² / year and represents the energy used to heat the building. By multiplying the Area (m²) of the office with the specific energy usage (142 kWh / m² / year) we got a total of 17 892 kWh / year. The market-based method utilizes the emission factor reported by Stockholm Exergi (2023). The location-based emission factor was collected from a report presented by EnergiFöretagen (2023).

Calculation formulas
Market-based Emissions (tons CO2e) = ((Activity data (kWh) * Market based Emission factor (g CO2e/kWh)) /1000) /1000

Location-based Emissions (tons CO2e) = ((Activity data (kWh) * Location based Emission factor (g CO2e/kWh)) /1000) /1000

Scope 3
upstream
1. Purchased goods
4. Upstream transportation and distribution
5. Waste generated in operations
6. Business travel
7. Employee commuting
8. Upstream leased assets downstream
9. Transportation and distribution of sold products
12. End-of-life treatment of sold products

Results

Scope 1 Emissions
Employees operating company vehicles prepare and present distance data for each month during the year. The total figures for each car was collected and used as “Activity data” to calculate emissions with a physical allocation methodology for each vehicle.

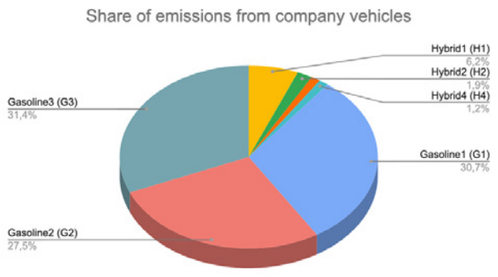
Emission Factors methodology: WLTP

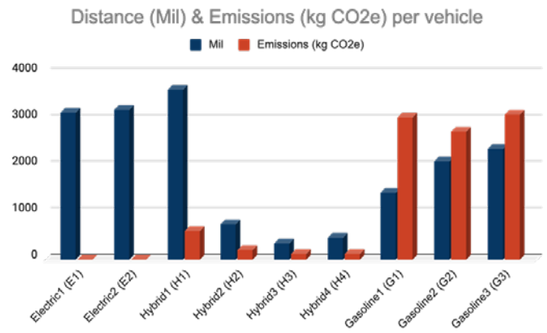
Calculations: Emission factors for each car model was collected and for six out of nine vehicles the EF was presented by the car manufacturer (Primary). For three car models the EF was collected from car.info where EFs for most car models are available (Secondary).

The results show that three cars contributed to 89.6% of the total emissions.
The Gasoline 3 car which had driven the longest out of the three accounted for 31.4% of the total emissions. This car was swapped for a Hybrid 4 in November, an average monthly distance was calculated to split the emissions for this driver and the two cars. The Gasoline 1 accounted for 30.7% of the total emissions and the Gasoline 2 car 27.5%, these two cars have been identified as the prioritized targets to reduce Scope 1 emissions.

Total Scope 1 emissions: 9.924 tonnes CO2e

Full tables with calculations and sources can be found in Table 1.





Scope 2 Emissions
Emissions included in Scope 2 are electricity purchased and district heating included in the rental cost for the office.

As a criteria in the GHG Protocol Corporate Standards Scope 2 emissions were calculated with two different emission factors based on a market-based approach and based on a location-based approach.

Electricity usage
Activity data: 3517.1 kWh (Supplier invoice)
Market-based Emission Factor: 9.4 g CO2e / kWh (Supplier invoice)
Location-based Emission Factor: 90.4 CO2e / kWh (IVL, 2021)

The Market-based approach utilized the specific Supplier invoice emission factor of 9.12 g CO2e / kWh.
((3517.1 kWh * 9.12 g CO2e)/1000)/1000 = 0.0321 tonnes CO2e

The Location-based approach utilized an emission factor as presented by IVL (2021) on nordic energy mix emission factors which was 90,4 g CO2e / kWh.
((3517.1 kWh * 90.4 g CO2e)/1000)/1000 = 0.317 tonnes CO2e

District heating
Activity data: 17 892 kWh
Market-based Emission Factor: 54 g CO2e / kWh (Stockholm Exergi, 2023)
Location-based Emission Factor: 468 g CO2e / kWh (Energiföretagen, 2023)

The Market-based approach utilized a specific emission factor from the supplier of district heating Stockholm Exergi (2023) which was 54 g CO2e / kWh.
((17892 kWh * 54 g CO2e / kWh) / 1000) /1000 = 0.966 tonnes CO2e

The Location-based approach utilized an emission factor as presented by EnergiFöretagen (2021) on nordic energy mix emission factors for district heating which was 468 g CO2e / kWh.
((17892 kWh * 468 g CO2e / kWh)/1000) /1000 = 8.373 tonnes CO2e

Total Scope 2 emissions:

Market-Based approach: 0.998 tonnes CO2e

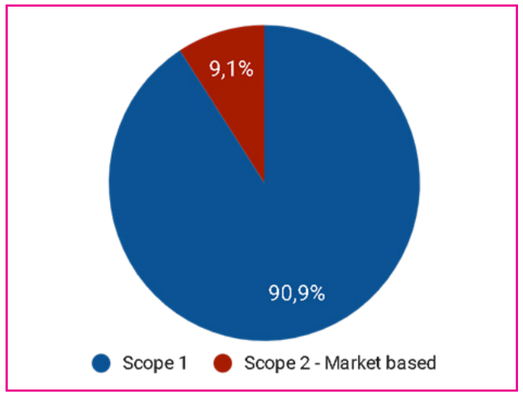
Location-based approach: 8.69 tonnes CO2e

For future reports the Market-based approach will be used and presented in the report due to the efforts that have been made to purchase renewable energy. As required a yearly Location-based Scope 2 emission will also be calculated and presented in the Appendix for Scope 2.

Fig. 4. Värtahamnen kraftvärmeverk, Stockholm Exergi

Results Scope 1 and Scope 2
The results of this first base year estimation of Scope 1 and Scope 2 will serve as the benchmark for Near-term targets set through the SBTi. The results from Scope 2 and the Location-based approach and the Market-based approach differ substantially.

As presented the Market-based approach will be the set method used in subsequent reporting. For this base-year Scope 1 stands for 90.9% of total emissions and Scope 2 stands for 9.1% of total emissions.



The emission estimation from which the SBTi Near-term targets are to be calculated from are:

Scope 1:	**9.924 tonnes CO2e**
Scope 2:	**0.998 tonnes CO2e**
Total emissions:	**10.922 tonnes CO2e**

As presented in this report the expectation is to find the majority of operational emissions in Scope 3 which is one of the reasons why Scope 3 mapping and estimations is a priority for the continuous sustainability work.

	Category	Tonnes CO2e	Share of total
Scope 1			
Company owned vehicles	Electric 1	0,000	0,00%
	Electric 2	0,000	0,00%
	Hybrid 1	0,617	5,65%
	Hybrid 2	0,190	1,74%
	Hybrid 3	0,114	1,04%
	Hybrid 4	0,118	1,08%
	Gasoline 1	3,045	27,88%
	Gasoline 2	2,728	24,98%
	Gasoline 3	3,112	28,49%
	Scope 1	**9,924**	**90,86%**
Scope 2			
Office electricity & heating	Electricity	0,032	0,29%
	District heating	0,966	8,84%
	Scope 2	**0,998**	**9,14%**
	Total Scope 1 & 2	**10,922**	

Result Scope 3

Discussion

Scope 1: Emissions from Direct Sources
For Scope 1, emissions calculations were based on distance as the activity data (AD) rather than basing the calculation on fuel consumption. This decision was influenced by the reliability and accessibility of distance data provided by the employees through the fleet management system. While this method provides a consistent data flow, it does introduce some uncertainties in emissions estimates, particularly for vehicles where specific manufacturer emission factors (EFs) were not available. Future reports will aim for 100% collection of EFs directly from vehicle manufacturers to minimize estimation errors.

The fleet analysis highlighted that the gasoline cars 1-3 are the most significant contributors to our Scope 1 emissions. One of these was replaced in November of 2023 and the other two will be focal points in our strategy to reduce emissions.

The strategic shift towards electric and hybrid vehicles has significantly contributed to the low emission levels reported. Continuing this transition aligns with Near-term targets presented by the Science Based Targets initiative (SBTi), aiming for a 42% reduction in Scope 1 and 2 emissions by 2030 from the base year 2023.

Scope 2: Indirect Emissions from Purchased Energy

Market-Based Approach
Active efforts to purchase 100% renewable energy have been conducted and the result was choosing the supplier God El which compared to the location-based results the Marbet-based emissions are very low, indicating that the efforts have paid off.

Location-Based Approach
The location-based total for Scope 2 was 8.69 tonnes CO2e. The electricity EF was gathered from IVL (2021) where a Swedish Energy Mix EF was identified. Although these data introduce some variability, it was deemed sufficient to present a location-based result. The district heating EF, derived from the Nordic Energy Mix presented by Energiföretagen (2021), indicates a higher emission intensity compared to Swedish averages but remains lower than many international standards.

The stark contrast between the market and location-based calculations (approximately tenfold) underscores the impact of strategic energy purchases. Onwards the market-based approach will be primarily presented, given the relevance of supplier-specific EFs as actions towards a more sustainable operation. Location-based calculations will be supplemented in the Scope 2 Appendix to provide a comprehensive view of our energy footprint.

Uncertainties and Future Directions
Some uncertainties arise from our selection of operational control. The exclusion of certain emission generating operations being excluded, like those at the storage facility, is a notable limitation. As subsequent reports are prepared the access to data and the share of the operations that are attributed may become clear, which eventually may alter the approach towards the GHG inventory based on the Economic share of operations, but this depends on successful calculation of Scope 3 and the state in which the suppliers are in regards to sustainability reporting and efforts.

Conclusions
Scope 1 & 2 Emissions Overview
Our assessment indicates that GHG emissions from Scope 1 and Scope 2 are relatively low, largely due to efforts made to modernize the carfleet and switch to renewable energy sources.

Scope 1 Emission Reduction Strategies

Continued modernization of our vehicle fleet is essential. Transitioning to plug-in hybrids and fully electric vehicles will significantly reduce our Scope 1 emissions. Additionally, integrating public transportation options for certain business travel can further net decrease emissions, while increasing Scope 3 emissions slightly through employee commuting and business travel.

Scope 2 Considerations
Our current strategy focusing on renewable energy procurement for electricity has successfully minimized Scope 2 emissions. Continual monitoring and optimization of energy sourcing is required to sustain and build on these results.

Scope 3 Emission Challenges
To holistically address our environmental impact, a comprehensive identification and calculation of Scope 3 emissions is imperative. This will provide a complete picture of our indirect emissions and highlight additional opportunities for reduction.

Next Steps
Fleet Modernization and Expansion of Low-Emission Vehicles
Accelerate the phase-out of high-emission vehicles in the fleet, replacing them with low-emission alternatives such as electric and hybrid models.

Scope 3 Emission Reporting and Reduction
Conduct a thorough value chain analysis to identify all relevant indirect emission sources as outlined by the GHG Protocol.

Engage with suppliers to gather data on upstream and downstream emissions, particularly focusing on high-impact areas identified in the value chain analysis.

Develop strategies for engagement and reduction with key suppliers to decrease Scope 3 emissions, such as sourcing from suppliers with verified low-emission practices or collaborating on sustainability initiatives.

Sustainability Reporting Enhancements
Implement software and systems for better data collection and analysis, enabling more accurate and timely reporting of all scope emissions.
Seek third-party verification of our GHG reporting to ensure accuracy and improve stakeholder confidence in our sustainability claims.

Efforts to reduce emissions

Transitioning to Low-Emission Vehicles
Progressively transitioning from fossil-fueled vehicles to plug-in hybrids and electric cars to reduce Scope 1 emissions have been an ongoing process over the past few years. This change is part of our aim to reduce direct emissions and now a part of our strategy to meet the near-term emission reduction targets in line with the Science Based Targets initiative (SBTi). As of 2024, 75% of our vehicles are either electric or plug-in hybrids with the near-term goal of further reducing emissions from Scope 1 by 42% until 2030.

Transportation Efficiency
Transportation logistics represent a large part of the total environmental footprint, encompassing both upstream and downstream emissions.

We are continually striving to optimize these processes to enhance transportation efficiency. Working with transportation efficiency leads to lower cost and lower environmental impact. In 2025, we will conduct a detailed analysis of transportation emissions to quantify the effectiveness of our current measures and plan further improvements. This analysis will help identify strategies to reduce both upstream and downstream transportation emissions, consistent with our broader sustainability objectives.

Product Development and Scope 3 Emission Reductions
In alignment with the GHG Protocol's categorization, product development initiatives have significantly influenced emissions reductions throughout our value chain. Specifically, improvements have targeted Scope 3 emissions, encompassing Categories 1 (Purchased Goods and Services) and 4 (Upstream Transportation and Distribution), as well as Category 9 (Downstream Transportation and Distribution).

As of summer 2023, the product development efforts have led to an annual reduction of 19% of total material usage,leading to a 12 tonnes CO_2e reduction of transportation emissions in Categories 4 and 9 combined.

This reduction amounts to the total emissions from Scope 1 and 2 for 2023, highlighting the substantial environmental benefits that can be achieved through optimizing product designs to reduce transportation weight. As Life Cycle Assessments (LCAs) are prepared for products the aim is to achieve deeper insights into the full environmental impact and the possibilities of implementing efforts to reduce it.

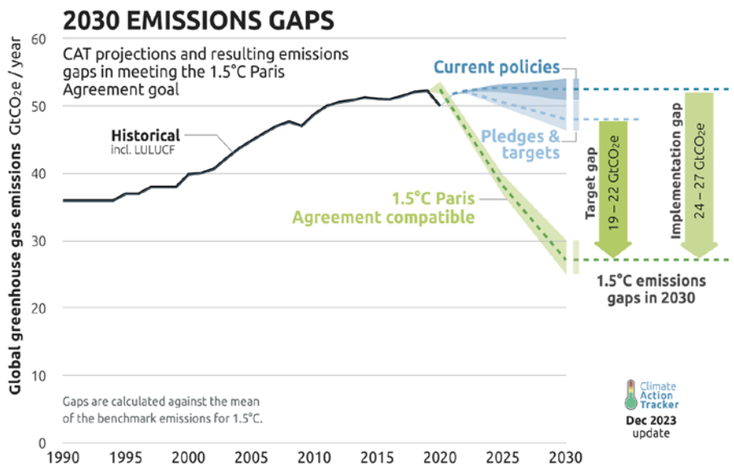


Fig 6. Climate Action Tracker results showcasing the current pledges & targets and how much additional work that is needed to meet the Paris Climate Agreement.

Emission offsetting

In pursuit of net-zero emissions for various types of enterprises, organizations, and states, offsetting methods are employed. These methods aim to sequester an equivalent amount of emissions through natural processes or by substituting fossil based electricity production with renewable sources. The objective of emission offsets is to enable companies to positively impact the climate and environment externally from their operational activities. By engaging in long-term offset initiatives, companies can achieve net-zero, provided that the projects can demonstrate verified sequestration.

The market for voluntary carbon credits, which is sold globally, is rapidly expanding. This growth has led to the emergence of numerous companies marketing these credits without proof that the funds are resulting in increased sequestration commensurate with the credits sold. Therefore, it is crucial that decisions to purchase carbon credits are made only after comprehensive analysis of the selling company's methods and data reliability.

As the progress towards a precise, transparent and regulated sustainability reporting framework is ongoing the next steps include looking at potential offsets where ecosystem restoration projects focused on forest ecosystems are of interest. Additionally, as several types of plastic polymers are used in production, product development aims to reduce such plastics but a willingness exists to find projects working with clean ups and to help fund these projects to gather additional plastic litter in nature.

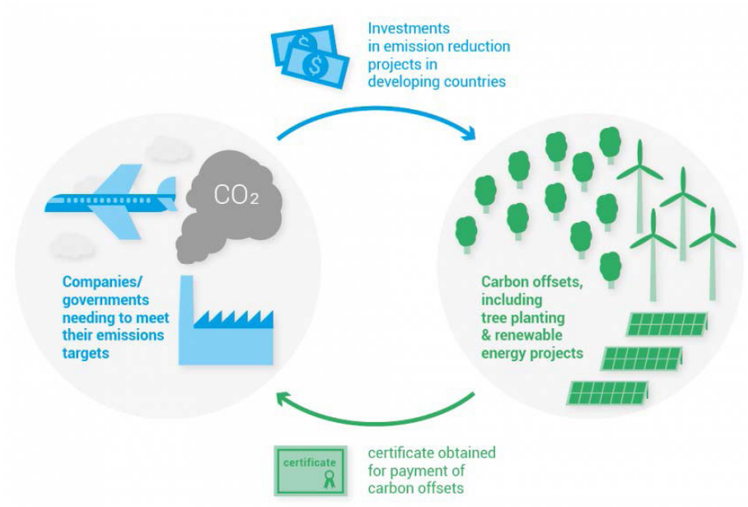


Fig. 7. Illustration of processes utilized for emission offsetting and how it is utilized as certificates

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Scope 1
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For subsequent reports contact will be initiated with the manufacturers where EF were not obtained to achieve 100% of emission factors in Scope 1 from manufacturing companies and not a third-party.
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Scope 2
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Appendices

Mapping & justification of Scope 3 categories for 2025

Categories Included	Categories Excluded
Upstream	
1. Purchased goods	2. Capital goods
4. Upstream transportation and distribution	3. Fuel- and energy-related activities
5. Waste generated in operations	
6. Business travel	
7. Employee commuting	
8. Upstream leased assets	
Downstream	
9. Downstream transportation and distribution	10. Processing of sold products
12. End-of-life treatment of sold products	11. Use of sold products
	13. Downstream leased assets
	14. Franchises
	15. Investments

Upstream Scope 3 categories
1. Purchased goods (Included)
As the control approach has been applied the category Purchased goods will include all purchases of products from factories that are subsequently sold. This category is expected to hold the majority of emissions within the operational boundary.
Data needed:

- LCA results for purchased products.

4. Upstream transportation and distribution (Included)
Transportation of purchased products is a central part of the operations and includes several modes of transportation to deliver products to the storage facility.

Sections of transportation identified:
- T1 - Raw material extraction to processing plants
- T2 - Processing plant to production factory.
- T3 - Production factory to storage facility.

Data needed:
- Mode of transportation
- Distance travelled
- Ideal: Emission report from supplier.

5. Waste generated in operations (Included)
Production of purchased products include waste generation, as production includes several processes from extraction of raw material, processing of raw material and production of the final product. The raw materials range from biomass-fossil fuels to recycled plastics.

LCA calculations will provide base data to estimate waste in each section.

Sections of waste identified:
- Waste in raw material extraction process
- Waste in processing stage
- Waste in production process

Categories of waste treatment:
- Landfill
- Incineration
- Composting
- Recovery for recycling

6. Business travel (Included)
This category includes all business travel conducted during the year that are not done with the company owned/leased car.

Categories:
- Air travel
- Rail travel
- Bus travel

Data needed:
- Ideal: Emissions report from supplier of service (SJ, SAS, SL)
- Alternative: Distance traveled

7. Employee commuting (Included)
This category includes all employees commuting to and from the office.
Categories:
- Private car
- Bus travel
-

Rail travel
Data needed:
- Number of employees commuting to work.
- Mode of commuting
- Distance commuted on a daily basis.
- Number of days commuted per week.

8. Upstream leased assets (Excluded)
As there are no leased assets this category is irrelevant due to the selected GHG inventory method.

Upstream Scope 3 categories
9. Downstream transportation and distribution (Included)
This category includes transportation between the storage facility, customers and transportation from customer to the waste
management facilities.
Data needed:
- Emission report from supplier of transportation services

Alternative:
- Distance to customer
- Mode of transportation
- Distance from customer to waste management site

10. Processing of sold products (Excluded)
As products sold by GEAB do not require any further processing this category is not relevant.

11. Use of sold products (Excluded)
Products sold by GEAB do not require any energy or additional activity generating emissions, hence this category is excluded.

12. End-of-life treatment of sold products (Included)
The products are eventually managed as waste, as a means of working towards recycling and a circular economy mapping how the products are treated as waste is crucial.

Data needed:
- KG/M3 Landfill
- KG/M3 Incineration
- KG/M3 Composting
- KG/M3 Recovery for recycling

13. Downstream leased assets (Excluded)
As there are no leased assets this category is irrelevant due to the selected GHG inventorymethod.

14. Franchises (Excluded)
GEAB does not have any operational franchises and is controlled through a single entity, hence this category is excluded.

15. Investments (Excluded)
GEAB does not use investments as a means of its operational business, hence this category is excluded

Data & Tables

Table 1. Scope 1 emission calculations

	Supplier/model	Emissions (t CO2e)	Activity data	Unit	Method	AD P/S Data	Emission factor	Unit	Emf. Method	Source
Scope 1										
Company cars	Volvo V60 Recharge T6 plus	0,61693	36290	km	Physical allocation	Primary	17	g CO2e / km	WLTP	https://www.volvocars.com/se/cars/v60-hybrid/
	KIA Sportage Plug-in Hybrid	0,18975	7590	km	Physical allocation	Primary	25	g CO2e / km	WLTP	https://www.kia.com/se/nya-bilar/sportage/upptack/
	KIA EV6 RWD	0	31470	km	Physical allocation	Primary	0	g CO2e / km	WLTP	https://www.kia.com/se/nya-bilar/sportage/upptack/
	Audi Q4 e-tron 150 kW Proline	0	32100	km	Physical allocation	Primary	0	g CO2e / km	WLTP	https://www.audi.se/se/web/sv/models/q4-e-tron/q4-e-tron.html
	KIA Optima SW Plug-in Hybrid	0,11356	3340	km	Physical allocation	Primary	34	g CO2e / km	WLTP	https://www.car.info/en-se/kia/optima/optima-sport-wagon-20-hybrid-a6-2019-17901457/specs
	Jeep Compass 1,4 4wd 170hp	3,045474	14298	km	Physical allocation	Primary	213	g CO2e / km	WLTP	https://www.car.info/sv-se/jeep/compass/mp-14-4wd-16464558/specs
	BMW GT 320d xDrive	2,7284355	21069	km	Physical allocation	Primary	129,5	g CO2e / km	WLTP	https://www.press.bmwgroup.com/global/article/attachment/T0260340EN/360154
	Volvo V60 D4 (Jan - Nov)	3,111728333	23663	km	Physical allocation	Primary	131,5	g CO2e / km	WLTP	https://www.car.info/en-se/volvo/v60/v60-d4-ma8-2020-18816490/specs
	Kia Sportage Laddhybrid (Nov-Dec)	0,118316667	4733	km	Physical allocation	Primary	25	g CO2e / km	WLTP	https://www.kia.com/se/nya-bilar/sportage/upptack/?gad_source=1&gclid=CiwKCAiwh4-
Total		**9,9241945**								

Data & Tables

Table 2: Scope 2 Emissions Breakdown

Scope 2	Supplier/model	Emissions (t CO2e)	Activity data	Unit	Method	AD P/S Data	Emission factor	Unit	Emf. Method	Source
Office electricity	Electricity (God El)	0,032075952	3517,1	kWh	Market-based approach	Primary	9,12	g CO2e/kWh	Supplier invoice (God el)	
	District heating (Stockholm Exergi)	0,966168	17892	kWh	Market-based approach	Primary	54	g CO2e/kWh	Stockholm Exergi (2023)	https://www.stockholmexergi.se/content/uploads/2023/01/Miljonyckeltal-2022_1.0.pdf
	Total Scope 2 Market Based	**0,998243952**								
	Electricity (Swedish Energy Mix)	0,31794584	3517,1	kWh	Location-based approach	Primary	90,4	g CO2e/kWh	IVL, 2021 - "Emissionsfaktorer för Nordisk elmix med hänsyn till import och export"	https://www.ivl.se/publikationer/publikationer/emissionsfaktorer-for-nordiskelmix-med-hansyn-till-import-och-export.html
	District heating (Nordic Energy Mix)	8,373456	17892	kWh	Location-based approach	Secondary	468	g CO2e/kWh	Nordic Residual Mix (2021) - Energiföretagen	https://www.energiforetagen.se/4af4c7/globalassets/energiforetagen/statistik/fjarrvarme/miljovardering-av-fjarrvarme/hjalp-vid-berakning/guide-for-allokering-i-kraftvarmeverk-och-fjarrvarmens-elanvandning-2023.pdf
	Total Scope 2 Location Based	**8,69140184**								